



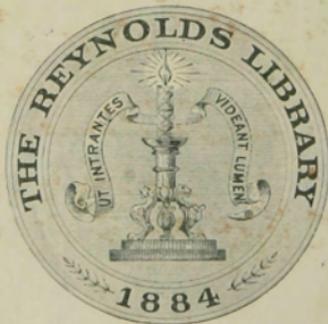
THE  
**TELEGRAPH**  
IN  
AMERICA.



AND  
IN MEMORIAM.  
**Samuel F. B. Morse,**  
AND  
WILLIAM ORTON.



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With sincere esteem  
Y<sup>r</sup> friend & serv<sup>t</sup>.  
Sam<sup>l</sup>. F. B. Morse.  
— m —

THE

# TELEGRAPH AMERICA



## Morse Memorial

IN MEMORIAM

**WILLIAM ORTON**

JAMES D. REID.  
III

Printed for the Author by

**WEED, PARSONS & COMPANY**  
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AMERICAN BANK NOTE CO.

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THE

# TELEGRAPH IN AMERICA.

ITS

FOUNDERS PROMOTERS AND NOTED MEN.

BY

JAMES D. REID.

NEW YORK:  
DERBY BROTHERS.  
1879.

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WITH DEVOTED AFFECTION I DEDICATE

**This Volume,**

WITH ALL ITS ACKNOWLEDGED IMPERFECTIONS

TO THE MEMORY OF THE

→HON. + WILLIAM + ORTON←

WHOSE PERSONAL KINDNESS AND ENCOURAGEMENT FIRST INDUCED ITS COM-  
PILATION, AND WHO, BY HIS

*Integrity, Skill, Patriotism and Prudence,*

MADE THE

**Telegraph in America**

THE SYNONYM OF

HONOR, ENTERPRISE AND SUCCESS.

## PREFACE.

---

ON the 10th of June, 1871, the telegraphic staff of the American Continent inaugurated the erection of a statue in Central Park, New York, in honor of Professor Samuel Finley Breese Morse, the inventor of the Electro-Magnetic Telegraph. On the evening of the same day, in the same city, a public reception was given to him in the Academy of Music. Vast numbers attended on these occasions, and the services, at both, were interesting, imposing and memorable.

On the completion of the ceremonies connected with these demonstrations, a pledge was exacted of me as having been an active laborer therein, that they should be appropriately commemorated by a suitable record. In the exuberance of the occasion, also, when every circumstance inspired enthusiasm, and generosity bubbled at the brim, a promise was given not only to make a permanent record of the ceremonies, but also of the names of thousands who so gallantly and joyfully contributed to the work of that successful day. These pledges were honestly given, but the fulfillment of them has been postponed by causes which need not be named. This memorial volume is the accomplishment of these promises, now somewhat venerable by delay.

In the performance of one duty, another was suggested. The progress of the introduction of the Magnetic Telegraph in America had no continuous record. It had been of a growth so rapid, and its beginnings were still so fresh in the public memory, as to render any attempt at history seemingly premature. As, however, the years recede, and the inventor and his friends, one by one, are passing, forever, behind the curtain of the stage on which they played, it was suggested to me, as one of the first born of its children, that the early records of the telegraph in America be united with my memorial duties. The advice may not have been wise, but it has been obeyed. In the following pages I have endeavored to give, very informally, the history of the tel-

ograph companies which have, most prominently, illustrated telegraphic progress. It is given simply as material for some future work, more complete and erudite, which may be written by more competent hands. Its preparation has been the fruit of hours largely stolen from the periods of natural rest, or interpolated, as opportunity offered, among the current duties of a service more or less engrossing. This will be only too evident when fresh eyes come to read in its pages oft recurring evidence of the manner of its compilation.

One sad advantage gained by the delay in publishing this volume, is the opportunity to make permanent not only the records of honors to Professor Morse while living, but also those which followed his decease. Occasion is also taken to give a brief sketch of the development of electric science.

What is written of Professor Morse's life has been derived from an intimate and delightful personal acquaintance, and the possession of his papers. The memory of his friendship has been an ever-living benediction. Serene as his life seemed to be, and was, it was, nevertheless, a continuous contest. It was only after heroic endurance and toil up to the full measure of human years, that he gained his final victory. His life is a lesson of heroic perseverance, of confidence in God, and in the triumph of truth.

A still sadder duty comes after our work seemed done. The death of Professor Morse was like the setting of a summer's sun, over which the shadows gracefully gathered and enfolded. At high noon, however, it came to one who, more than any other one man, had given to the telegraph national greatness, systematized power, and by an almost ideal life of heroic honor, intense vigor, intellectual brilliancy, and generous authority, had placed the telegraph in America high among the great industries of the world. With a trembling hand and a saddened heart the writer finishes his task by writing the name of William Orton among the lengthening list of the noble and the gentle dead.

Thus in the shadows of a great bereavement the book is given to the craft for whom it was at first undertaken, in the confident assurance of its generous reception.

JAMES D. REID.

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# MORSE MEMORIAL.

## CHAPTER I.

### BEFORE THE DAWN — SIGNAL TELEGRAPHS.

“Fast as the fatal symbol flies,  
In arms the huts and hamlets rise;  
From winding glen, from upland brown,  
They poured each hardy tenant down.  
Nor slacked the messenger his pace,  
He showed the sign, he named the place,  
And, pressing forward like the wind,  
Left clamour and surprise behind.”

— [*Lady of the Lake.*]

THE first thought of a *bon-vivant* as his eye twinkles through a fresh sample of his favorite wine, which with dexterous thumb and finger he holds up to the sun, is, “How old are you?” “Where grew the grapes which made you?” And he is but a type of an age which seems bent on tracing all things to their origin — hunting them up to their primal nest.

The more remote the seed, the more dim the dawn, the deeper the fascination. It is regarded as a sublime thing for a brave man to perish in an African swamp in a heroic attempt to find the sources of the Nile. So, also, Darwin, in another field, shares the laurels of Speke and Livingstone. His researches are not pleasant. Few delight in such an ancestry as he accepts as his own. And yet, both he, and others like him, with curious eyes and

diligent fingers, are lifting up the prehistoric stones to find, if possible, beneath their gray mantle the beginnings of themselves.

The telegraph has had a like scrutiny. Mr. Shaffner has even suggested that its origin might be found in Eden. And there is some foundation for this. For example, the word which, in France, expresses the English term "magnetism," is "*aimentation*," from the word "*aimer*," to love. Now, it is certain that there was love in Eden; why, therefore, should Eden be closed against the search for the telegraphic dawn? It may yet appear, indeed, that in that halcyon era Adam and Eve had some delightful code of signals, by which brief partings were illuminated by these assurances of return.

So far as we have any knowledge, the earliest methods of signalling, all of which have come to be classed under the general term of telegraphs, were of a very simple character. Among savage tribes, and, indeed, largely among more civilized races, these signals were by fires. The "sign of fire" is alluded to in the Old Testament by Jeremiah. As civilization advanced, torches, flags, birds, drums, trumpets and other modes of conveying the vocabulary of signalled thought and information, were employed. The Indian mounds on our Western prairies give evidence of having been beacon bearers in the years gone by.

The unfolding intelligence of the age revealed itself, also, in so arranging the more primitive fire-signals, that, by changing their size, or dividing or multiplying them, or by separating their flame, it became very easily possible to spell out distinct words. This was brought into such perfection in the third century before the Christian era, that, by the combined use of torches and fires, the Roman generals were able to communicate their plans to each other with much minuteness and success. Mr. Shaffner, in his *Manual*, has, with his accustomed industry, and in a most interesting manner, entered very largely into the history of the signal service of this remote period. He gives, as an illustration of its capacity, as early as 1084 B. C., the announcement thereby to the

Palace at Rome of the fall of Troy, by beacon lights from Ida to Lemnos; from thence to Athos, Mount of Jove; thence to the watch-towers of Macistus, Messapius, the crag of Cithæron, and the Mount Ægiplanctus; thence to the Arachnæ heights, and finally to the roof of the Atreidæ.

The first description of what is called a "telegraph," although that word (meaning "writing at a distance,") belongs to modern times, was a system of wooden blocks of various shapes, to indicate letters, arranged by Dr. Hooke in 1684. A century later, in 1794, three brothers named Chappé were confined in schools in France, situated some distance apart, yet within sight of each other. Free communication, under the rigorous rules of these schools, was denied them. They yearned for intercourse. Finally affection suggested a plan by which a pivoted beam could be used to convey the signs of letters, by pointing it in different directions. The variety of signals was enlarged by adding small movable beams at the ends of the main beam. In this way these brothers arranged 192 different signals, and, by correspondence, thereby relieved the tedium of their confinement. Curiously enough, what was thus contrived under the spur of brotherly affection, proved the fortune of them all. After their release, the system they had devised for communication with each other was exhibited to the government of France, and adopted for a service of signals. One of the brothers Chappé became telegraphic engineer for the government. Semaphoric signal-houses and signals were rapidly established along the whole French coast, in 1803, with Chappé as manager. These were continued in use for a number of years, until electrical discovery provided the modern means for that purpose. As an evidence of the value of the telegraph, even in its then crude state, it is stated that the first use made of the Chappé signals was to announce an important victory for the French army. This was transmitted from the French frontier to Paris with surprising promptness to the French Convention, then in session.

In 1795, Lord George Murray, of England, improved on Chappé's original plan, by using two frames in which six Venetian blinds were inserted, thus adding greatly to the ease in operating and translating, as well as to the variety of the signals. Murray's system was adopted by the British government about the close of the last century, and continued in use until 1816.

In Prussia, the semaphoric system was not introduced until as late a period as 1832, but was so available and complete that 4,096 different signals could be transmitted by it, and the service was rapidly extended all over the kingdom. In Russia, also, all along the great routes of travel, may still be seen the towers erected for the government telegraphic service. Over two hundred of these were erected at great cost, were thoroughly painted, and surrounded by tastefully kept gardens, on which also stood the neat and ivy-covered home of the keeper. Of course, these towers are no longer used for the purpose of their construction, but are preserved as mementoes of an age gone by.

In 1807 General Pasley, and in 1816 Sir Home Popham, contrived modifications of the Chappé and Murray system, introducing lamps for night service. Jules Guyot, of France, and Treutler, of Berlin, also perfected similar systems, but with little practical advantage over those previously in use. Shaffner's Manual treats fully on all these early and ingenious appliances.

In the American Revolutionary War one of the signals employed was a flag-staff, surmounted by a barrel, beneath which a flag and basket could be so changed in their combinations that a number of announcements could be thus communicated. It will be remembered also how the farmers of Middlesex, Essex and Worcester, on the night of April 18, 1775, sprang to arms to meet the foe, having been roused by Paul Revere, who having seen the signal agreed upon in the North Church tower, which told the movements of the British troops from Boston, had started on his famous ride to warn the people that the storm had burst.

“ He said to his friend, ‘If the British march  
By land or sea from the town to-night,  
Hang a lantern aloft in the belfry arch  
Of the North Church tower, as a signal light,  
One, if by land ; two, if by sea ;  
And I on the opposite shore will be,  
Ready to ride, and spread the alarm  
Through every Middlesex village and farm,  
For the country folk to be up and to arm.’ ”

—[*Longfellow.*]

Jonathan Grout, Jr., of Belchertown, Mass., filed an application in 1800, for a patent for a telegraph which he operated between Boston and Martha's Vineyard, a distance of ninety miles, from hill-top to hill-top, and which was sighted by the aid of telescopes.

In July, 1812, Christopher Colles, of New York, published the following in the New York Columbian :

“ Mr. Colles, having completed his telegraphs, informs the public that their operations will be shown from the top of the Custom House on Tuesdays, Thursdays and Saturdays, from four till six in the afternoon. Admittance 50 cents.”

Mr. Colles issued an explanatory pamphlet in which he says :

“ Eighty-four letters can be exhibited by this machine in five minutes, to the distance of one telegraphic station averaged at ten miles, and by the same proportion a distance of 2,600 miles in fifteen minutes twenty-eight seconds.”

This, of course, was nothing but the already well-known European semaphore or visual signal. Colles worked his signals between New York and Sandy Hook for several years.

It is a curious circumstance, that as late as 1846 signals on Murray's plan, erected on high or prominent points of land, were used between New York and Philadelphia by some enterprising street brokers, who long kept the matter secret, using it even after

the introduction of the Morse electric telegraph, and whose means of information for a long time confounded the members of the Stock Exchange. One of these gentlemen, known as Bull Bridges, when at last the Morse instrument began, in 1845, to click in the second story of the Philadelphia Merchants' Exchange, was able, by practicing privately on telegraphic sounds, to catch by ear the messages coming over the wires. He could also, with his large, lustrous eyes, wink a figure to a confederate conveniently waiting for the information. He took great enjoyment in these private lines of his, and was probably the first man, in Philadelphia, at least, to take the Morse characters by sound. The "visual" line was soon abandoned.

The earliest system of telegraphy for signaling over long distances is said to have originated among the African negroes. The means used were telephonic, and the signals were read by sound, and not by the eye, as in the case of the semaphore or other early signaling devices. The "Elliembic," as the instrument is termed, has been in use from time immemorial in the Cameroons country, on the west coast of Africa. By the sounds produced on striking it, the natives carry on conversation at several miles distance. The noises are made to produce a language, as intelligible as the human voice.

In all ages men have resorted to signals to quicken intelligence. They have longed for something better and speedier. The burning brand by which the Highland chieftain gathered his clans to battle, as it flamed through the Scottish mountains, borne by men swift of foot, and the smoke of the signal-fires of the Sioux and Blackfoot Indians, curling up from the mounds of our Western prairies, were only hints of a time coming when an instrumentality which was to bring men all over the earth side by side, was to be also the agency, to a large degree, of universal peace.

## CHAPTER II.

## THE DAWN OF ELECTRICAL DISCOVERY.

“ Sea and mountain and Time and space  
Laughed again in his Lordship's face,  
And bade him blush for his weak inventions  
And the narrow round his achievements ran.”

—[*Rossiter Johnson.*]

POWER, especially when associated with mystery, has never failed to fascinate. It inspires the realm of the imagination. This gives to life many of its charms. Our lives, indeed, are the result of influences which impinge upon our senses with such subtlety, and yet with so imperious a drift, that we are a mystery to ourselves. It is easy to see, therefore, why the subject of electricity has, in all ages, and among all classes, captivated the human mind. Where it did not impel to investigation, it excited to curiosity.

“ Who hath not felt  
Its spirit, and before its altar knelt?”

Not unseldom, either, has it led to dread and apprehension, as revealing powers around us, and hovering over us, full of the possibilities of evil.

Aside from these, however, electricity as a science is susceptible of great powers to stimulate and delight. Its demonstrations are unique, startling, brilliant. No branch of experimental philosophy is so full of picture, so replete with surprise. It is so identified, also, with the great and sublime agencies of nature; demonstrates the possession of such mysterious power; so affects the animal

frame; so trembles through the human body; so roars in the sky; so bounds from the human finger out over the earth, taking the deep caverns of the sea and the mountain summits as its path, that there seems no wonder that its fascination has been absorbing and complete. It is not likely soon to cease.

Six hundred years before the Christian era, Thales of Miletus discovered and described the property possessed by amber to repel and attract light substances when rubbed. Since then, the subject of electricity has, in a greater or less degree, interested and excited the minds of men. No branch of experimental philosophy has been so popular with all classes and ages. At that early date, however, nothing seems to have been known of the subject except this curious property of the amber. A few hundred years later, similar observations were made by Pliny and others, and who also speak of what is supposed to be the modern tourmaline, or loadstone, then known as the *lapis lyncurius*. These two items seem to have been the bounds of knowledge on the subject prior to the Christian era. In the first century of the Christian era, the singular power by which the torpedo paralyzed its prey is treated of by Pliny; and, later in the same century, by Aristotle, Galen and Appian. In the fifth century, Eustathius, in his commentary on the Iliad of Homer, speaks of the occasional emission of sparks from the human body when submitted to friction. Until, however, the sixteenth century had closed, no attempt seems to have been made to explain these phenomena. They are simply stated as facts, yet with that apparent interest with which every development, however trifling, of the subtle agency which now plays so important a part in the world's industries, has never failed to arouse.

In Strada's "Imitation of Lucretius," printed in 1617, the following singular passage is found:

"The loadstone is a wonderful sort of mineral. Any articles made of iron, like needles, if touched by it, derive by contact not only peculiar power, but a certain property of motion by which

they turn ever toward the constellation of the Bear, near the North Pole. By some peculiar correspondency of impulse, any number of needles which may have touched the loadstone preserve at all times a precisely corresponding position and motion. Thus it happens, that, if one needle be moved at Rome, any other, however apart, is bound, by some secret natural condition, to follow the same motion."

Akenside, in his "Pleasures of Imagination," refers to this conceit in the following lines :

"'Twas thus, if ancient fame the truth unfold,  
Two faithful needles, from the informing touch  
Of the same parent stone, together drew  
Its mystic virtue, and at first conspired  
With fatal impulse quivering to the pole.  
Then—though disjoined by kingdoms, though the main  
Rolled its broad surge betwixt, and different stars  
Beheld their wakeful motions—yet preserved  
The former friendship, and remembered still  
The alliance of their birth. What'er the line  
Which one possessed, nor pause nor quiet knew  
The sure associate, ere with trembling speed  
He found its path, and fixed unerring there."

Early in the seventeenth century, Dr. Gilbert, of Colchester, England, and still later in the same century, Boyle, Otto Guericke, Newton, Hawksby and Dr. Wall variously experimented in the now rapidly dawning science, and various important facts became known. Gilbert noted the influence of dry north and east winds in producing rapid electrical excitement under friction. Otto Guericke constructed an electrical machine of a globe of sulphur, and thereby discovered electric light. He also discovered that when once a light body was attracted by an electric, it was also repelled by it, and was incapable of a second attraction until it had been touched by some other body. Newton substituted glass for sulphur, and showed that electricity could be excited on the side of the glass opposite to the side which had been rubbed.

Wall, curiously enough, speaks of thunder and lightning as suggested by the sounds and light produced by the friction of amber. The seventeenth century, however, closed with comparatively little definite knowledge on electrical subjects, but with a very widely awakened interest therein.

With the eighteenth century, 1720-1736, came Stephen Gray, a man of clear head and of indomitable perseverance, who bent his whole mind to the discovery of the nature and powers of the new agent which then appears to have dawned somewhat definitely on the scientific world. He found after a variety of experiments, that electricity was easily producible from a vast variety of objects, by the friction of feathers, of hair, of silk, linen, woolen, paper, leather, wood, parchment, and gold beater's skin. He found, also, that electricity communicated itself to bodies incapable of excitation at distances of several hundred feet. He next proved the conducting power of fluids and of the human body. He now also demonstrated after a variety of interesting experiments, the important fact that electric attraction was not proportioned to the mass of matter in a body, but to the extent of its surface. He next discovered the insulating qualities of silk, resin, hair, glass and other substances. Lastly, he discovered the fact of induction, although he seems to have been unable to explain it. Stephen Gray, therefore, made the first grand advance in definite electrical knowledge, and although the facts discovered may seem diminutive, yet they were rudimentary, well proven, suggestive, valuable, and furnished a most important basis for further observation and experiment.

In the middle of the eighteenth century, Dufaye, a man possessed of Gray's perseverance, but with a mind of greater analytic power and sagacity, discovered that electricity had two distinct forms or modes of development. He found one producible by the friction of glass. This he called vitreous, from the nature of the substance producing it. Another kind of electricity, as he supposed, he found could be developed by the friction of amber,

gum lac, etc. This he called resinous. He further showed that two bodies charged with the same kind of electricity repelled each other, but attracted bodies charged with electricity of another kind. Here was another close look into the laboratory of nature.

In 1745, a curious discovery was made. It was found that bodies quickly lost their electrical virtue when exposed to the atmosphere. An attempt was, therefore, made to surround them with an insulating substance. Water contained in a glass bottle was accordingly electrified. Nothing remarkable followed this until the holder of the bottle attempted to disengage the wire connecting with the prime conductor, when, greatly to his alarm and to the amusement of his friends, he received a genuine electric shock of no gentle kind. He was, indeed, seriously alarmed. In describing the effect produced upon him by one of these experiments, Muschenbrœk, the shocked philosopher, writes, "That he felt himself struck on his arms, shoulders and breast, so that he lost his breath, and was two days before he recovered from the blow and the terror!" So thoroughly astonished and frightened was he, that he declared that he would not take another for the kingdom of France! A genius by the name of Boze, however, whose desire to be famous, or perhaps to subserve science, seemed to have been stronger than the love of life, ardently desired to be killed by electric shock, so that his demise might furnish the subject of an article for the memoirs of the French Academy of Sciences! History does not inform us that he was gratified in his unselfish wish, although others at a later date, much against their expectations, suffered as he had desired. The effect of the shocks received by different parties at this time, was amusingly magnified on every hand, and connected the subject of electricity in many minds with diabolical agency. These experiments were the result of the discovery of the Leyden jar by Von Kleist, Cuneus and Muschenbrœk, although the first named seems best entitled to that credit.

The most important record of this period is the history of an

experiment suggestive of the rapid advance which had been made in electrical inquiry, and which excites surprise that its employment in telegraphy, which it so clearly foreshadowed, has been so long withheld from the world.

In making experiments with the Leyden phial, Wilson of Dublin, Ireland, described what is known as the lateral shock. He had observed that a person standing near the circuit through which the shock is transmitted, would sustain a shock if he were only in contact with or even placed very near any part of the circuit. This immediately, of course, started inquiry as to how far the shock could be transmitted, and very numerous experiments were made to determine the matter.

Dr. Watson, of England, took a most prominent part in the investigation to which these inquiries led. In July, 1747, he succeeded in conveying the electric charge across the river Thames at Westminster Bridge. A few days afterward he caused it to make a circuit of two miles at the New River, at Stoke Newington. In August of the same year, he sent it over a circuit of four miles, *two of wire and two of dry ground*. He proved also that the passage of the electric matter through 12,276 feet of wire was instantaneous. Here was a vast step taken almost a century before a practical telegraph was perfected and put into public use. It was just at this interesting period that America first stepped into the arena of European philosophical investigation under the keen leadership of our renowned countryman Benjamin Franklin, and in referring to whom and subsequent electrical history, mention will, for the present, be confined solely to the part taken therein by American citizens.

## CHAPTER III.

## PROGRESS OF ELECTRICAL SCIENCE IN AMERICA.

"Nothing's so hard, but search will find it out."

— [Herrick.]

IN 1747, Mr. Peter Collinson, a Fellow of the Royal Society of London, in a communication to the Literary Society of Philadelphia, gave the earliest impetus worthy of note to electrical inquiry in the United States. It stirred Benjamin Franklin to a series of experiments in this special realm, and to a correspondence with the scientists of Europe thereon, which at once evoked universal admiration. Priestly says of these letters, that "nothing was ever written on the subject of electricity which was more generally read and admired. "It is not easy to say," he adds, "whether we are most pleased with the simplicity and perspicuity with which they are written, the modesty with which the author proposes every hypothesis of his own, or the noble frankness with which he relates his mistakes when they were corrected by subsequent experiments." The part taken by Franklin in electrical discovery and discussion was, in truth, a genuine surprise to the scientific world. Nothing had been expected from the new land beyond the sea, where the Indian was still generally supposed to be master, and the tomahawk the ruling power; and thus it happened that when with acute and rigorous analysis, with delightful humor, and exhaustive experiment, in language of the most lucid terseness and simplicity, our talented countryman modestly questioned the correctness of existing theories then held by its foremost

thinkers, and entered with a bold, yet modest adroitness into the field of electrical discovery, and made those brilliant experiments which still cling to his name, Europe made her first bow to the young empire, and felt the first tokens of its coming influence in the world's civilization.

Dufaye, as already noticed, had discovered the important fact of what seemed the existence of two distinct electricities, which, because of the different modes by which they were developed, he distinguished as vitreous and resinous. He had shown also, that bodies having the same electricity repel each other, but attract bodies charged with electricity of another kind.

Franklin criticized Dufaye's statement of electrical conditions. He claimed the existence of but one electric fluid so called. His idea was that all bodies in their natural state were charged with a certain quantity of electricity. In each body the quantity is of definite amount. Some have it in excess and in a condition to impart it readily to other bodies having less, and which are in a condition to receive it. For vitreous electricity, which in Dufaye's hypothesis, this excess was represented, Franklin's idea led to the use of the term plus or positive. The resinous electricity, that is, the electricity in bodies having less than their natural amount, was termed the minus or negative. All electrical phenomena were, therefore, made referable to its quantity in bodies as plus or minus.

Franklin applied this principle to the Leyden jar. The inner coating of tin-foil being charged with more than its natural quantity of electricity, was regarded as positively electrified. The outer coating having its ordinary quantity reduced, was named the negatively electrified. The discharge was made by a conductor connecting the two. He showed that a series of jars may all be charged at once, by suspending them on the prime conductor, one hanging on the tail of the other, and a wire from the last to the floor. With the jars thus charged, he constructed a battery by separating them, and then putting their insides and outsides

in metallic connection. There seems to be in this ingenious and suggestive arrangement the first outline of our modern batteries.

His next discovery was the determination of the place where electricity resides in the Leyden jar. This he showed to be upon the glass, and that the coatings were only conductors to unite the forces of the several parts.

It seems unnecessary to refer to the brilliant experiments which were published in 1749, by which he proved the identity of lightning and electricity, and how forcibly he showed their analogies. "The electrical spark," he writes, "is zig-zag, and not straight; so is lightning. Pointed bodies attract electricity; lightning strikes mountains, trees, spires, masts, chimneys. Electricity chooses the best conductor; so does lightning. Lightning reverses the pole of a magnet; so does electricity. Lightning destroys animal life; so does electricity when sufficiently powerful." His kite experiment, however, in 1752, by which the identity was established, and which all the world knows, made his name immortal, caused a profusion of experiments in all parts of Europe, and led to most important results.

One of those forcible sentences which made his letters so memorable was the following:

"When a gun-barrel, in electrical experiments, has but little electrical fire in it, you must approach it very near with your knuckle before you can draw a spark. Give it more fire, and it will give a spark at a greater distance. Two gun-barrels united, and as highly electrified, will give a spark at a still greater distance. But if two gun-barrels, electrified, will strike at two inches distance and make a loud snap, at what a great distance may ten thousand acres of electrified cloud strike and give its fire, and how loud must be that crack!"

Scarcely less interesting is the record of one of Europe's sagacious and patient thinkers. In the fourth volume of his "Lessons on Physics," published in 1748, the Abbé Nollet thus prophetically and felicitously expresses himself. It shows how minds, far

separated, are often found hovering round the margin of some grand discovery :

“ If any one should undertake to prove that thunder is, in the hands of nature, what electricity is in ours ; that those wonders which we dispose at our pleasure, are only imitations of those grand effects which terrify us ; that both depend on the same mechanical agents ; if it were made manifest that a cloud prepared by the effects of wind, by heat, by a mixture of exhalations, etc., is, in relation to a terrestrial object, what an electrified body is in relation to a body near it not electrified, I confess that this idea would please me much. How numerous and specious are the reasons which present themselves to a mind conversant with electricity in support of it. The universality of electric matter, its ready action, its instrumentality, its activity in giving fire to other bodies, its property of striking bodies externally and internally, even to their smallest parts, all these points of analogy, which I have been for some time meditating, begin to make me believe that one might, by taking electricity for the model, form to one's self, in regard to thunder and lightning, more perfect and more probable ideas than hitherto proposed.”

After the kite experiment, which led lightning by a hempen cord from the sky, Franklin raised a metallic rod from one end of his house, the first lightning-rod ever known. To this he attached a chime of bells, which gave notice of atmospheric changes. He now conceived the idea of protecting buildings from lightning, and made possible the modern lightning-rod man. The rod the world has gratefully received. Of the man there may be a reasonable doubt.

Among other achievements of Franklin was the transmission of the electric spark across the Schuylkill river, near Philadelphia, in 1748. He was connected, also, with numerous experiments of great value to science. These all led to splendid advances in human knowledge of one of the subtlest of the agencies of nature.

For half a century after these experiments of Franklin, no

American record appears of any important advance in the realm of electrical adaptations to any practical end until 1810, when Dr. John Redman Coxe, of Philadelphia, proposed a signal telegraph, using the electric current of the recently discovered voltaic pile to produce electrical decompositions at the end of wire conductors, evolving visible gas as signals of letters, and for which he employed thirty-six wires. Each of these wires had a return wire, making seventy-two in all. It was the same as that proposed by Sömmering in the same year. Both were slow processes and cumbrous, and came to nothing. Dr. Coxe did not even give his plan a practical test.

Although, however, no striking advance had been made in the direction of utilizing electrical knowledge in America, it had developed, as in Europe, a very deep and prophetic interest. Every European experiment and paper on the subject was eagerly studied and communicated to their classes by the able professors who, even at that early day, presided over the departments of chemistry and natural philosophy. And when, in Europe, Volta inaugurated the first year of the present century with his splendid discovery of a battery which placed in the hands of scientists an electricity of dynamics, which gave promise of the ability to hold and bridle and control and prolong the current, instead of the static or frictional electricity which up to that time was alone known, the interest in every new development of an agency so mysterious, so quickening to imagination, so full of the mutter of tongues which seemed awaiting release, was everywhere greatly intensified. As early as 1810, the very thought out of which grew the modern telegraph was uttered in the ears of its subsequent inventor by Jeremiah Day, Professor of Natural Philosophy in Yale College. And, as Day's lectures at that date show the exceeding accuracy and maturity of electrical knowledge even at that early period, the following interesting excerpt from one of them is given, and which is taken from the testimony elicited in after years, when the Morse patent for an electro-magnetic tel-

graph was in litigation before the Supreme Court of the United States.

Referring to this period, 1809-10, Dr. Day says:

"In my lectures on natural philosophy, the subject of electricity was specially illustrated and experimented upon. Enfield's work was the text-book.

"The terms of the 21st Proposition of Book V of Enfield's Philosophy are these: 'If the circuit be interrupted, the fluid will become visible, and when it passes it will leave an impression upon any intermediate body.'

"I lectured upon and illustrated the first two experiments propounded by the 21st Proposition, and I recollect the fact with certainty. The experiments referred to are in terms as follows:

"Experiment 1st. Let the fluid pass through a chain, or through any metallic bodies, placed at small distances from each other, the fluid in a dark room will be visible between the links of the chain, or between the metallic bodies.

"Experiment 2d. If the circuit be interrupted by several folds of paper, a perforation will be made through it, and each of the leaves will be protruded by the stroke from the middle to the outward leaves."

The future inventor of the modern telegraph was an interested and fascinated attendant upon these lectures. Contemporaneous, also, with Dr. Day, was a man whose name by reason of his rich contributions to science was household through the whole world of learning and civilization. Both by his journal and by his lectures, Professor Benjamin Silliman was known by all men of science. He kept sharply up with the latest and most advanced thoughts on physical phenomena, and especially in the department of electricity, to which he gave exhaustive prominence in his college discourses.

In 1827, an ingenious citizen of New York, Harrison Gray Dyar, erected a line of telegraph, two miles in length, on a race-course on Long Island. He used a single wire, and obtained marks on litmus paper by discoloration, by means of the current.

But he used frictional electricity. It was fitful, easily affected by weather, and beyond the erection of the structure spoken of, no further record of it appears. Yet he stood on the very threshold of success. Had a Daniell's battery been known then and placed in his hands, Harrison Gray Dyar might have anticipated Morse, and worn his laurels. But the needed knowledge was yet incomplete. Daniell and Henry and Morse had their work to do. Time was in no haste and waited for them.

The most important advance made in the evolution of the coming telegraph, and respecting which invention seemed to have thoroughly roused herself, was in 1828, by the distinguished Secretary of the Washington Smithsonian Institution, Professor Joseph Henry, at that time Professor of Physics in the Albany Academy. Schweigger, of Halle, in Germany, had made the very important discovery that a needle which Oersted had just found was made to assume a direction at right angles with an electric current, could be made to do so with greatly increased promptitude by being surrounded by a coil of insulated wire, which thus became a galvanic multiplier. Pursuing the idea suggested by Oersted and Schweigger still further, Professor Henry is regarded as the first to employ the insulated wire of many coils, to construct an electro magnet. Professor Henry also demonstrated in 1829, the dependence of the electro motive force of the current upon the number instead of the size of the plates of a battery. In an experiment of great interest and value, he showed that, whereas a battery of a single cell, with a given surface of zinc, could, at a distance of one thousand and sixty feet, produce only magnetism enough to lift half an ounce, by dividing the same zinc into twenty-five plates instead of one, but with no increase of surface, the magnet lifted eight ounces, or sixteen times as much as the single cell. Here, again, stood an illustrious American at the very verge of a great invention, but who had to wait until the constant battery of Daniell, and the alphabet and apparatus of Morse made perfect success possible. Thus, amid the honors conferred on others, Dyar,

and especially Henry, deserve grateful recognition. All these experiments and adaptations left the conditions for a needle telegraph with its rapid reciprocal motions by change of the polarity of currents, perfect and complete. In America, however, no such telegraph had been proposed. It waited a more perfect system, many of the main elements of which were already provided and apparently challenging employment. We are, now, after referring to these suggestive accomplishments, brought to the period when the name of Professor Morse appears in connection with the telegraph, and in whose work and history as a citizen, as a man of refinement and culture, as a gentleman, and as a distinguished and successful inventor, the American people, and especially the telegraphic craft of America, have taken a deep and reverent interest. A rapid sketch of that history prior to his connection with telegraphic invention, forms the subject of the following chapter.

The narration will necessarily be brief. An abler pen has already given it with generous amplitude to the world. We merely claim the privilege of the echo, which repeats the sounds it hears. Yet not alone as an echo. The beauty of Mr. Morse's character, the versatility of his intellect, the sweetness of the life of a man modest as he was great, strewed some of its radiance directly upon our own, until admiration became love, and friendship was transmuted into affection. He was a man who, like a fine painting, enlarged and grew beautiful by examination, and infused some of its own richness into the steady gazer's heart. Contact with him was not only a delight, but a benediction. Now that he has passed away — if such men ever do pass away — we remember him as the evangel of a new era to civilization, the bearer of one of the bright banners of universal fellowship and peace.

“ He was sent to hasten the happy time  
That was promised so sure to be,  
When knowledge would flash over all the earth  
As the waters the dark blue sea.”

## CHAPTER IV.

## EARLY LIFE OF PROFESSOR MORSE.

“The mounting blood betrays  
An impulse in its secret spring, too deep  
For his control.”

—[*Southey.*]

PARTLY because of his personal character, in part, also, because of his interesting and eventful history, as well as, of course, on account of the great practical value of the invention which bears his name, Professor Morse secured for himself throughout his whole career, a very wide and general esteem. Not only so, but by reason of that wonderfully diffusive power inherent in characters essentially pure and lofty, he was, in the hearts of multitudes of men, consciously or unconsciously, an object of very general affection. There are few names, indeed, which fortune has rendered illustrious, which are named among men with a more conscious sense of kindness and veneration. Because this is so, and because this volume may reach the hands of some entering telegraphic labor, to whom it must prove of interest, a brief sketch of Mr. Morse's life, pertinent in the main to his chief work, though not limited thereto, seems demanded and appropriate.

Character often runs through generations of men, like a silver line, as marked as the grey of an eagle's eye, or the blackness of a raven's wing. Such is the influence of a noble origin, be it in the blood, as we more than suspect, or in a high example or noble

culture, that the best certificate of many a man is his parentage; and although high character in the father is sometimes sullied in the son, and a noble name is not unseldom degraded, yet we are among those who believe that the distinguishing traits of men and women are largely hereditary. There are names which have become historic, which society accepts as the synonyms of nobleness and honor. There is a chivalry in the blood of some families which beams through the ages. Among the blessings which come to men in this world, as the stimulant to action and the pledge of high souled honor—the source of an instinctive trust which men feel and acknowledge, not the least is that of a noble, unsullied and honorable descent. It was upon some such basis as this, that a shrewd Scotchman, on being applied to by a young countryman for a position of trust within his gift, after surveying the applicant carefully for a moment, inquired in his quaint vernacular with a quiet pride, no doubt, in his own descent, "Wha's your faither?" He wanted to know on what tree the sapling before him had grown, so as to form a proper estimate of his worth and fitness. And so while we have little to do with Mr. Morse's ancestry, yet the Scotchman's question seems in order, and there is a proper curiosity in knowing the possible influences which produced a man on whose brow fame has, with much apparent fondness, rested her decorating hand.

Happily Mr. Morse, among other peculiarities, possessed the rather uncommon habit now-a-days of preserving with care and minuteness his ancestral records, tracing his family lineage back through many generations. To use an electrical term, he looked closely after his "connections," and had a kind of reverence for "unbroken circuits." Dr. Prime, in his admirable work, has given these in great detail. They are given here with the merest mention until Mr. Morse himself forms a part of the family group.

The family were of English origin. Anthony Morse was born at Marlborough, Wiltshire, England, May 9, 1606. He came to America in 1635, and settled in Newbury, Massachusetts. He is

represented as a man of courage, enterprise and integrity. His son was like him, bore his name, inherited and lived on his estates, and died February 25, 1678. Anthony's grandson was named Peter, had all the family traits, and served his country in being the father of ten children. The oldest of the ten was Jedediah, born July 8, 1726. He was a man of decided note and character, and was by turns clerk, treasurer, selectman, member of the Colonial and State Legislatures, an able and upright magistrate, and a prominent, honored, useful member and officer of the church. The eighth child of this good citizen was named also Jedediah, and was the father of Professor Morse.

Jedediah Morse, one of the leading divines of the beginning of the present century, was born in Woodstock, Connecticut, August 23, 1771. He was the author of the well-known book entitled "American Geography," which ever since has been identified with his name. He was also the compiler of the "Universal Gazetteer," a work of great labor and value. He was a man of great vigor and intellectual ability and push. Industrious in the extreme, sanguine, impulsive, resolute, ingenious, full of resources, his life was one of incessant labor in directions all tending to instruct, to elevate and to bless mankind. He was regarded both at home and abroad as a man of distinguished genius, of immense impetus, one of the foremost men of his country and time. His aims were all high. It is indicative of his reputation, that the title of D. D., then not so easily acquired as now, was conferred upon him by the University of Edinburgh, Scotland, an honor seldom bestowed on a foreign resident. He is described as a man tall and slender, extremely neat in dress, of mild manners, and bearing the charm which indicates refinement and cultivation, yet of leonine will and resolute earnestness.

Professor Morse's mother's name was Elizabeth Ann Breese. She was born in a house on the corner of Wall and Hanover streets, New York, not a stone's throw from where the first telegraph office was opened in that city. She was the granddaughter

of the distinguished President of Princeton College, Samuel Finley, a man of great ability and extensive learning, not unlike its present distinguished occupant. She was a woman of a very superior character, calm, judicious, cautious, reflecting. Her home was made attractive by her cordial, dignified, graceful manners, and the ability and animation of her conversation. From such a promising stock, and mingling in himself the characters of both, sprang Samuel Finley Breese Morse, who first saw the light of day at the foot of Breed's Hill, Charlestown, Massachusetts, April 27, 1791, a little over a mile from where Benjamin Franklin was born, and a little over a year after his death. Morse had two brothers younger than himself, who were both known as men of mark and high character. The first was named Richard Cary, a man of fine literary tastes and of a retiring nature, who died in Kissingen, Bavaria, September 23, 1868. The second brother was the well-known Sidney E. Morse, the founder of the New York *Observer*, a man of great and varied ability, a profound mathematician, the author of the art of Cerography, and the inventor of the barometer for deep sea soundings, as well as of other things in connection with his brother Samuel. He died December 21, 1871. He was his brother's favorite companion. Dr. Prime, who knew Sidney well and intimately, says tenderly of him: "No one ever saw him unduly excited, or ever heard from his lips a severe or unkind expression, while gentleness, kindness and grace pervaded his spirit and life." In his character, mind and manners, Professor Morse always seemed to blend the father's vigor, inventiveness and perseverance, the mother's gentleness, elevated character and refinement, and the brother's force of personal character and habits of patient, exhaustive and exact study and learning.

Professor Morse commenced his education when he had attained his fourth year. His first instructor was a good old lady, a cripple, who was compelled to retain her seat during the hours of school, a condition which many a modern urchin would contemplate with serene delight. A long rattan supplied the place of

locomotion, and was ubiquitous. At this school young Morse felt the full weight of the descending rattan for having sketched with a pin, on a chest of drawers, a likeness of his venerable teacher. Perhaps, with a free allowance for imagination in the premises, who knows but the young scratcher saw the vision of a telegraph pole in the lifted rattan!

At seven years of age he entered the preparatory school at Andover, Massachusetts, where he became a zealous and conscientious student. Among the books which then greatly attracted him was Plutarch's lives of illustrious men. It touched his ambition and inspired him with a desire to do something which would ennoble his life. At thirteen years of age he wrote the "Life of Demosthenes," which is still preserved among the family papers, and exhibits the fine powers of graceful composition which marked him through life. At the early age of fourteen, he entered the freshman class of Yale College.

It was at Yale College, in the class of Professor Day, afterward president, that the subject of electricity first came under his notice, and inspired him with peculiar interest. He possessed two elements of mental quality which were always more or less conspicuous: the æsthetic, which led him, with devoutness and enthusiasm, toward nature and painting; the other to the inventive. Indeed, the latter quality was necessary to effectiveness in the former. An extract from the lectures of Professor Day, showing the advanced state of electrical knowledge, has already been given in a former chapter. Referring, in after years, to the effect of that lecture upon his mind, he writes:

"The fact that the presence of electricity can be made visible in any desired part of the circuit was the crude seed which took root in my mind, and grew into form, and finally ripened into the invention of the telegraph." This is in entire consistence with the quality of Mr. Morse's mental characteristics, which, besides being remarkably quick and acute in perception, grasped strongly salient features, got hold of causes, and clung to them until they

exhibited results, setting aside the more showy processes, which often distract and hinder the observation of minds more naturally acute.

In Yale College Benjamin Silliman, who, as already stated, stood for many years in the very front rank of scientific teachers and explorers, was the Professor of Chemistry. He was young Morse's teacher, and became his warm personal friend. In his testimony given in later years, when his favorite pupil was struggling before the courts of his country for the recognition of his claims as an inventor, he says :

"Samuel F. B. Morse was an attendant on my lectures in the years 1808, 1809 and 1810. My lectures were on chemistry and galvanic electricity. The batteries then in use were the pile of Volta, the battery of Cruikshanks and the Couronne des Tasses. I always exhibited these batteries to my classes ; they were dissected before them, and their members and the arrangements of their parts, and the mode of exciting them, were always shown."

It had been attempted to prove Morse's necessary ignorance of such matters. Silliman shows that the electrical knowledge of the age, up to the most advanced stage of thought and discovery in Europe, was made familiar to the students by the simplest and most exhaustive of experiments. Young Morse also resided near his professor. For several years, from 1821 on, he was on terms of great intimacy with him and his family. He was often present in Professor Silliman's laboratory during his preparatory experiments, aiding, and obtaining thereby a most minute and perfect knowledge of their arrangement and processes. In this way he became intimate with electrical phenomena in their most suggestive features. His opportunities for study in this department were, indeed, exceptionally ample and complete. Some years afterward he renewed these studies under Professor Dana, of the University of New York, and also under Professor Renwick, of Columbia College.

Mr. Morse's association with James Freeman Dana, while

mutually engaged in lecturing before the New York Athenæum, was intimate and cordial. Dana was an enthusiast on the subject of electrical science. It absorbed his whole nature. He talked of it in his sleep. He infused his interest in it into Morse, with whom he spent much of his time. Had not death struck him down in the spring of 1828, he would probably have become the leading electrician of America, as he was its most enthusiastic exponent. It is remarkable to find that Dana, in 1827, used an electro-magnet in horseshoe form, in illustrating his lectures. The language is no less remarkable, considering the date of its utterance. A single sentence is given: "A spiral placed round a piece of soft iron, bent into the form of a horseshoe magnet, renders it strongly and powerfully magnetic when the electric current is applied." Morse, therefore, knew the modern electro-magnet in 1827. Of these studies, especially those under Silliman and Day, he always wrote with much evident delight and enthusiasm. One of his vacations was spent in the philosophic chamber of Yale, with Dr. Dwight, in the preparation of a series of electrical experiments. Every thing shows how fascinating these studies had become to him, and how intimate must have been his knowledge in the realm of which they treated. As early as 1809 he wrote to his father from Yale College: "I am very much pleased with chemistry. It is very amusing as well as instructive. I intend, with your leave, getting me a chemical trough and small apparatus when I come home—Ward and I to bear the expense together. You will find our experiments very entertaining. We shall want gun-barrels, retorts, etc., the use of which I will explain to you hereafter." Later in the same year he writes: "My studies are, at present, optics in philosophy, dialing, Homer, all of which I find very interesting, and especially Mr. Day's lectures, who is now lecturing on electricity. He has given us some very fine experiments. Day has given us two lectures on this subject, and there are two more remaining. I will give you some account of them as soon as delivered." These inci-

dental allusions are frequent, and marked by more or less enthusiasm.

A distinguished class-mate writes of young Morse as follows:

"The three brothers Morse were exceedingly reputable, studious, holding an honorable rank in the curriculum of studies. Samuel Finley was the most companionable and genial of the three, always gentlemanly, always having a kind word for others. The lectures of Prof. Silliman upon chemistry and mineralogy were then exciting great interest, and in them he exhibited especial enthusiasm.

"Finley Morse, as he was then called, bore the expression of gentleness. In person rather above the usual height, well formed, graceful in demeanor, with a complexion slightly ruddy, features duly proportioned, and often lightened with a genial and expressive smile. He was handsome, and with manners unusually bland. It is needless to add, that, with intelligence, high culture and general information, and with a strong bent to the fine arts, Mr. Morse was, in 1810, an attractive young man."

Hon. R. H. Dana, in a speech delivered in Boston in 1872, on a Memorial occasion, said of Mr. Morse:

"He was a youth of remarkable personal beauty, of very attractive manners, of most enthusiastic temperament, of pure heart and blameless life. I have heard his companions speak of his ardent patriotism. It knew no bounds. It sometimes endangered his personal safety."

## CHAPTER V.

## THE ARTIST.

"Time, place and action may with pains be wrought,  
But Genius must be born, and never can be taught."

— [Dryden.]

THE faculty which developed earliest in Professor Morse was, as we have seen, the æsthetic. The portrait of his old lady teacher, scratched upon her bureau, was the first evidence of his talent as an artist. The rattan which punished him for his disrespect for the family furniture did not seem to hinder its development. He was then an urchin, in small clothes. After a few more years had passed over his head, and he had become a student at Yale College, he found a stimulant which has quickened the wits of many other men, and which now thoroughly stirred his slumbering faculties. His father was great, but poor. He had a large household. Young Morse at Yale felt the vagueness and the inconvenience of an empty purse. He immediately bestirred himself, provided brush and paint, and commenced taking on ivory the portraits of his more opulent companions, at five dollars a head. He thus not only developed his own powers, but aided his father by relieving him largely of the cost of his education. He executed, also, with much success, profiles for which he charged a dollar each. Poverty and a manly desire to provide for himself, thus fostered his natural tendencies. He found in painting an inspiration. He soon afterward selected it as his chosen profession.

As soon as he graduated, which he did in 1810, he resolved to place himself under the tutorage of the renowned Washington Allston, one of America's most illustrious artists. This was subsequently accomplished, and the ambition of young Morse was now to excel as a painter. Happily he had found a master who not only appreciated, but loved him. He accompanied Allston to Europe in 1811, bearing letters to some of England's most distinguished men. The world seemed opening to him the door of fortune.

Benjamin West was then in the zenith of his fame. The genius of his great countryman thrilled and inspired him. It was a proud day for Morse when he grasped West's hand, and was welcomed to his studio. A mutual attachment sprang immediately from this introduction, and West became, thereafter, his friend and father. Genius recognized itself in another. Meanwhile, West's friendship and his home letters introduced Morse to men of commanding influence and reputation. Some of their names are historic. It was something for a young man to be introduced to and secure the friendship of William Wilberforce, and Henry Thornton, Zacharias Macauley, father of the great historian, the two Grants, one of whom was afterward known as Lord Glenelg, and many others. All these gave him a warm hand and welcomed him cordially.

Mr. Morse's instincts were refined and his companionships choice. He had for his room-mate while in London, the gifted Leslie, then, like himself, struggling for excellence in a sublime art. For companions he had such men as Benjamin West, Copley, Allston, Coleridge, Rogers, Charles King, Lamb, and others equally famous. Morse never lowered himself by entering doubtful society. He was captivated by and honored his art. He wrote thus to his mother in 1812: "My passion for my art is so firmly rooted that I am confident no human power could destroy it. The more I study, the greater I think is its claim to the appellation of divine. I am now going to begin a picture of the death of Hercules, the

figure to be as large as life." The picture was exhibited to West, who warmly praised it, and in May, 1813, it was accepted for exhibition in the rooms of the Royal Academy at the Somerset House, then regarded as a very marked token of favor. It was regarded by the judges as one of the preëminent works of the exhibition, and West remarked of it, that, "Were Morse to live to his age, he would never make a better composition." This was high praise to a young man only three years out of college, and who was already contesting the palm of excellence with the first masters of the art! It is but one evidence among many in his career, not only of his genius, but of that which is properly called genius, the thoroughness and conscientious completeness of every work he undertook.

Not long before his death the venerable professor, in one of those pleasant mornings which the writer enjoyed with him, told with great gusto the history of his painting of "The Dying Hercules." Said he: "I worked on it until it seemed perfect. I then took it, with some pride in my performance, to Mr. West. After looking at it carefully for a while, he said to me, "Very good, very good," and handing it to me, said, "Go on and finish it."

With some hesitation I answered that I had, as I supposed, finished it.

"No! no! no!" he quickly answered; "see there, and there and there, the finish is imperfect; there is much work to be done yet. Go on and finish it; go on and finish it."

And so, said the professor, with a merry, chuckling laugh, "I went to him several times, every time sure I had finished "Hercules" at last. But the result was all the same. "Finish it, young man," was his answer, until I despaired of satisfying him. Seeing this, he then explained how important had been the lessons taught me in the minute and careful attention to detail. He taught me the advantage of thorough work as the secret of success and fame.

A new and most unexpected triumph grew out of this painting. In executing it he had pursued the plan of conscientious artists,

who first model in clay the figure to be painted, in order to strict anatomical correctness. This cast, to which he had attached no special value, was somehow seen by West, who was at once struck by its fidelity to nature. He was induced, by West's kind criticism, to send this model to the Society of Arts, in competition to take its chance for a prize in sculpture. This venture was, somewhat to his surprise, successful, and on the 13th of May, 1813, he was publicly presented at the Adelphi with the annual prize, and also with a gold medal by the Duke of Norfolk, in presence of a most distinguished company, in which were Lord Percy, the Margravine of Anspach, the Turkish, Sardinian and Russian ambassadors, and many English noblemen. In the British Art Reports, "The Dying Hercules" is placed among the nine best paintings in a gallery of nearly one thousand, and among them the works of Turner, Northcote, Lawrence and Wilkie.

When young Morse went to Europe with Allston, of course he was dependent to some extent upon his father for his resources. The time of his absence had been limited to three years. It was now 1815, and he had been absent four years, one year longer than his limit. He had to return home. This was necessary for other reasons. His clothes were threadbare, his shoes out at the toes. "My stockings," he says, "want to see my mother." This necessity possibly prevented another triumph of his brush, for which he had patiently put forth his best and most unwearied efforts. He was ambitious, and knew the power within him. He had determined to compete with the first masters for the chief prize for historical composition offered by the Royal Academy of Great Britain. For a subject he had chosen "The Judgment of Jupiter in the case of Apollo, Marpessa and Idas." The prize was a gold medal and fifty guineas. The picture was completed, and hoping it would be allowed to compete even in his absence, he offered it for that purpose through West, who, struck with its great merit, advised him to stay. But he could not remain, and the rules cut him off. The presence of the artist was required.

The premium had to be delivered to the successful contestant in person. A petition to make his case an exception was declined, and "Jupiter" went with its author to America.

He arrived in Boston October 18th, and without delay rented a studio. He had his "Jupiter" on exhibition, and his own fame as an artist had preceded him. Many crowded his studio to see both the artist and his picture. Society also opened her doors wide to him. Boston always held an open hand to art. But this was all. Nobody offered to buy his "Jupiter," or to give him an order in the line of high art he had marked out for himself. He fretted under this state of things, and, in concert with his younger brother Sidney, tried invention, to which both had a strong bias. No one would ever dream, however, of the direction of its first effort. It seems laughable to think of Morse inventing a new pump, or rather, an improvement on an old one. But, a force pump for the fire-engine, which "four men could easily work and deliver three hundred and sixty gallons a minute," was the invention. Whether he saw any thing "divine" in this is not known, but for a time, as the improvement was no doubt then a very important one, it aroused his enthusiasm. So excellent, indeed, was it, that Professor Silliman exhibited the model to his class and published it in his *Journal*. He had by this time, also, like all sensible men under like circumstances, an angel in his eye. And as marriage has always to prudent minds a fiscal side, the pump had, no doubt, much to do with the angel. It was most amusingly mixed up in his affectionate letters in the wondrous sentences which lovers frame, with the tender thoughts which are german to such a correspondence. The lady seems to have enjoyed it, and, perhaps, on that watery enterprise became as enthusiastic as the inventor. Success to the pump meant to her union to her beloved. How many hopes have been similarly inspired!

But, as Dr. Prime says, pumps would not go, even although Sidney had waggishly dubbed them with the euphonious name of

"Morse's Patent Metallic Double-Headed Ocean Drinker and Deluge Spouter Valve Pump Box!" The brothers made prodigious efforts to introduce it. It was exhibited before the mayors and aldermen of many towns, to the astonishment and delight of these worthies. It was praised and the young inventors were flattered, but no orders were obtained. The elder of the two finally became so involved with portraits which he now occasionally had to draw for a livelihood, and pumps, engines and bellows, fire-machines and looms, which latter was the inspiration of them all, that it is not surprising to find him cutting loose from invention and commencing the painting of portraits as a regular vocation.

In this he was quite successful, and although it was not the line of high art which he had marked out for himself, and in which he had hoped to have made a name, yet he pursued it with ardor, and received numerous orders from many towns in New England, which he visited for that purpose. Early in 1818, however, he left New England, and, at the urgent invitation of his uncle, Dr. Finley, of Charleston, S. C., went to that city, and there soon acquired, by the excellence and care with which he executed his work, a large and remunerative business. He received 150 orders in a few weeks! In this way he spent four winters. The first season, however, had been so successful, that with about three thousand dollars in his pocket, he returned to the east, and on October 1, 1818, was married to Lucretia P. Walker, of Concord, N. H., a lady described as the most beautiful and accomplished of the town. She was undoubtedly a lady of much personal attractiveness and culture, and was both intelligent and prudent. One of the honors accorded him in Charleston, was an order by the common council for Mr. Morse to draw the portrait of James Monroe, then President of the United States, and which, when finished, was regarded as a triumph of art.

It would appear from some remarks of his brother Sidney, about this period, that their inventions, respecting which they still cor-

responded, had been of a somewhat remarkable character. He informs his brother that the government was building a steamboat on the very principle of their own experiments. What these were we do not pretend to know. Another of his inventions cavated August 6, 1823, was a machine by which a statue in marble or stone could be perfectly copied from the clay model, and which he regarded as valuable.

In January, 1821, in conjunction with Hon. John S. Boydell, Mr. Morse originated the "South Carolina Academy of Fine Arts," of which Hon. Joel R. Poinsett was the President, but which has long since expired.

After various experiences Mr. Morse settled in New York, and not long after succeeded in founding the National Academy of the Arts of Design, of which, in 1827 he became President, and to which he was annually re-elected until 1845. This honor was unfavorable to the successful prosecution of his art; his interest in and the time devoted to the Academy, interfering with professional practice. Yet it favored his reputation as a man of broad and liberal learning. His discourse on the "Academies of Art" delivered in the chapel of Columbia College, May, 1827, before the New York Athenæum, will long stand as a monument of his ability in the line of art literature. He delivered the first course of lectures on the fine arts ever delivered in America, and they were notable for their suggestiveness and learning. As an historical painter Morse stood, by general acknowledgment, next to Allston. Had the country demanded art of this high quality, it is probable that Mr. Morse's life would have been that solely of an historical painter. But the nation was too young. Commerce ruled above the higher forms of art and gave them no place. Wealth and its acquisition reigned supreme. Mr. Morse was honored, but his art kept him poor. He longed, however, for the opportunity to try his power on some national work.

In 1822, circumstances awakened anew Morse's ambition for distinction as an historical painter. His skill had been remarked by

distinguished men at Washington. He now conceived the idea of painting the interior of the Representatives' Chamber in the Capitol at Washington. He accordingly located his family in New Haven, and devoted eighteen months to the painting of the picture. It measured eight feet by nine, and contained a great variety of figures. Its exhibition, however, caused him a serious loss, and this, with contributions in common with his brothers, to discharge their father's pecuniary liabilities, swept away all he had accumulated in Charleston. Yet, we find at this very time, the record of a gift of five hundred dollars to the library fund of his Alma Mater at Yale. The painting is now in the possession of Mr. Huntington, President of the Academy of the Arts of Design, New York.

Morse now settled and determined to test his future fortunes in New York. The corporation of that city, not long after his settlement there, gave him an order to paint a portrait of General Lafayette, who was then in the United States, and with whom he, by this means, formed a warm and life-long friendship. For this purpose he went to Washington, but in February, 1825, he was called home by the death of his wife. His work was further interrupted by the death of his venerable father and mother.

In 1829 he again visited Europe, spending three years among artists and collectors of art in England, Italy and France. In Paris he painted the interior of the Louvre, copying in miniature the most remarkable paintings hanging on its walls. In the fall of 1832, he returned to the United States, and resumed his position as President of the National Academy of Design, to which post he was elected every year during his absence.

When an artist was to be employed to fill with a picture one of the vacant panels in the rotunda of the Capitol, the American artists, it is believed without exception, considered Morse best entitled to the honor. Great was their disappointment when another was selected. They exhibited their sense of the wrong done him, by voluntarily raising a subscription to pay him for a

picture suited to such a national object. A considerable sum was collected and paid over to him, but not enough to enable him to complete the design in a manner satisfactory to himself. Determined that no man should have an opportunity to charge him with appropriating his money without an equivalent, he resolved to refund the amounts paid over to him, and though sorely pressed, never ceased his efforts until he had paid back the last cent.

Hon. Amos Kendall, from whose pen we derived many of these details years ago, adds as follows :

“ Professor Morse, under the most straightened circumstances, had an insuperable repugnance to contracting debts, or living on the bounty of others. His dying mother, after encountering much suffering from the kindness of his father in lending his name to friends whom he trusted, exacted a promise from her son that he would never thus endanger his own peace of mind and the comfort of his household, and to that promise he ever religiously adhered.”

This hatred of dependence was innate, and debt was to him its most abject form. His nature was sensitive and proud.

“ He chose rather far  
A dry but independent crust, hard earned.”

Somehow in all Morse's characteristic acts one is reminded of John Ruskin's description of a true gentleman—“ fineness of nature.” “ A gentleman's first characteristic,” he says, “ is that fineness of structure in the body which renders it capable of the most delicate sensation ; and of structure in the mind which renders it capable of the most delicate sympathies. This is compatible with heroic bodily strength and mental firmness ; indeed, heroic strength is not conceivable without such delicacy. The white skin of Homer's Atrides would have felt a bent rose leaf, yet would have subdued its feeling in the glow of battle, and behaved itself like iron.”

“ So nature, with a matchless hand, sends forth her nobly born,  
And laughs the paltry attributes of wealth and rank to scorn ;  
She moulds with care a spirit rare, half human, half divine,  
And cries, exultingly, ' Who can make a gentleman like mine ?' ”

— [ *Eliza Cary.* ]

## CHAPTER VI.

## BIRTH OF THE RECORDING TELEGRAPH.

“One morning he made him a slender wire,  
As an artist's vision took life and form ;  
While he drew from Heaven the strange, fierce fire  
That reddens the edge of the midnight storm.  
And he carried it over the mountain's crest,  
And dropt it into the ocean's breast ;  
And science proclaimed, from shore to shore,  
That time and space ruled man no more.”

HAVING now spent over three years in Europe, laboring much and enriching his mind by contact with and the study of its art treasures, Mr. Morse sailed from Havre for New York on the packet ship Sully, Captain Pell commander, on the first day of October, 1832. He was now forty-one years old. Among the passengers were Hon. W. C. Rives and family, of Virginia ; Mr. J. F. Fisher, of Philadelphia ; Dr. Charles T. Jackson, of Boston ; Mr. T. Palmer, Miss E. Palmer, Mr. C. Palmer, Mr. F. Palmer, Mr. J. Haslett, of Charleston, S. C. ; Mr. Lewis Rogers, of Virginia ; Mr. W. Post, of New York ; Mr. Constable, of New York ; Mons. De la Cande, Mons. J. P. Chazel, of Charleston ; Mr. A. Scheidler, of Frankfort, Germany ; Mr. and Mrs. Burgy and others. The whole company was an unusually intellectual one. There was a long voyage before them, and each amiably undertook to aid in relieving the tedium of the journey by the pleasant devices known to intelligent travelers.

At an early period of the voyage the conversation around the evening table turned upon electricity and magnetism. Dr. Jackson introduced the subject by reference to lectures to which he had recently listened while in Paris, in which very interesting illustrations of the more recent discoveries in electro-magnetism had been given. He also referred to the brilliant experiments of Ampere with the electro-magnet. The subject at once excited very general interest, into which Mr. Morse entered with awakened enthusiasm. Hitherto he had felt no other interest in electrical matters than that of a lively and excited curiosity. His early studies now enabled him to enter into the conversation with intelligent and instructive earnestness. Dr. Jackson had in his trunk in the hold of the vessel an electro-magnet, which he described, and during the conversation alluded to the length of wire in the coils. This led one of the company to inquire "if the velocity of the electricity was retarded by the length of the wire?" A very pregnant thought lay in that inquiry, and the conversation became earnest and practical. Dr. Jackson replied that electricity passed instantaneously over any known length of wire. At this point, Mr. Morse, remembering the lesson of his instructor at Yale, remarked, "If the presence of electricity can be made visible in any part of the circuit, I see no reason why intelligence may not be transmitted instantaneously by electricity." Somehow, the utterance of the thought of such an employment for the electric current aroused at once, in his mind, the idea of its possibility and accomplishment. The fact also faced him that this had not yet been done. The thought at once greatly absorbed him. He felt within him the thrill of a great possibility. The conversation went on, but Morse left the table for the deck, to brood over the conception which had so suddenly broken upon him. And while he paced the deck, walking to and fro beneath the well-filled sails that bellied to the October wind, the idea rapidly took form in his mind, that, either by the electro-chemical or electro-magnetic effect of a current, marks might be made at dis-

tances so great and in such variety as to render possible the easy communication of and record of an intelligible language. This was, so far as he knew, a new thought. The painter's faculty of combination now unconsciously came to his aid. His mind was also inventive. The general subject was familiar to him by previous study. The electric telegraph had already shone upon his mind in the grey dimness of its early morning.

Several factors were already clearly known. The instantaneous passage of the current or spark was one. The appearance of a spark when a current was interrupted, was another. On these Morse now began. His mind rapidly reached the first practical result, that the spark could be used to denote a sign; its absence, a second; the time of absence, a third. He now drew from his pocket his artist's sketch-book, and commenced to elaborate his thoughts by constructing signs which might be used to indicate letters. Day after day he bent his mind to the thought which now, by a strange fascination, engrossed his whole being. Gradually the conception took shape and system, until at last they had assumed such form that, at the breakfast table, he communicated the processes by which he believed a recording telegraph could be made serviceable to mankind.

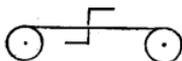
The sketches of this Atlantic journey are full of interest as aiding to indicate how the coming telegraph took its first form in Mr. Morse's mind. They are all the more so because these sketches were made at sea, far away from all possible help from books of reference, to which, had the idea sprung upon him on shore, he would naturally have had immediate resource. Although his knowledge of electrical phenomena was at this time as complete as the condition of electrical discovery permitted, and that, too, more than usually exact, yet we have no evidence, although the contrary is claimed for him, that prior to this ocean voyage he had ever associated the science with any scheme for popular utility. The thought now, however, took at once that direction. His sketch-book shows this. Here is one of the earliest of these

sketches. The first thought, it will be seen, is not unlike the latest. In fact, the history of invention shows nothing which in some respects seemed to take, at its inception, more complete and abiding shape. The following are the signs he thought could be made by one of the processes referred to. These were confined to figures, which he thought could be used as the basis of a code for words and sentences:

1	2	3	4	5	6	7	8	9	0
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·

These, of course, have all been changed in their relation to signs since then, yet all of them, except the last, are in use to-day as the representatives of other characters.

Then follows a sketch, which is afterward more elaborated, in which the plan of obtaining a record begins to foreshadow itself. This is evidently the idea of the electro-chemical process obtaining signals by the passage of the current through chemically prepared paper:

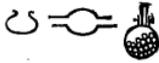


On another page appears the following, which, with the numeral signs above given, is easy of translation, and is the idea of coding messages by making numbers the signs of words. The translation appears hereafter:

.. . . . . | . . . . . — | . . . . . | . . . . . |  
 . . . . . | . . . . . | . . . . . | . . . . . | . . . . . |  
 . . . . . | . . . . . | . . . . . | . . . . . | . . . . . |  
 . . . . . | . . . . . | . . . . . | . . . . . | . . . . . |

Between the lines of this sketch, the use of which is indicated afterward, appear the following diagrams of tubes, as if the whole

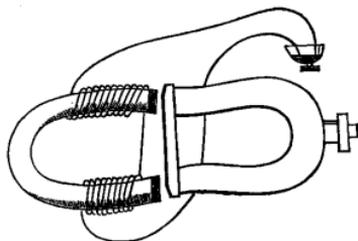
plan, not only of the mode of transmission, but of the methods of establishing communication, were at the same time rushing through his mind.



These evidently have in view an underground arrangement of wires as the first crude thought of how they could be arranged to connect distant places, arose in his mind. Unfortunately for himself, he long adhered to the subterranean plan, and only abandoned it when ruin stared him in the face. On another leaf was sketched the following code message, of which the characters already given are the signals, and to which the reader will refer for interpretation :

215.	56.	15.	5.	
War.	Holland.	Belgium.	Alliance.	
161.	252.	300	41.	35.
France.	England.	Against	Russia.	Prussia.
25.	4030.	141.		
Austria.	Wednesday.	6th Aug.		
222.	32.			
Naturalist.	Died.			

On another page appears the following, which is evidently a method by which, by means of a battery, a bar of iron can be taken by an electro magnet from the attraction of a fixed magnet, and restored again on the breaking of the circuit, and thus, by reciprocal action, motion be produced. In this process the fixed magnet is used in place of the modern adjusting or retractile spring, now in common use, and which was the basis of the patent afterward granted to Professor Page.

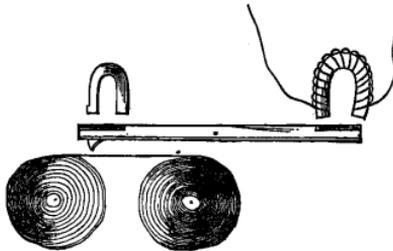


The cup in the sketch probably represents a cell of battery, or what seems as likely, a cup of mercury, in which the ends of the wire were immersed to form a connection, omitting the battery.

Following these appears a sketch of metal type, which will appear hereafter in Mr. Morse's own history of his invention, and which will be recognized as the type rule for the automatic system of transmission, by which a conductor passing over metal teeth manipulates signals to a distant station, instead of by the hand and key, as in the common mode, and which Mr. Morse did not at first adopt, the automatic system having first engaged his thoughts. The automatic system of the present day is, indeed, simply the use of paper to indicate the spaces which in Morse's type rule were made by the spaces between the metallic teeth, any excellence in present modes being entirely in the mechanical devices by which the paper is prepared for transmitting, and in methods to avoid the static charge and to secure a clear and rapid record over extended circuits by the electro-chemical process.

The following is a sketch which is evidently designed to show in the rough the mode of obtaining a record. It is so simple that it is not necessary that the parts be indicated by lettering. There are the moving paper rollers, not yet put into a cog-moving machine, but sufficiently indicated to be understood. There is the marking point at the extremity of a centered bar. There is the electro magnet with its connecting wires, which, when charged,

overcomes the opposite permanent magnet, and secures contact with the rolling paper. These, indeed, are the essential features of the telegraph complete, the same as it is to-day, so far as the recording apparatus is concerned, except the change in the mode of constructing the magnet, and the spring which supersedes the permanent magnet. This latter seems to have been, as already said, the patented invention of Professor Page, and was afterward connected with the Morse apparatus by purchase. Yet, curiously enough, the use of a spring to withdraw the armature on the opening of the circuit is referred to in one of Morse's early experiments. The expedient was a very simple and natural one.



It is not necessary to say that with such thoughts and possible accomplishments burning in his brain, with all their imagined consequences, sleep forsook him. In the pleasant interviews the writer enjoyed with him in his later years, he not infrequently referred to these agitations as the crisis of his life. To Mr. Rives he first submitted the sketches, explaining with ardor their entire feasibility. After a few days, during which his study over these new creations kept him under much mental excitement, he announced his scheme to his other companions, explaining the process by which he expected to accomplish it. So completely had he by this time made his combinations, that five years afterward when a model of the instrument was constructed, it was at once recognized as the one drawn in the sketch-book on the Sully. Bye-and-bye the voyage approached its end, and as the vessel was nearing

the port, Mr. Morse, feeling himself the possessor of a secret of profound interest to mankind, addressed the captain, "Well, Captain Pell, should you hear of the telegraph one of these days as the wonder of the world, remember the discovery was made on board the good ship Sully." Captain Pell is still a resident of Brooklyn, New York, and remembers the remark.

All the evidence, alike of Professor Morse's own records and the testimony of the captain and passengers, gentlemen of the highest character and intelligence, proves that what is now known over the globe as the Morse alphabet, a simple but effective arrangement of dots and spaces, and a mode of applying the galvanic current so as to secure a record on paper of permanent signs, at a distance, was practically begun, elaborated and completed, on the packet ship Sully, before the inventor set foot on his native shore.

On landing after this, to him, eventful voyage, Mr. Morse was met by his brothers, to whom he communicated with much enthusiasm, the points of his invention and the sketches he had made. He would gladly now have devoted himself to the elaboration of the new thought, but he had to betake himself to his work as an artist. He was poor. For two or three years following his return, therefore, he had to travel much of the time to meet engagements in his vocation, giving only such spare hours as he could snatch from his wandering life, to work out the idea of a recording telegraph and which he longed to test. In referring to this period of Mr. Morse's history, Mr. Kendall wrote me as follows: "It was agreed between Mr. Morse and Dr. Jackson, that the latter, who had a laboratory, should, by a series of experiments based on this suggestion of Morse, determine what chemical solution was best adapted to the purpose. But Dr. Jackson either failed to make them, or did not communicate their result, and Professor Morse, suffering under the blight of poverty, had no funds to purchase the necessary material, and was obliged to resort to his pencil for the means of subsistence." Mr. Robert Sabine, one of

England's excellent men, the author of "The History and Progress of the Electric Telegraph," thus writes of Jackson and Morse in reference to a claim by Jackson of having been the real inventor of the recording telegraph:

"Two men came together, a seed word, sown, perhaps, by some purposeless remark, took root in fertile soil. The one, profiting by that which he had seen and read of, made suggestions, and gave explanations of phenomena and constructions only imperfectly understood by himself, and entirely new to the other. The theme interested both, and became a subject of daily conversation. When they parted, the one forgot or was indifferent to the matter, whilst the other, more in earnest, followed it up with diligence, toiling and scheming ways and means to realize what had only been a dream common to both. His labors brought him to the adoption of a method not discussed between them, and Morse became the acknowledged inventor of a great system."

A suit brought by Jackson against Morse, in connection with Jackson's claim, ended in a prompt verdict for Morse.

Not long after his return his brothers assigned him a room on the fifth floor of a building on the corner of Nassau and Beekman streets, New York, which he gratefully accepted, and which was for a long time his study, studio, bedroom, kitchen and workshop. Here he erected a lathe for use in the construction of the pieces of his instrument, as he could find time to make them. The models he whittled with his own hands, and from them made the moulds and castings. Here, he lived on the simplest fare, prepared by himself, and toiled incessantly. He had strong faith both in God and in his own ability in time to succeed in accomplishing a grand result. So, studying the strictest economy in food and dress, denying himself the pleasures of social life, he devoted himself in hope and patience, at all possible times, to the elaboration of the new device.

In 1835, Mr. Morse had acquired such a reputation as an artist, and was so esteemed as a man of culture and refinement, that he

was appointed Professor of the Literature of the Arts of Design in the New York University. His apartments were now in an eligible building fronting on Washington Square. Circumstances now specially favored the prosecution of his telegraphic idea.

Industry has been claimed as one of the essentials of true greatness. It is indeed a most important element therein. There have been clever lazy characters possessing exceptional ability, but they were like the sun flashes of a glass upon the wall—bright, gleamy, superficial, useless. The prominent characteristics of true greatness, especially in high art, in which Morse thought to have shown, and for which he was highly fitted, are undoubtedly sensibility, tenderness, imagination. Yet labor has shown itself to be at the bottom of all true success. The men who have earned real crowns have done so by persistent toil, by hard, persevering, long-continued labor. The pressure of a divine mission is upon them. Every thing they do has a design. Every moment has a value. Morse felt this pressure upon him all through life, and especially now. His paintings alone would have filled a large gallery. And now that he came to a position in which his darling thought found promise of wing, he betook himself in earnestness and confidence to the task. Like Arnolfo, and Albert Durer, and Isaac Newton, he knew his power and the value of the measure of his thought. Yet he possessed the under sense of powerlessness, and felt that the greatness was not *in*, but *through* him.

Professor Morse had the inspiration of a grand purpose to brighten the struggle. It sublimated his life. He saw in his telegraph not a crown for himself, but a new aid to human happiness, something which touched the higher orders of human virtue, something designed to be done through him by Him who is the origin of all things grand and humanizing and pure. And thus, in his estimation, his new University room became the workshop of the Almighty.

## CHAPTER VII.

## MR. MORSE'S HISTORY OF HIS INVENTION.

Intellect has conquered time !  
Sing who will of Orpheus' lyre,  
Ours the wonder-working wire.

IT is always just to allow an inventor to tell his own story. Mr. Morse had to do that very often, but not half so frequently as it has been attempted for him. The last time he gave it shape was when, in his seventy-seventh year, he was serving as Commissioner at the International Exposition in Paris in 1868. The value of this paper is not alone in the clearness with which he has stated the process of his thoughts, but is the best exposition of the place he occupies as an inventor, and of the proper limits of the invention which bears his name. Somewhat abbreviated, it is as follows. After alluding to the conversations on the Sully, to which reference has already been sufficiently made, he proceeds :

“ Before the end of the voyage on the Sully the invention had the following attributes. My aim at the outset was simplicity of means, as well as results. Hence, I devised a *single circuit of conductors* from some generator of electricity. I planned a *system of signs*, consisting of dots or points, and spaces, to represent numerals, and two modes of causing the electricity to *mark or imprint* these signs upon a *strip or ribbon of paper*. One was by *chemical decomposition of a salt* which should discolor the paper ; the other was by the *mechanical action of the electro-magnet*, operating upon the paper by a *lever*, charged at one extremity with a pen or pencil. I conceived the plan of moving the paper ribbon at a *regular rate*, by means of *clock-work machinery* to receive the signs. These processes, as well as the mathematically calculated signs, devised

for and adapted to *recording*, were sketched in my sketch-book. I also drew in my sketch-book modes of interring the conductors in tubes in the earth, and, soon after landing, planned and drew out the *method upon posts*. This was the general condition of the invention (with the exception of the plan upon posts) when I arrived in New York, on the 15th of November, 1832.

"In reflecting on the operations of electricity as a proposed agent in telegraphy, I was aware that its presence in a conductor of *moderate length* could be indicated in several ways. The physical effects in a shock; the visible spark; visible bubbles during decomposition, and marks left from decomposition; its magnetic effects upon soft iron and steel; and its calorific effects — these were all well-known phenomena. Could any of these be made available for *recording*, and at a *great distance*? If so, which of them seemed to promise the surest result of a *permanent record*? Static electricity was quickly dismissed as too uncontrollable, and I directed my attention exclusively to the phenomena of dynamic electricity. The decomposition of a salt having a metallic basis would leave a mark upon paper or cloth. If a strip of paper or cloth were moistened with the salt, and were then simply *put in contact* with a conductor charged with electricity, would there be any effect upon the paper? A magnetic effect is produced exterior to the charged conductor. Is there any salt or substance so sensitive as to be affected either by decomposition, or in any other way, by this magnetic influence, by *simple contact* with an electrically-charged wire? It was doubtful, but worth an experiment.

"But, if such effect were verified by experiment, it was conceived that marks like those in the diagram (1) might be made across the moistened paper, as it passed beneath and in contact with the conjunctive wire A B, when the wire was electrically charged and discharged.

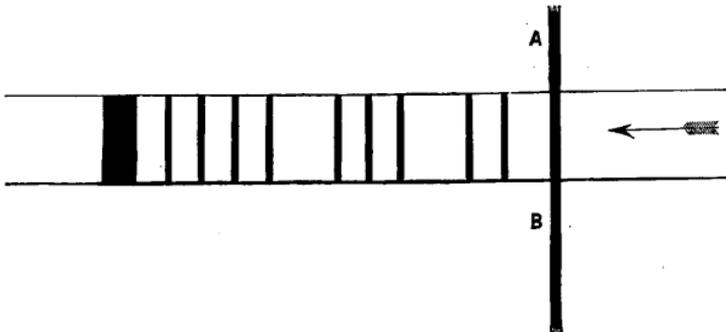


DIAGRAM 1.

"It is needless to add, that, on trial, no such effect was produced by the *magnetic* properties of an electrically-charged wire upon any salt that I afterward submitted to the experiment. Nevertheless, it is perceived that, had this device (which was noted down for testing) been verified, the simplest of all modes of *recording* would have been the result.

"The nearest approach to this simplicity seemed to be the passing of the chemically-prepared paper between the two broken parts of a circuit, so that the electricity should pass through the moistened paper or cloth; this would mark a point or dot when the circuit was closed, and by rapid closing and-opening of the circuit, while the paper was moved regularly forward, points or dots, in any required groups, could be made at will. But what salt would best produce this result was to be determined after reaching the end of the voyage. In the mean time, as I originally proposed to record numerals only, intending to indicate *words* and *sentences* by numbers, it was a desideratum to arrange the ten digits to be represented by dots or points within as small a space as possible. The first and most obvious mode seemed to be the following:

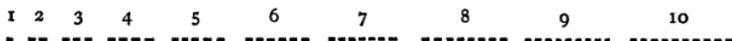


DIAGRAM 2.

But a few minutes' reflection showed that, after *five* dots or points, the number of dots became inconveniently numerous in indicating the larger digits; hence, it occurred to me that, by extending the spaces appropriated to the five larger digits, giving them a greater space value than was possessed by the five smaller digits, I might reduce the number of dots, necessary to indicate any of the ten digits, within five dots. On this principle, therefore, I constructed the following *signs* for the ten numerals, and devised the *TYPES* for regulating the opening and closing of an electric circuit. (See Diagram 2.)

"On inspecting the diagram (2) it will be perceived that the types were to be divided into definite *parts*.

Type 1	contains	4	parts,	and	appropriates	1	part	to	its	cog,	and	3	to	its	space.
" 2	"	6	"	"	3	parts	to	its	cog,	and	3	"	"	"	"
" 3	"	8	"	"	5	parts	to	its	cog,	and	3	"	"	"	"
" 4	"	10	"	"	7	parts	to	its	cog,	and	3	"	"	"	"
" 5	"	12	"	"	9	parts	to	its	cog,	and	3	"	"	"	"
" 6	"	6	"	"	1	part	to	its	cog,	and	5	"	"	"	"
" 7	"	8	"	"	3	parts	to	its	cog,	and	5	"	"	"	"
" 8	"	10	"	"	5	parts	to	its	cog,	and	5	"	"	"	"
" 9	"	12	"	"	7	parts	to	its	cog,	and	5	"	"	"	"
" 0	"	14	"	"	9	parts	to	its	cog,	and	5	"	"	"	"

" Each of the *first* five digits, therefore, is indicated by a space of three parts, and

" Each of the *last* five digits is indicated by a space of five parts.

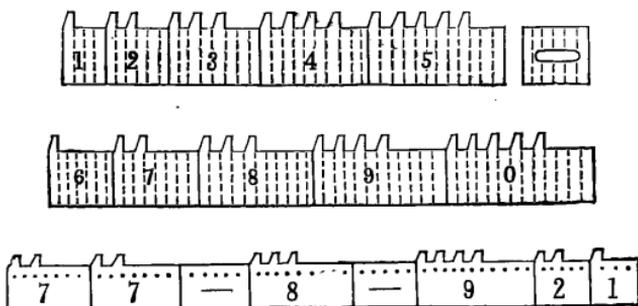


DIAGRAM 3.

" The *space type* for separating completed numbers, whether single or compounded, contains six parts.

" The *length* of the *spaces*, therefore, was an element to be used in determining the difference between the class of the first five digits and the class of the last five digits, and not simply the number of dots or points. Whether one dot was to be read as numeral 1 or as numeral 6, was to be determined by the length of the space after it, and, for the purpose of measuring this space in the last numeral of a dispatch, the single dot or point was to be used as a supernumerary *finale* to every dispatch.

" A space of the length of nine or more parts, after a dot or group of dots, indicates the dot or group of dots to be a complete number, whether single or compounded.

" A space *less* than the length of the nine parts, after a dot or group of dots, indicates that they are a portion of a compounded number.

" This method seems crude and even impractical, especially in view of my perfected alphabetic code, devised as early as 1835. But cumbersome and inconvenient as it was, in its earliest stages, if compared in its results with the results of the semaphoric modes in use at that day, it will be perceived that it was even then a great step in advance.

" A day had scarcely passed after my landing, before I commenced the construction of the invention from the plans and drawings made on board the ship. The signs to be recorded or imprinted it was necessary to embody in a species of *type*, which were to make the required closings

and openings of the circuit of conductors, necessary to mark or imprint the points or signs upon a strip of paper at regulated intervals of time; the paper or ribbon having a *regular* movement, while the type performed the closing and opening of the circuit at *irregular* intervals, and furnished the means of breaking the line into dots and spaces, in such variety as at once to enable me to construct eventually, all the different letters of the alphabet. The *type* proposed at this time consisted of thin strips of type-metal with cogs varied at intervals, as seen in Diagram 2. These by means of a mechanical movement (hereinafter described) were made and intended for closing and opening the circuit at the desired times. These types were, at that time, an essential part of the machinery in process of construction; and having more facilities, immediately on my arrival, for elaborating these types than for other parts of the machinery, they were the first constructed. A mold of brass was made and a quantity of the type was cast before the close of the year 1832. The rest of the machinery, except a single-cup battery, and a few yards of wire, and the train of wheels of a wooden clock, which I adapted to the service of unrolling the strip of paper, I was compelled, from the necessities of my profession, to leave in the condition of drawings until I found some more permanent resting-place. From November, 1832, until the summer of 1835 (two and a half years), I had changed my residence three times, and was wholly without the pecuniary means for putting together and embodying the various parts of my invention in one whole. But in July, 1835, I took possession of my new home, in the new building of the New York City University, and I then lost not a day in collecting the parts and putting into practical form the first rude instrument which was to demonstrate the operation of the invention. I was favored with a little leisure from the unfinished condition of the University building, which impeded the access of visitors to my apartments for my usual professional duties.

"I ought here to say that, with the aid of a single-cup battery, as early as 1834, previous to my removal to the University, I ascertained that no visible effect was produced upon numerous salts, which I submitted to trial by putting them in *simple contact* with the wire charged with electricity, as shown in the plan of Diagram 1, proposed for experiment on board the ship. I succeeded, however, in marking by chemical decomposition, when the electricity was passed *through* the moistened paper or cloth, in 1836, in the University, but the process was attended with so many inconveniences that it was laid aside for the moment, not *abandoned*, that I might give my attention more directly to the *electro-magnetic mode* of recording.

"If my nomadic mode of life for two years previous, and the condition of my pecuniary means, be kept in mind; if, also, it be considered that many of the mechanical facilities in New York, so abundant at the present day, for embodying the invention, did not exist, and therefore were denied to me, it will account both for the slowness in completing the instrumentalities of my invention, and the rudeness of the first constructed instrument. The *electro-magnet* was not an instrument found for sale in the shops, as at this day; insulated wire was nowhere to be obtained, except in the smallest quantities, as bonnet-wire of *iron* wound with cotton thread. Copper wire was not in use for that purpose, and was sold in the shops by the pound or yard at high prices and also in very limited quantities.

"To form my electro-magnet, I was under the necessity of procuring from the blacksmith a small rod of iron bent in horseshoe form; of purchasing a few yards of copper wire, and of winding upon it, by hand, its cotton-thread insulation, before I could construct the rude helices of the magnet. I had already purchased a cheap wooden clock and adapted the train of wheels to the rate of movement required for the ribbon of paper.

"I needed a proper support for the machinery on which to arrange the various disconnected parts. A stretching-frame for canvas, XX, Diagram 4 (having a bar across the middle), which stood unemployed against the wall of my *atelier*, suggested to me a rough but convenient method of putting into operation the printing or marking of the signs. I nailed it at the bottom against the edge of a common table. Across the lower part of the frame I constructed a narrow trough to hold three narrow cylinders of wood, A B C; A and C small, one on each side of the large cylinder B. The wooden clock D was placed at one end of this trough. The small cylinder C next to the clock had a small pulley-wheel fixed upon its prolonged axis, outside the trough; a similar pulley-wheel was fixed upon the prolonged axis of the slower wheels of the train of wheels outside the clock; these two pulley-wheels were connected by an endless cord or band.

"Upon the other small cylinder A, on the other side of cylinder B, was wound the ribbon of paper, composed of long strips of paper pasted together, end to end. When the clock-train was put in movement, the ribbon of paper was gradually unrolled from its cylinder, and, passing over the cylinder B, was rolled up upon the cylinder C by means of the cord and pulleys. To give the weight which moved the clock-train a sufficiently long space in which to fall, a long rod or strip of wood projecting upward was nailed to the side of the frame, at the top of which

rod was a pulley-wheel over which the cord attached to the weight E was passed.

“Upon the middle of the cross-bar of the frame there was a small shelf or bracket *h* to hold the electro-magnet, which was the moving power of the marking or printing lever.

“The *lever* was an A-shaped pendulum, F, suspended by its apex at *f* from the center of the top of the frame, directly above the center of the cylinder B in the trough below. This lever was made of two thin rules of wood meeting at the top, *f*, but opening downward about one inch apart, and joined at the bottom by a transverse bar (which was close to the paper as it moved over the large cylinder), and another about one inch above it. Through the center of these two bars a small tube or pencil-case, *g*, was fixed, through which a pencil loosely played. The pencil had a

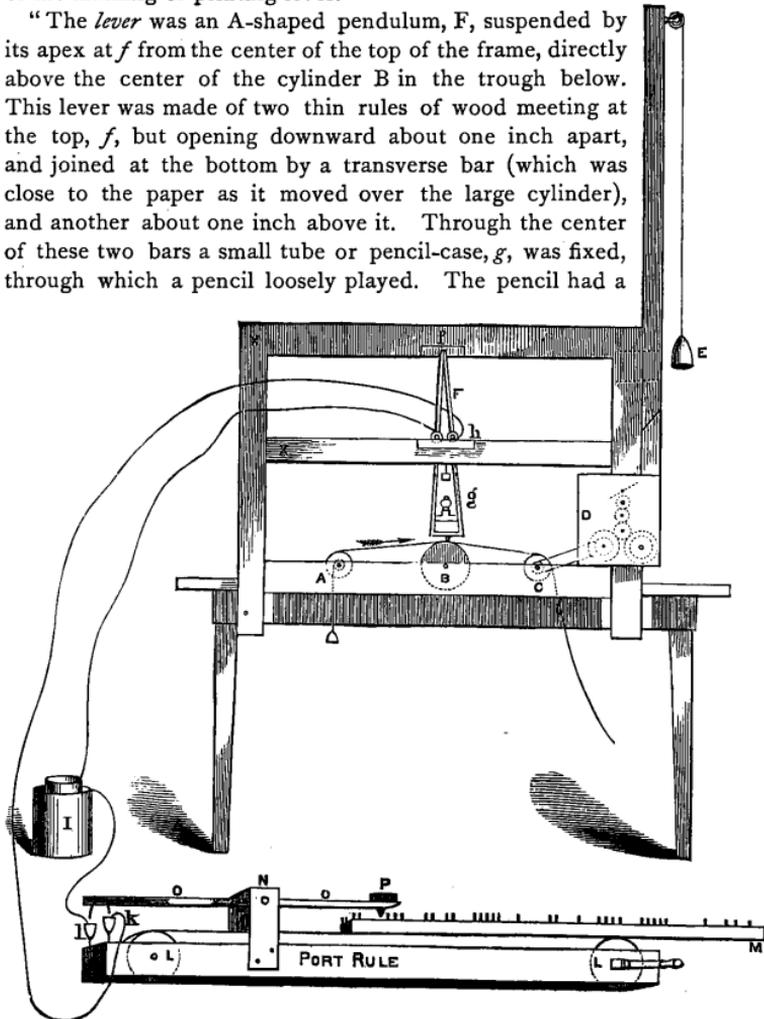
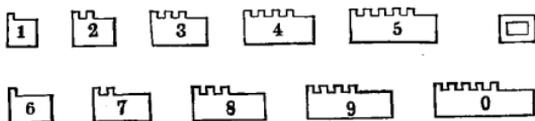


DIAGRAM 4.

small weight upon its top to keep the point in constant contact with the paper ribbon. Upon the lever directly opposite to the poles of the electro-magnet was fastened the *armature* of the magnet, or

## -TYPE.



## EXAMPLE OF IMPRINTING.



a small bar of soft iron, *h*. The movement of the lever was guided by stops on the frame at the sides of the lever, permitting to it only a movement forward to, and back from, the magnet; the pencil at the bottom of the lever was thus allowed to advance when the magnet was charged, and to retreat when discharged, about one-eighth of an inch. The lever advanced by the attraction of the magnet, and retreated by a weight in the first attempts, but immediately afterward *by the action of a spring*.

"The first voltaic battery or pile<sup>1</sup> was of a single pair, I, having one of its poles connected by a conjunctive wire with one of the helices of the electro-magnet, and the other pole with *one of two cups of mercury*, K; a conjunctive wire connected with the other helix of the magnet. The only part of the voltaic circuit not completed was between the two cups of mercury, J and K. When a forked wire upon the lever O O united the two cups J K, the circuit was complete, the magnet was discharged, the armature *h* was attracted, and the lever F drawn toward the magnet. When the forked wire was removed the magnet was discharged, and the spring brought back the lever to its normal position. When the clock-work was put in motion, the ribbon of the paper was drawn over the large cylinder B; from the cylinder A, the pencil *g* on the lever, being in constant contact with the ribbon of paper, traced a continuous line lengthwise with the ribbon. When the lever was in a normal position, the line was upon one side of the ribbon, as at *r*; when

<sup>1</sup> I had at this time a Cruikshank's battery of twelve pairs, but so out of order as not to be available for experiment.

attracted by the magnet to the other limit of its motion, the line was on the other side, as at *s* in Diagram 5.

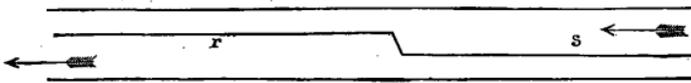


DIAGRAM 5.

“The *pathway* of the pencil-point (when the lever was attracted toward and held by the magnet for a longer or shorter time, tracing the line *s*) contains the *three* elements of *points*, *spaces* and *lines*, forming by their various combinations the various conventional characters for *numerals* and *letters*. The other line, *r*, traced by the pencil when the lever is in its normal position, may, therefore, be disregarded. Only the variations in the line *s*, traced by the pencil when the magnet is charged, is of importance. A specimen of these combinations is exhibited in the following diagram (6).

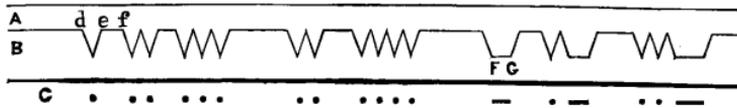


DIAGRAM 6.

“A is the line *r* in Diagram 5 which the pencil traces when the lever is in its normal position.

“B is the line *s* in the same diagram which is to contain the conventional characters, to be read as if marked in points, spaces and lines, as on the line C below the ribbon of paper. The arrows show the direction of the movement of the ribbon of paper when the clock-work is in motion.

“Supposing the ribbon of paper in motion while the magnet is not charged, and the pencil to have commenced marking the upper line at *d*, the circuit is quickly closed and opened again; the pencil is thus drawn a moment to the lower line, B, marking a transverse across and back again, leaving a *point* in the lower line, B. But, as the ribbon of paper is in motion, the transverse line back again does not return the way it came, but goes back to *e*. From *e* to *f* is a *space*. If the circuit be closed twice, and at each closing be opened quickly again, there will be two *points* left in the line B, followed by another space; if *three* times, there will be *three points*, and then a longer *space*, and so on, making one or more *points* and *spaces* at pleasure. But if, instead of opening the

circuit quickly, it be kept closed a moment, and then opened, the pencil leaves a *line* on the line B, as at F G. Thus *points*, *spaces* and *lines* are made at will. Combinations of these (strictly speaking, *broken parts of a continuous line*) I made in sufficient variety to form my conventional alphabet. (See Diagram 7.)

PORTION OF THE CONVENTIONAL ALPHABET.



DIAGRAM 7.

“At the time of the construction of this first telegraphic instrument, I had not conceived the idea of the present *key manipulator*, dependent on the skill of the operator, but I presumed that the *accuracy* of the imprinting of signs could only be secured by mechanical mathematical arrangements and by *automatic process*. Hence, the first conception, on board the ship, of embodying the signs in type mathematically divided into *points* and *spaces*. (See Diagram 2.) Hence, also, the construction of the type-mold, and castings of the first type, in 1832.

“Having ascertained that the machinery I had constructed, rude as it was, would move the ribbon of paper at a regular speed, and that the pencil-lever was obedient to the closing and opening of the circuit, the next thing to construct was the manipulator or regulator of the closing and opening of the circuit.

“I had already in abundance the type cast in 1832. These were now to be put in use.

“I prepared rules or composing-sticks, M (Diagram 4), of about *three* feet in length each, formed by two strips of wood, so placed side by side as to leave a narrow channel large enough to contain the type in desired order, and to allow the cogs of the type to project above the upper edge of the rules. Through and along the bottom of the rules, projecting downward, were several needle-points, about one-fourth of an inch in length; their use will be perceived presently.

“A long trough, L L, sufficiently wide to allow of easy passage of the rules through its length, was constructed with the following parts. Near each end of this trough were two small cylinders of wood, L L. On the prolonged axle of one of them was a hand-crank, and over the two cylinders an endless band of worsted tape about one and a half inch in width, which, when the crank was turned, passed from end to end of the trough. Midway and across the trough was erected a small frame or

bridge, N, within which a wooden lever, O O, was suspended, parallel with the endless band, having its fulcrum at N, at a point about two-thirds its length, but the longer part reaching from the fulcrum to the end of the trough, on each side of which, under the end of the longer part of the lever, were placed the *two cups of mercury*, J K. Upon the end of the lever and above the cups of mercury was fixed a forked wire, so bent as to connect both cups when the end of the lever was depressed, and to disconnect them when it was raised. At the other, or shorter end of the lever, a weight, P, overbalanced the longer part, and on the under side, beneath the weight, was a beveled tooth projecting downward. The rule or composing-stick, having the type set up, was then placed upon the endless band, the needle-points beneath the rule striking through the band and retaining the rule in its place. By turning the crank the rule was made to pass beneath the lever. The first cog of the type, coming in contact with the tooth beneath the weight of the lever, raised that end and depressed the other, causing the forked wire to descend into the two cups of mercury, and *closing* the circuit. When the cog had passed the tooth, the weight caused the tooth to fall into the space between the first and second cogs, and the fork at the other end of the lever to rise out of the cups of mercury, *opening* the circuit. At each dip of the fork into the cups, the circuit was closed, the magnet was charged, the armature on the pendulum lever was attracted, and the pencil passed from the upper line A (Diagram 6) to the lower line, B. When the fork was raised out of the cups the circuit was opened, the magnet was discharged, and the pendulum lever with its pencil resumed its normal position by the action of the spring. A repetition of this process, as the rules with the type passed beneath the tooth on the lever, completed the action of the instrument.

“This was the construction and mode of operation of the first recording instrument for *imprinting characters at a distance*. In this shape it ‘*produced a new practical result, seen and felt and appreciated by the senses,*’ witnessed, and testified to, by many witnesses as seen in operation in 1835, 1836, 1837. It was a result never conceived nor accomplished before; it was an important practical result for the first time attained.

“The recording instruments throughout the world at this hour have the same characteristics as this first rude instrument.

“To make clear the *identity* of the modern recording instruments with this recording instrument of 1835, which at first blush may not be so obvious, I have made the diagrams (8, 9).

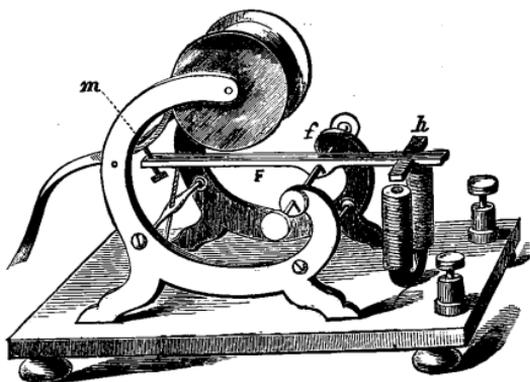


DIAGRAM 8.

“Compare Diagrams 8, 9, with Diagram 4. The letters in each diagram refer to similar parts in each, so that, in describing one, all are described. In Diagram 8, the machinery that moves the ribbon of paper is removed in order the better to show the writing or recording apparatus. *F* is the lever; *f* its fulcrum; *h* the armature of the electro-magnet affixed to the lever; *m* shows the stylus or marking instrument in Diagram 8, 9, affixed to the extremity of the lever, having the fulcrum *f* between the stylus *m* and the armature *h*. This is the modification in the modern instruments, while in Diagrams 4 and 9 *g* shows the stylus affixed to the other extremity of the lever *F*, having the armature *h* between the stylus *g* and the fulcrum *f*. If, therefore, as in Diagram 9, two ribbons of paper are put in movement, one before each stylus *g* and *m*, it will be seen that *g* in Diagram 9 makes the zigzag marks represented in Diagram 6 like those of *g* in the original instrument (Diagram 4), while at the same time, by the same movement of the lever, the stylus *m*, at the other extremity of the same lever, marks the alphabet in *points and lines*, or *dots and dashes*, upon its own ribbon of paper, the characters in universal use at the present day.

“It is thus perceived that by prolonging the lever of the modern modification of the recording instruments beyond the armature *h* toward the cylinder *B*, and affixing a stylus, pen or pencil *g*, on its extremity, allowing it to be in contact with the moving ribbon of paper, as in the original instrument of 1835, the action of the lever *F* may be made to mark the original zigzag characters at *g*, while the modern points and lines are at the same time marked by *m* on its own ribbon of paper. The dotted lines shadow the original A-shaped lever of Diagram 4,

showing the same assemblage and arrangement of parts as in the original instrument.

"It may seem singular to some that the plan of direct up-and-down movement of the lever, as in Diagrams 8 and 9 at *m*, to mark upon the paper (the plan devised on board the ship, and which is now the most universal), should not have been the first that was put in operation,

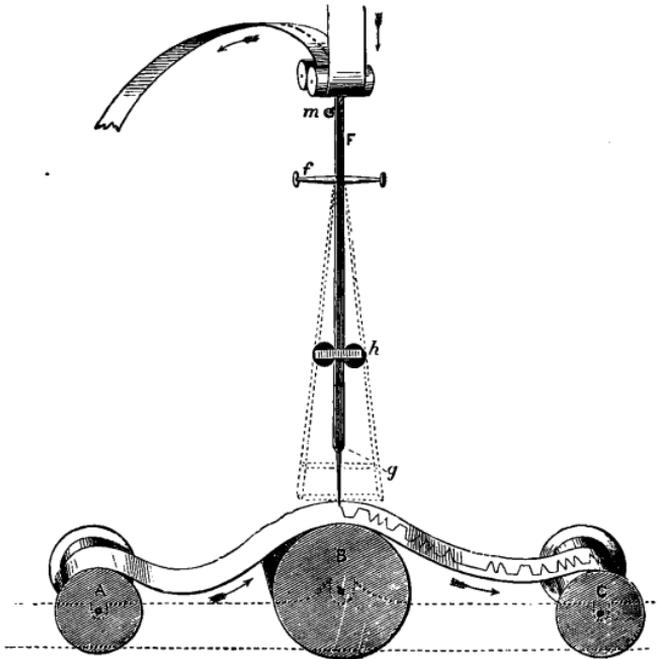


DIAGRAM 9.

since too it was the first and the most obvious mode devised. Having chosen, however, for economical reasons, the stretching-frame as the most convenient support at hand for the machinery, it was necessary to adapt the parts to this choice, even if my results must be attained in a more indirect manner.

"It is easy to see that the direct action of the lever, as at present universally used in the register, would accomplish the result better, and it was put into use almost immediately after the first trial. Lightness in the lever was a desideratum, and this seemed to be easiest attained

by suspending it at its fulcrum *f*, but, especially as a *pencil* was chosen as the first marking instrument (Diagram 10), it was supposed to be necessary in some way to avoid the direct blow of the pencil upon the paper, which was produced by this mode, but which endangered the

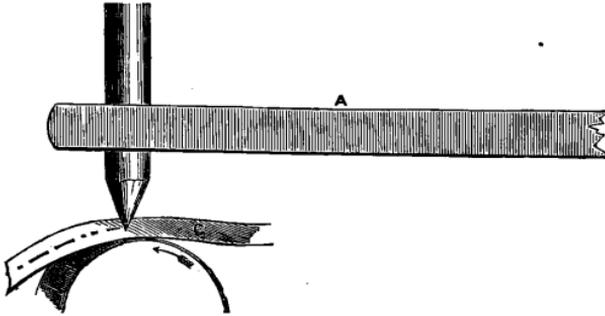


DIAGRAM 10.

point, and therefore the zigzag sliding movement was adopted. The *pencil as employed* in Diagram 9, at *g*, was not the only marking instrument devised and put in operation in the earlier instruments. Besides the direct action of the pencil as in Diagram 10, *fountain-pens* of various kinds, one of which is shown in Diagram 11, and a small *printing-wheel*,

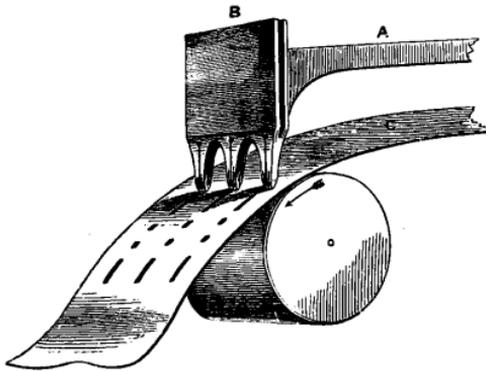


DIAGRAM 11.

as shown in Diagram 12, were used, the latter being supplied with ink from a sponge with which it was in contact. All these were used with more or less of success.

"The same *result*, however, to wit, *recorded characters* representing numerals and letters, and words and sentences, was given by each of these modes in this first-constructed instrument as is given in instruments of the present day. The instrumentalities are the same, and the result the same; the only difference is in the mode of using the *marking lever*.

"It will be now perceived that my invention of 1832 had certain very important novel characteristics which distinguished it from all inventions of a previous date. It was not like any of them.

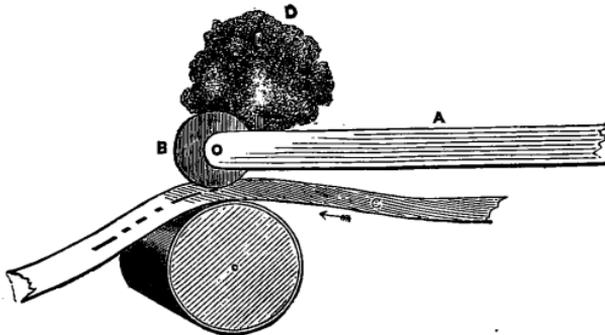


DIAGRAM 12.

"Although the contemplation of static electricity as a means of producing a permanent record at a distance gave rise in my mind to the conception of the invention on board the ship, it was not the *static* form of electricity, but its *dynamic* form, which I immediately adopted for carrying into operation what I had devised. Electricity was proposed to be used by me neither in the form, nor for the purpose, nor by the same instrumentalities, as were proposed in the earliest contrivances, say previous to the year 1800. None of them proposed to *record* their intelligence. None of them proposed or made use of the *electro-magnet*, for it was not then invented, nor the scientific basis of it discovered. None of them had invented a *system of signs* adapted to recording, for the necessity of them had not arisen. For the same reason, none had proposed a *moving ribbon of paper* for receiving the record. None proposed to use a *single circuit of conductors*.

"Still, between the years 1800 and 1832, the means by which that end was to be accomplished were all *semaphoric*. *Decomposition* by dynamic electricity in the form of *gas-bubbles*, and the *deflection* of the *magnetic needle*, were the sole novelties in the signals of their proposed plans. No period, therefore, is more strongly isolated from all previous

dates than the date 1832 as the epoch of a *new method* of applying electricity by the *electro-magnet* to the *creation of a NEW ART*, of a *new method* of communicating to a distance, to wit, *recording*, a method wholly unlike any previously imagined or invented.

“ But the instrument I had devised in 1832, and constructed in 1835 (so far, at least, as to demonstrate its practicability to communicate *from one station to a distant station*), did not completely embody my *whole plan*. This *whole plan* was not complete until I could, by a *duplicate* of the instrument, have the means of a return from that distant station. This was necessary in order to *receive from*, as well as to *send to*, a particular station. The *whole plan* comprised intercommunication, or reciprocal communication.

“ Between the date, 1835, of the completion of the first instrument and 1837, the date of its more public exhibition, there was a very important addition to it, which I had already devised and provided against a foreshadowed exigency, to meet it if it should occur when the conductors were extended, not to a few hundred feet in length in a room, but to stations many miles distant. I was not ignorant of the possibility that the electro-magnet might be so enfeebled, when charged from a great distance, as to be inoperative for *direct* printing. This possibility was a subject of much thought and anxiety long previous to the year 1836, long previous to my acquaintance or consultations with my friend Professor Gale on the subject, but I had then already conceived and drawn a plan for obviating it. The plan, however, was so simple that it scarcely needed a drawing to illustrate it; a few words sufficed to make it comprehended. If the magnet, say at twenty miles distant, became so enfeebled as to be unable to print *directly*, it yet might have power sufficient to close and open another circuit of twenty miles farther, and so on until it reached the required station. This plan was often spoken of to friends previous to the year 1836, but early in January, 1836, after showing the original instrument in operation to my friend and colleague, Professor Gale, I imparted to him this plan of a relay battery and magnet to resolve his doubts regarding the practicability of my producing magnetic power sufficient to write at a distance.

“The simple and effective instruments as modified by Messrs. Digney Frères, of Paris, embody the distinctive features of my invention more to my satisfaction than any of the French instruments. There is a modification which they have made, however, which requires a few remarks to prevent misapprehension in regard to its exact nature. In reading the excellent work of M. Breguet, p. 163, in his chapter “*Morse Register marking the signs in ink*,” “*Recepteur Morse faisant les signaux*

*à l'encre,*" I find some things to correct. A wrong impression is made in describing the mode of *embossing* the characters by a *steel point*, '*à gaufrage,*' as if that were my *only* original mode of marking. This is not the fact; a *pencil*, a *fountain-pen*, and the *small printing-wheel* by which ink was used, were among the first modes of marking. There were many modes of marking which I devised and tried, but experience alone could settle which was best; the pencil and pen and small printing-wheel with ink were the original modes in use; the steel point (Diagram 13), for embossing the character, was invented some time

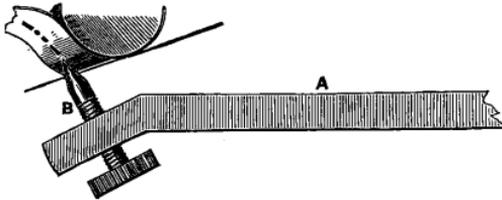


DIAGRAM 13.

after, and patented as an improvement, since it dispensed with ink; M. Breguet gives to Thomas John, of Prague, the invention of the *small printing-wheel*, "*une molette ou roulette,*" to mark the characters, and states that he received for his invention a platina medal from the Society of Encouragement.

"That Mr. Thomas John made his improvement independently, without a knowledge of the fact that I had it in use nearly twenty years before, I have no doubt, but it is nevertheless true that the introduction of this inking-wheel is not a novelty; whatever of novelty there is in its present use consists in the *mode* of its application, and in the beautiful apparatus constructed by Messrs. Digney Frères, the mode, so far as I know, is new.

"My *caveat*, filed in the Patent Office in Washington on the 6th of October, 1837, in describing the register, specifies: 'A *pencil*, or *fountain-pen*, or a *small printing-wheel*, or any other marking material;' and the mode of using the wheel is also described, thus: 'When the *printing-wheel* is used, the *wheel* is brought in contact with the *paper* by the magnet when required to mark.' The wheel in my first experiments, inked by a sponge, was *brought down* upon the paper; Mr. John's mode of applying the wheel, inked in a reservoir, was by bringing it *against* the paper from the side, while Messrs. Digneys' mode was *bringing the paper* against the wheel inked by a felt roller. This latter mode I conceive to be a substantial improvement, since it combines delicacy with

efficiency, and requires so much less power for the operation that even the relays can be dispensed with on lines of considerable extent.

"If, then, judged by the first rule laid down by Dr. Russell, I claim to be the *inventor of the first recording telegraph* (not to say, strictly speaking, the *first real telegraph*), am I not 'the first who produced the practical result which, however imperfect, gave a result which was seen, and felt, and appreciated by the senses?'

"Let me not be misunderstood as appropriating to myself the credit of the many modifications of the telegraph that have since been made in every part of the world, because I claim the invention of the *generic telegraph*. I do not pretend that the mechanism of the first forms of the telegraph was not rude, and even uncouth when compared with the beautiful workmanship of the European *ateliers*, of the hundreds of accomplished mechanics who have brought to the work their incomparable ingenuity and skill. And yet I may appeal to the fact, generally acknowledged, that the essential features of the original invention have not been obliterated; they can be easily and distinctly traced through all the improvements made in the various parts by which the different processes of the art have been more easily performed."

After a few weeks of trial of the port-rule system it was abandoned, and Mr. Morse substituted therefor the Morse key, now in general use, and which he called, very happily, the "correspondent." Before the former plan was abandoned, Mr. Vail had invented an ingenious machine for receiving and distributing type, which, however, proved of no practical use. Dr. Gale claims that Mr. Vail was the first to read messages by sound.

## CHAPTER VIII.

## HISTORY OF TELEGRAPHIC INVENTION AND DISCOVERY.

“The invention all admired, and each how he  
To be the inventor missed; so easy it seemed,  
Once found.”

—[*Milton's Paradise Lost.*

BEFORE following Professor Morse further in his work, it may prove instructive to some not given to scientific reading, to sketch very briefly the history of the development of the general art. No attempt is designed to make an elaborate inquiry into all the details of the progress of scientific thought, out of which sprang the modern telegraph. Yet it is both useful and interesting, not only to trace its gradual evolution, but, when, as in the case of Professor Morse, exceptional honors are bestowed upon some single individual, to follow the steps which led to, and were the auxiliaries to his triumph. For, in our view, every stone which leads by successive layers to the keystone of an arch, is as important as the keystone itself; although the latter assumes by its act of completion, the point of honor. And so in the progress of discovery, there is not a torch lit, how humble soever its flame, which is not as worthy of gratitude, as the one by whose fortunate light the problem is finally solved. In this view, therefore, Professor Morse absorbs in himself no exclusive honor, but represents alike that which was peculiarly his invention — what, in the universal recognition of the world, he

himself accomplished, and all who before or in concert with him, helped him to his crown. They culminate and are honored in him. In a few rapid notes we shall soon see the column rise on which was at last to stand the American inventor. Before these are given, the words of the clear-headed and conscientious Faraday find here a fitting place. Speaking of the important discovery of the Voltaic pile at the opening of the present century and of the early workers in scientific development, he says with characteristic beauty and justice :

“ Such knowledge is the early morning light of every advancing science, and is essential to its development ; but the man who is engaged in dispelling that which is deceptive in it, and revealing more clearly that which is true, is as useful in his place, and as necessary to the general progress of science, as he who first broke through the intellectual darkness, and opened a path into knowledge before unknown.”

One of the most curious writings of the seventeenth century, as foreshadowing upon a false and vulgar notion the era of the telegraph, is by the Jesuit Famianus Strada, in his book called “ *Prousiones Academicæ*,” 1617, to whom allusion has already been made in connection with the loadstone. He says : “ If you desire to communicate to a distant friend, take a plain, round, flat disc, and upon its outer rim mark down the letters of the alphabet, and, traversing upon the middle of your disc, have a needle, which has touched loadstone, so arranged that it may be made to touch upon any particular letter, *ad libitum*. Make a similar disc, the exact duplicate of this first one, with corresponding letters upon its margin, and with a revolving magnetized needle. Let the friend you propose corresponding with, take, at his departure, one disc along him, and let him agree with you before hand on what particular days, and at what particular hours he will take observation of the needle. With this arrangement between you, turn your finger to the disc and touch the easy moving needle. Your dis-

tant friend notes the revolving needle vibrate without apparent impulse, and fly hither and thither around the rim, and as it touches the various letters, learn your meaning from the interpreting needle! Oh! that this style of writing were brought into use!"

1. The first published idea of a practical telegraph was made by Winckler, at Leipsic, in 1746, who used the Leyden jar to produce a current upon a long wire. He sent a current across the river Pleisse. Le Monnier, about the same time, proved the instantaneous action of the current on a long wire.

2. Dr. Watson, Bishop of Llandoff, accomplished the same thing in England in 1748, over a wire circuit of four miles. Franklin in the same year sent a current across the Schuylkill river near Philadelphia; and in 1749, De Luc transmitted an electric current across the Lake of Geneva.

3. In 1753, a Scotchman by the name of Charles Marshall, residing in Paisley, Scotland, but whose achievements in electric science seem to have escaped the eye of the writer of the *Annals of Electricity*, published in 1753, a clear and interesting description of a practical telegraph. His plan was to use a wire for each letter, the terminals of which were to be arranged along the face of a gun barrel, pointing to letters spaced thereon, and to be indicated by electrical discharges from the wires. To prevent the loss of current by exposure to the atmosphere, he proposed to cover the wires with jeweler's cement.

4. Le Sage, of Geneva, proposed a similar plan in 1774. He used 24 wires, with small balls of elder suspended by wires at the termini, and which, by being affected by the electrical charges, indicated letters.

5. Lomond invented a somewhat remarkable machine in 1787, which by a synchronous movement between two instruments, and what is called an alphabet of motion, communication was maintained by certain movements of pith balls on electrical connection being made at given points, which were the signs of words or letters. (Vail's History, 121.)

6. In 1794, Reusser, of Geneva, by an electric spark produced by the Leyden jar and wires, illuminated letters of tinfoil at a distance on a glass plate. (Vail's History, 121.)

7. In 1798, Betancourt, in Spain, sent a spark by Leyden jars and a wire, twenty-six miles; and in the same year, Salva, at Madrid, worked for many miles what was called "an electric spark telegraph." (Ann. of Elec. 446.)

8. Bockman, in 1795, and Cavallo, in 1797, and also Lullin, about the same time, proposed the use of sparks, one, two or more to indicate letters, and thus reduce the number of wires as used by Reusser. This plan was specially noticed by Justice Woodbury in the suit of *Smith v. Downing*, as having a hint in it of the Morse telegraph.

9. In 1796, a telegraph invented by Dr. M. de F. Salva was announced. It is stated that a telegraph on a very grand scale was constructed, by which the Prince de la Paix of Spain "was informed, at night, of news which highly interested him." But there seems no reliable record of the mode adopted.

10. The researches into Morse's claims revealed the fact, but little known until then, that Harrison Gray Dyar, of New York, erected a telegraph of a single wire with glass insulators, on a line of poles on Long Island, in 1827. He used common, that is, frictional electricity, and but one wire, which operated by causing a spark, which, by passing through litmus paper, left a red mark on it, and then passed into the ground without a return wire circuit. The difference of time between the sparks was, by an arbitrary alphabet, as in the plan of Cavallo, Bockman, and Lullin, to signify different letters. The paper was moved by hand. It was abandoned in 1830, but was the nearest approach to a recording telegraph yet discovered. Its greatest difficulty was in the use of the incontinous, wild, easily dissipated frictional electricity. Had he studied Galvani or Volta, he might have succeeded. Singularly enough, Mr. Dyar states, what seems incredible, that, on making a proposal to construct a telegraph line between New

York and Philadelphia, shortly after his Long Island experiment, a writ was obtained against him and his partner, a Mr. Brown, of Providence, R. I., for "conspiracy to carry on secret communications from city to city," which so frightened them that Mr. Dyar fled from New York, and in 1828 left the United States and made his home abroad. Although thereafter residing in Paris, where any contribution to electric knowledge would have been welcomed and honored, there is no evidence that Mr. Dyar attempted, in any way, either to make his system known or to put it to practice. There is not the slightest evidence that Prof. Morse had any knowledge of Dyar's plans.

11. In 1814, a remarkable pamphlet was issued by Ralph Wedgewood, of England, who proposed a system which he called the Fulguric telegraph, which he says, "admits of writing in several distant places, at one and the same time, by the agency of two persons only," which, therefore, he said, "must be highly desirable to government, as affecting the most speedy and certain communication with every quarter of the world."

All these employed frictional electricity. None of them seemed to have known the meaning of the discovery of Volta in 1800, upon which the success of the present telegraphs is so largely based. Yet they showed how active were the minds of men in this direction.

12. The nineteenth century opened with Volta's great discovery of the pile which bears his name. It was based on the earlier discovery of Galvani, who found that by forming a chain of conducting substances between the outside of the muscles of the leg and the crural nerve of a frog, convulsions might be produced. Volta's pile was a profound result of the study of that discovery of Galvani. The pile was composed of alternate discs of silver and zinc, with card-board between, which had been soaked in salt water. This was the germ of the modern constant battery, as practically perfected by Daniell and Grove. It developed a cur-

rent, which, though imperfect, had a governable, reliable, dynamic power. This was the great need of electric science.

13. In 1811, Soemmering used the Voltaic pile in an experimental telegraphic line, in which he employed thirty-five wires, each of which, by being made to terminate in a glass reservoir of acidulated water, evolved, when the battery was applied, a gas bubble, and thus denoted the letter with which the terminus of the wire was connected. By his plan, he required seventy wires in all, thirty-five to send and as many to receive. It was a system of visible signals, an advanced sémaphore. About the same period Schweigger, of Halle, a man of much power of original thought, reduced this system of seventy wires to two, the letters being indicated, not by the bubbles, but the time elapsing between them. This was a great advance on Soemmering.

14. In 1816, Francis Ronalds, of Hammersmith, England, invented a telegraph, of which he published a full description in 1823, in which he used two clocks, one at each end of a buried wire, in front of which was suspended from an insulated wire an electrometer of Canton's pith balls. The clocks being synchronous, these balls were discharged as a brass plate or hand capable of being moved around the signal disc was made to touch a given letter, and thus communicated a series of signals representative of words or sentences. On this plan Ronalds worked a line of eight miles in length. But the process was very slow. He communicated his plan to the Admiralty, but was informed "that telegraphs of any kind were then wholly unnecessary, and that no other than the one in use would be adopted."

15. In 1819, Romagnesi, a physicist of Trent, and, eminently, Oersted, of Copenhagen, discovered the deflecting influence of a galvanic current on a free magnetic needle, in causing it to assume right angles from the direction of the current. On reversing the direction of the current, it was found that it also reversed the deflection of the needle. Here was the birth of the English

needle system. It was, indeed, the seed discovery of the coming telegraph.

16. In 1820, Schweigger, to whom we have already alluded, made the great and very suggestive discovery that the deflection of a needle may be increased by coiling an insulated wire in a series of oval or flat rings, compactly disposed in a loop, and thus conducting the current around the needle from end to end. Here was the galvanic multiplier, the very thought on which our modern relays are built!

17. In 1820, Ampère and La Place proposed to the French Academy of Sciences a telegraph in which a needle was employed for each letter.

18. In 1830, Ritchie surrounded each needle with a coil of wire, so as to disclose a letter when deflected, and Alexander, of Edinburgh, modified the same idea in 1837.

19. Schilling, of Cronstadt, matured a needle telegraph for Russia in 1836, but died before he had demonstrated it to his government.

20. The discovery from which at last grew the recording telegraph was made, or at least was first clearly stated, in 1821, by Ampère and Arago. Arago found that a piece of soft iron, when surrounded by a helix of wire and a current of galvanic electricity passed through it, becomes a temporary magnet. Sir Humphrey Davy arrived at the same result during the same year. Here was an important advance on the discovery of Schweigger, and to which it no doubt led.

21. In 1825, William Sturgeon, of London, found after much patient experimenting that, by coiling copper wire loosely around a varnished piece of insulated soft iron bent into the form of a horse-shoe, the successive coils being insulated from each other, he could convert the non-magnetic soft iron into an electromagnet at will, and as quickly restore it. Here, again, was the means provided for reciprocal motion, but by a much more powerful agent, an agent having, in connection with the Voltaic battery,

positive dynamic force. This triumph of discovery, which was a step still further in advance of Schweigger and Oersted, excited universal interest and attention. One of the most fruitful and permanently useful discoveries of the period was that of the laws of the electric current, so called, in 1827, by Ohm. All electrical measurements are based thereon. By the application of the "Ohm" law, the electrician can now establish, almost to a foot, the location of a fault in the great ocean cables. It was a grand contribution to science.

22. In 1829, Professor Joseph Henry, Professor of Physics in the Albany Academy, now the well-known Secretary of the Smithsonian Institution in Washington, acting on the experiments of Schweigger, Sturgeon and Oersted, constructed an electro-magnet weighing twenty-one pounds, twenty inches long, made out of an iron bar two inches square, and surrounded with 540 feet of insulated wire, wound in nine coils of sixty feet each. He proved that a small battery is capable of producing great magnetic effects if the spirals of the coils are numerous and the resistance to the passage of electricity not very great. He showed, also, that six short insulated wires used as a joint conductor were more powerful than three of double the length. Not only so, but he also made the important discovery, at a later date, however, that the electro-motive force of the galvanic current depended on the number, and not on the size of the cells or plates of the battery. Dr. Gale claimed that honor, but Henry had evident precedence, as his paper on this subject was published in 1831, long before Gale's claim. He also showed that, by a battery of many plates, and with the current made to pass around a bar of iron, encircled by a coil of insulated wire, it was possible to produce the physical result of motion with a feeble current at considerable distances from its source. In 1828 Moll constructed a magnet capable of sustaining 135 pounds.

23. In evidence given at a later period, it appears that Booth, in Dublin, in 1830, showed, without any practical illustrations so

far as is known, how electro-magnetism could be used to telegraph at a distance, by causing marks by the fall of an armature from the horse-shoe magnet.

24. In the same year, Barlow, of England, made an unsuccessful attempt to establish a telegraph on this idea, but failed for want of power.

25. In the same year, attention having now been thoroughly awakened to the development of magnetic power, Moll made a magnet, similar to Henry's, which sustained seventy-five pounds.

26. Professor Henry, by experiments in the same direction, made a magnet which sustained 2,063 pounds, and another capable of sustaining 3,500 pounds. The first of these is now in Yale College, the latter in the cabinet of Princeton College.



MICHAEL FARADAY.

27. During the same year, Faraday produced a strong circular motion by electro-magnetism at a distance, and by numerous interesting experiments in the same field with Henry, seems to have largely perfected our knowledge of that branch of inquiry. He has, without question, given the most exhaustive knowledge on the subject of the chemical effects of galvanism, and of the laws which govern it, of any of our scientists. In 1831 he was the first to obtain a spark from an electro-magnet, and in 1832 discovered electro-dynamic induction. Faraday, in 1847, suggested gutta percha as an insulator. His mind was one of the clearest, most conscientious and suggestive of the great scientists of Europe.

28. The needle telegraph, or alternate right and left deflection, based on the discovery of Oersted, was made practically perfect in 1837, and put into actual operation in 1838, on the line of the London and Blackwall Railway. It was the invention of William Fothergill Cooke, of England, who patented it. He used two conductors and two needles. Cooke was, however, indebted for his success to the great English electrician, Professor Wheatstone, one of the most prolific of the scientific minds of England, who first introduced the fine wire which now surrounds all our modern magnets, and thus made comparatively distant transmission by visual signs easy. The needle telegraph grew out of and was made possible by the discoveries of Romagnesi, Oersted, La Place, Ampère, Schweigger and Arago. It was not until 1845 that Cooke and Wheatstone patented an instrument with a single needle.

With all this knowledge, however, up to 1832 it is clear that no recording telegraph had been invented, or had anywhere been established. Two men were yet needed to produce it. These men were Morse and Daniell. Of these we now write.

#### THE DANIELL BATTERY.

Up to the year 1835, two important elements were still wanting to make the recording telegraph possible, and were absolutely

essential. The first was a battery of suitable constancy and certainty of action. The second was the means of distant transmission. The batteries hitherto invented under the Voltaic plan were seriously defective. They subsided rapidly. Their force was unequal. The sulphuric acid became quickly saturated with the oxide of zinc. The hydrogen precipitated itself upon the surface of the metals and stopped action. By the chemical action of the battery, the zinc contained in the sulphate of zinc was deposited in the condition of a crust upon the copper, where it had a purely local action. The escaping hydrogen of the battery dissipated the electricity. Impurities in the zinc also formed small circuits upon itself, wasting and impairing its proper action. These were all evils, and up to 1835, no means of relief from them had been found.

Sturgeon first stopped local action on the zinc surface by amalgamating it with mercury. Daniell invented the valuable device of the porous cup or cell. The cell, which could be made of plaster of Paris, animal membrane, earthenware or paper, divided the vessels containing the metals into two cells, one of which, the zinc cell, was filled with dilute sulphuric acid, in the proportion of ten parts water to one of acid, and the other with an acid solution of sulphate of copper. The porous cup prevented the passage of the sulphate of zinc to the copper plate. Action was thus made regular and constant. The sulphate of copper was thus decomposed into sulphuric acid and the protoxide of copper. The sulphuric acid passed through the porous cup into the zinc cell, there to act upon the oxide of zinc, while the oxide of copper was again decomposed into oxygen and metallic copper. The oxygen united with the nascent hydrogen formed in the oxydation of the zinc to form water, and the metallic copper was deposited on the copper plate, keeping it constantly bright and improving it as a conductor. Here were the elements not only of constancy, but power. These were what Morse needed; what he could do nothing without; without which, his invention would have failed.

Morse needed Daniell. It is thus that great inventions are cumulative.

Grove soon after invented a battery still more powerful, yet less constant, employing for metals zinc and platinum, and nitric and sulphuric acids. This was the battery first used on the Morse lines, and by some still preferred. Bunsen substituted carbon for platinum. The simple principle of gravity on which the Callaud battery has been invented, leading to the superposition of the zinc as the lightest element over the sulphate of copper, invented by Varley in 1854, has of late years dispensed almost entirely with the porous cell. The Daniell battery was one of the last great boons to the evolution of the telegraph. The battery was now perfect, so far as necessary power and constancy was concerned.

Morse's entrance into the circle of inventors was sudden and unexpected. His invention and his mode of elaborating it has been given in his own language. He was a painter, educated, indeed, in general electric science to the extent attainable by collegiate instruction and intimacy with professional teachers, but having never pursued its study with reference to practical results. He entered now, not so much to discover, although even in this he has earned a permanent fame, as to invent and combine. He brought into use the painter's art, greater in his than in any other—the blending, the combining of things known. He took familiar elements, and, with a dexterity which looked like inspiration, put them together. He then invented a language by which they could find expression. Up to his time, it is well known that there had been, practically, no telegraphic language. Morse gave the alphabet of that language, and it is to-day acknowledged and employed by all nations, as the telegraphic idiom of the world. There was also, as all know, up to Morse's time no recording telegraph. Morse also gave that, and it is in preferential use by every nation on the earth. He completed the great work to which all these men, with their uplifted torches, were, with sublime fidelity and genius, leading the way.

## THE RELAY.

"Morse made his discovery of the relay in 1836. It was the discovery of a means by which the current, which, through distance from its source had become feeble, could be reinforced or renewed by its own action. It made transmission from one point on a main line through indefinitely great distances, and through an indefinite number of branch lines, and to an indefinite number of stations, and registration at them all, by the manipulation of a single operator at a single station, both possible and practicable."

Professor Morse writes of it as follows :

"Early in 1836, I procured forty feet of wire, and putting it in the circuit, I found that my battery of one cup was not sufficient to work my instrument. This result suggested to me the probability that the magnetism to be obtained from the electric current would diminish in proportion as the circuit was lengthened, so as to be insufficient for any practical purposes at great distances. To remove that probable obstacle to my success, I conceived the idea of combining two or more circuits together, in the manner described in my first patent, each with an independent battery, making use of the magnetism of the current on the first to close and break the second, the third, and so on. This contrivance was fully set forth in my patents. My chief concern, therefore, on my subsequent patents, was to ascertain to what distance from the battery, sufficient magnetism could be obtained to vibrate a piece of metal, knowing that, if I could obtain the least motion at the distance of eight or ten miles, the ultimate object was within my grasp. A practical mode of communicating the impulse of one circuit to another, such as that described in my patent of 1840, was matured as early as the spring of 1837, and exhibited then to Professor Gale, my confidential friend."

This was a most invaluable invention, and both in its use in connection with the local circuit of offices and in repeaters for distant writing, is, perhaps, the most brilliant feature of the modern telegraph, as invented by Morse.

It seems important, as well as interesting, although this is not designed either as a history of invention, or as a defense of Professor Morse's claims as an inventor, to add the following sketch

written by Morse's intimate friend and associate, Professor L. D. Gale, with whom, as well as with Professor Morse and Mr. Vail, the editor of this volume was on intimate terms when the telegraph was first presented to the public, and can therefore testify to its credibility and value. He says, after a careful description of the machine, which it is unnecessary here to repeat :

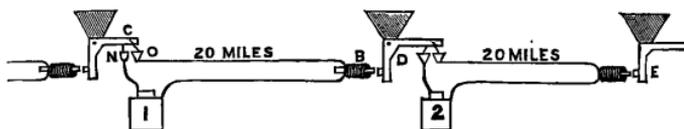
#### DR. GALE'S STATEMENT.

" During the year 1836, and beginning of 1837, the studies of Professor Morse on his telegraph I found much interrupted by his attention to his professional duties. I understood that want of pecuniary means prevented him from procuring to be made such mechanical improvements and such substantial workmanship as would make the operation of his invention more exact. \* \* \* From April to September, 1837, Professor Morse and myself were engaged together in the work of preparing magnets, winding wire, constructing batteries, etc., in the university for an experiment on a larger but still very limited scale, in the little leisure that each had to spare, and being, at the same time, both much cramped for funds. The labors of Professor Morse were, at this period, mostly directed to modifications of his instruments for marking, contriving the best modes of marking, varying the pencil, the pen, using plumbago and ink, and varying also the form of the paper, from a slip of paper to a sheet. In the latter part of August, 1837, the operation of the instruments was shown to numerous visitors at the university. It was early a question between Professor Morse and myself where was the limit of the magnetic power to move a lever. I expressed a doubt whether a lever could be moved by this power at a distance of twenty miles, and my settled conviction was that it could not be done with sufficient force to mark characters on paper at one hundred miles distance. To this Professor Morse was accustomed to reply: '*If I can succeed in working a magnet ten miles, I can go round the globe.*' He often said to me: '*It matters not how delicate the movement may be, if I can obtain it at all, it is all I want.*' He always expressed his confidence of success in propagating magnetic power through any distance of electric conductors which circumstances might render desirable. This plan was thus often explained to me. 'Suppose,' said Professor Morse, 'that in experimenting on twenty miles of wire we should find that the power of magnetism is so feeble that it will move a lever with certainty but a hair's breadth. That would be insufficient, it may be, to write or print, yet it would be sufficient to close and break another on a second circuit

twenty miles farther, and the second circuit could be made, in the same manner, to break and close a third circuit twenty miles farther, and so on around the globe.'

"This general statement of the means to be resorted to was shown to me more in detail early in the spring of the year 1837.

"The apparatus was arranged on a plan substantially as indicated in the accompanying sketch. One (1) is a battery at one terminus of a line of conductors representing twenty miles in length, from one pole of which the conductor proceeds to the helix of an electro-magnet at the other terminus (the helix forming part of the conductor); thence it returns to the battery end, terminating in a battery cup, O. From the contiguous mercury cup, *p*, a wire proceeds to the other pole of the battery; when the fork of the lever, C, unites the two cups of mercury, the circuit is complete, and the magnet, B, is charged, and attracts the armature of the lever, D, which connects the circuit of battery 2 in the same manner, which again operates in turn the lever, E, twenty miles farther, and so on. This was the plan then and there revealed and shown to me by Professor Morse, and which, so far as I know, has constituted an essential part of his electro-magnetic telegraph from that date to the present time."



On this feature of Professor Morse's invention, so essential to its success, much bitter controversy arose. Its originality with Morse was denied. Some contended that he found it in Europe. Others claimed it for Professor Henry. Anxious to know the facts in the case, the writer wrote Hon. Amos Kendall on the general subject, and who courteously replied at much length. The following is a part of his interesting letter:

"DEAR FRIEND REID:

"\* \* \* There is one feature in Mr. Morse's invention which some men are still disposed to deny to him. It is the combined circuit. Their denial is based entirely on a misapprehension of some of Professor Henry's statements, contained in sundry depositions. I deem it unnecessary to analyze those statements, because there is conclusive

evidence from Professor Henry himself that he knew nothing of that part of Morse's invention until more than two years after it was perfected. While Mr. Morse was in Europe, in 1838-39, Henry borrowed his wire of Dr. Gale for the purpose of experimenting upon electro-magnetism at Princeton. On his return, Morse wrote to Henry, approving the loan of wire, and, among other things, inquiring whether, in his experiments, he had become acquainted with any fact tending to show that his plan of an electro-magnetic telegraph was impracticable."

To this Professor Henry replied as follows :

" PRINCETON, *May 6, 1839.*

" DEAR SIR: Your favor of the 24th ult. came to Princeton during my absence, which will account for the long delay of my answer. I am pleased to learn that you fully sanction the loan which I obtained from Dr. Gale of your wire, and I shall be happy if any of the results are found to have a practical bearing on the electrical telegraph.

" I am acquainted with no fact which would lead me to suppose that the project of the electric telegraph is impracticable. On the contrary, I believe that science is now ripe for the application, and that there are no difficulties in the way but such as ingenuity and enterprise may obviate. But what form of the apparatus, or what application of the power will prove best, can, I believe, be only determined by careful experiment. I can say, however, that, so far as I am acquainted with the minutæ of your plan, I see no practical difficulty in the way of its application for comparatively short distances; but, if the length of the wire between the stations be great, I think some other modification will be found necessary in order to develop a sufficient power at the further end of the line.

" I shall, however, be happy to converse freely with you on these points when we meet. In the meantime, I remain, with much respect,

" Yours, &c.,

" JOSEPH HENRY.'

" *To Professor Morse.*"

Mr. Kendall then sums up as follows :

" This letter establishes the following facts, viz.:

" 1. That Professor Henry had been experimenting upon electricity with Professor Morse's wire, previously used by him in New York.

" 2. That at the date of this letter, *upwards of eight years* after the publication of his experiments in Silliman's *Journal*, which have been largely quoted as virtually an invention of the electro-magnetic tel-

egraph, Professor Henry had no definite idea of the form of such a telegraph, and supposed there were still difficulties which it would require 'ingenuity and enterprise' to overcome.

"3. That, although it has been confidently asserted that Professor Henry's experiments, published in 1831, had shown how abundant magnetic force could be obtained on a circuit of any extent, Professor Henry himself, more than eight years thereafter, deemed something more necessary for that purpose on circuits of great length.

"4. That supposing Professor Morse's plan to be a telegraph of a single circuit, he deemed some modification of that plan necessary, when the circuit should be of great length, 'in order to develop a sufficient power at the farther end of the line.'

"5. Professor Henry did not then suggest, and the inference is irresistible that he had not before suggested, to Professor Morse any specific modification calculated to effect that object.

"Yet Professor Morse, more than two years before, had not only devised but actually constructed, in his combined circuits, the 'modification' Professor Henry in May, 1839, thought still to be necessary, and in April, 1838, had embraced it in his specification then filed in the Patent Office.

"Professor Henry never claimed to have invented the telegraph, or this part of it. He greatly improved the electro-magnet, and thereby facilitated invention, and in that Oersted, Schweigger, Sturgeon and others are entitled to an equal share."

He adds:

"Truth is slowly making its way against error. Even the adversary counsel in a late argument before the Supreme Court of the United States, admitted that Professor Morse was the first to invent '*a practically useful electro-magnetic marking telegraph.*' The world will not hesitate to believe that which interested counsel do not think it expedient to deny. \* \*

"Yours sincerely,

"AMOS KENDALL."

It is only necessary to add Prof. Henry's noble and encouraging letter of February 24, 1842. He wrote from Princeton college:

"About the same time with yourself, Prof. Wheatstone, of London, and Prof. Steinheil, of Germany, proposed plans of electro-magnetic telegraph. These differ as much from yours as the common principle

would well permit. Unless some essential improvements have lately been made in these European plans *I should prefer the one invented by yourself.* With my best wishes for your success,

“I remain, with much esteem,

“JOSEPH HENRY.”

The discovery of the relay led to a most important result, as will be seen by the following effect of its explanation to one who afterward became Mr. Morse's partner, procured him the means to complete the invention for public exhibition and use, and was otherwise of service to him.

The experiment of Professor Henry which gave rise to the idea that it may have aided Morse in devising the relay and local circuit, is too interesting to be omitted. Henry had constructed an immense magnet, acted upon by a battery in a short circuit. He now conceived the idea of demonstrating to his class how little power was necessary to produce a great mechanical effect. He therefore introduced a magnet into the circuit to hold the terminals of the divided wire together, and which, when opened, of course caused the weight borne by the magnet to drop. Booth attempted this plan in connection with a telegraph in 1830, and failed. So of Barlow. Morse did a like thing to produce reciprocal action of a very different character. He used it to reproduce—to open and close circuits to secure distant transmission.

The first completed instrument for recording, was first tested in 1835. It resembled in external appearance, a small melodeon, having a key-board on which were the letters, figures, periods, commas, etc. These keys were levers. The ends of the levers, distant from the seat of the operator, were in connection with brass circular disks, upon the rims of which were prominences and depressions of unequal length, so arranged that the prominences would close and the depressions open the magnetic circuit, and thus magnetize and demagnetize a bar of soft iron. Morse had laid aside his type rule or automatic process, but adopted another

practically the same. The automatic mode still held preference in his mind, as most likely to secure mechanical accuracy.

In reference to this new manipulator, Mr. Morse wrote: "When magnetized, the bar of iron referred to, drew to itself one end of a lever, having an iron armature, to the other end of which a pencil or pen was attached, the point of which, by this action of the magnet, was pressed against a moving ribbon of paper; when the bar was demagnetized, the lever was restored to its original position by a spring, and the pencil lifted from the paper. It is easy to see that an arrangement of prominences and depressions, or *conductors and non-conductors*, on the brass circles, might be so contrived that each key should produce its own particular set of lines, dots, and spaces." This was the first practical registering telegraph. It was the thought of 1832 on the Sully, tested in 1835. Before the patent was issued the clumsy key-board and disks had given place to the modern key, happily named "the correspondent," and the pencil to the metallic stylus striking against a groove, indenting the paper, as in the registers still in use. The exhibition of this crude machine on the 2d September, 1837, in the presence of Professor Daubeny, of the English Oxford University, Professor Torrey, Mr. Alfred Vail and others, so demonstrated to all present the practicability of the invention, that it resulted in enlisting the means, the mechanical skill and zeal of Mr. Alfred Vail, and his brother George, who, after thorough inquiry into the device designed to renew the power of the current to any distance required, furnished Mr. Morse with the means, material and labor for an experiment on a larger scale, and finally led to placing the machinery in condition for public inspection and use. So useful was Mr. Alfred Vale to Professor Morse, and so helpful and ingenious was he in the planning of the construction of the register as now employed, that Professor Morse assigned to him one-fourth interest in the patent, and they ever afterward worked together in harmony and mutual esteem. Professor Morse, in after years, thus kindly wrote of him: "It is especially to the attention and skill,

and faith in the full success of the enterprise maintained by Alfred Vail, that is due the success of my endeavors to bring the telegraph at that time creditably before the public."

In a letter to a friend Mr. Morse writes:

"Up to the Autumn of 1837, my telegraphic apparatus existed in so rude a form that I felt reluctance to have it seen. My means were very limited, so limited as to preclude the possibility of constructing an apparatus of such mechanical finish as to warrant my success in venturing upon its public exhibition. I had no wish to expose to ridicule the representative of so many hours of laborious thought. Prior to the summer of 1837, at which time Mr. Alfred Vail's attention became attracted to my telegraph, I depended upon my pencil for subsistence. Indeed, so straitened were my circumstances, that in order to save time to carry out my invention, and to economize my scanty means, I had for months lodged and eaten in my studio, procuring my food in small quantities from some grocery, and preparing it myself. To conceal from my friends the stinted manner in which I lived, I was in the habit of bringing my food to my room in the evenings, and this was my mode of life for many years."

The discovery of the relay was the first sure step to success and fortune. There is a curious fact connected with the history of the relay. It could not be patented in Germany, and, therefore, could not with safety be exposed. In 1848, two young Americans named Charles Robinson and Charles L. Chapin, had gone there with Morse machinery to try their fortunes in building lines. Wheatstone had a dial instrument in use on a short railroad line, but its action was feeble and unsatisfactory. Robinson and Chapin now built a line of telegraph from Hamburg to Cuxhaven, a distance of 90 miles, by which to transmit marine news. The magnets, however, were carefully locked up in boxes, just as Vail did in Washington and Philadelphia. The line worked charmingly. The registers clicked out loud and strong at either end. The German electricians scratched their heads and wondered. Finally, Steinheil was sent on to make observations. He was a man of genius and culture, and had a telegraph at work in Europe before Morse in America. He looked carefully around,

and his keen eyes soon saw the locked boxes. He asked to see their contents. But the view was courteously declined. So he returned and complained that the Yankees kept their secret locked, but that the action was magnificent. When, however, at a later date, he did finally know all, he showed the grand stuff of which he was made. He gave Morse his hand, confessed himself beaten, and the two were friends forever after.

The second or combined circuit has been claimed for Prof. Henry, for Sir Charles Wheatstone, and Davy. In the case of Prof. Henry no publication of any such claim appears previous to his deposition in 1849. C. B. Moss, a chief witness in the great suit at Philadelphia, where Morse's patent was attacked, claimed the honor for Davy, who enrolled his method January 4, 1839, dating his invention July 4, 1838. Morse's combined circuit was known and explained to Dr. Gale on or about the 7th of March, 1837, a date prior to any claim for either Wheatstone, Henry or Davy. Wheatstone's patent was unlike Morse's in its parts, purposes and results, and was enrolled December, 1837. Henry says he saw it on April 1 of that year. There is nothing to prove Wheatstone's priority — certainly nothing to show Morse's indebtedness to him. The true inventor of the relay or combined circuit we sketch for the defense of History. His name is unknown. The principle, however, is clear. The fall of a single brick can perpetuate itself forever. Morse saw and applied it. Whose hand upset that brick?



## CHAPTER IX.

## THE STRUGGLE.

"Eager to hope, but not less firm to bear,  
Acquainted with all feelings, save despair."

—[Byron.

WITH the year 1837 the subject of electric telegraphs seems to have burst upon public attention both in Europe and America, and everywhere awakened a deep interest therein. This was quickened, in America, by the arrival, in 1837, of two Frenchmen, Gouon and Servell, who announced publicly the possession of a system of telegraphing adapted for public use, but which, on examination, proved to be only a modification of Chappé's semaphoric or ærial telegraph. The proposal to erect a telegraph on this system, however, attracted the attention of Congress, and some aid was proposed to the foreign inventors. Of course Morse's apprehensions were awakened, and he devoted himself now more assiduously than ever to the perfection of his instrument. One of the evidences of public interest was shown in a communication from Hon. Levi Woodbury, Secretary of the Treasury, dated March 10, 1837, entitled "Circular to certain Collectors of the Customs, Commanders of Revenue Cutters and other persons, desiring information in regard "to the propriety of establishing a system of telegraphs for the United States," in compliance with a resolution passed by the House of Representatives, a copy of which seems to have been subsequently specially

addressed to Professor Morse. To this circular Mr. Morse replied at great length giving comparative estimates of the cost of a telegraph under ground or in the air, and stating the peculiarities and history of his own invention.

Interest was also aroused in another direction. In October, 1837, Prof. Morse was approached by speculators, not unlikely by men connected with the public lotteries then so active, for the construction of a private telegraph line of two hundred miles in length. They were quick-witted enough to see that an electric telegraph was better than the swiftest pigeons. They were just the men to see its great value.

Quickened by all these indications Prof. Morse secured Prof. L. D. Gale, already referred to, as a partner, and now Vail, Gale and Morse commenced active preparations to perfect the invention for public presentation. The first instrument constructed was the work of Mr. Alfred Vail, aided by his father, Judge Stephen Vail, and his brother, Hon. George Vail, M. C. It differed little from the modern register except in the absence of the elegance of the apparatus now provided by our telegraph instrument manufacturers, and in having four pen points or styles instead of one. It was a substantial and powerful instrument, with coils several times larger than those now employed, and the wire which encircled the cores of the magnet was also of a larger size than that now in use. The works were enclosed behind solid surfaces, and the stylus was made to strike laterally upon the paper instead of upwards, as in later styles. These instruments employed three persons, one to translate, one to copy, one to wind!

The first experiment was made with three miles of copper wire around a room of the factory of the Vails at the Speedwell Iron Works, Morristown, New Jersey, January 6, 1838, and was quite successful. It was now determined to exhibit it in public, and accordingly invitations were sent to a number of intelligent citizens to meet Prof. Morse in the Geological Cabinet of the Uni-

versity, Washington square, New York. On January 24th a large assemblage gathered in answer to the invitation, some of whom have left on record their recollections of that eventful day, and of the modesty and quiet self-possession of the inventor, now happily beginning to see the fruition of his years of thought and toil.

It was arranged that gentlemen present were to prepare dispatches for transmission, and which were to be translated by some one who had no knowledge of their contents. A number of messages were successfully transmitted in this way to the amusement and delight of the audience. One, especially, addressed to the universe, directing it to wheel round by kingdoms, caused universal laughter and astonishment. The record of this message is still preserved. The exhibition was, in every respect, a complete success. The congratulations of the brilliant company were warm and loud. The triumph was perfect. Public attention was now thoroughly aroused.

On the 8th of February, 1838, in response to an invitation from the Franklin Institute of Philadelphia, Prof. Morse exhibited the new telegraph before the Committee of Science and Arts of that institution, who reported their high gratification, and expressed their desire that government would give the means of testing it on an extensive scale. It was in answer to a letter written about this time to his brother, Sidney E. Morse, that the latter replied as follows :

“Your invention, measuring it by the power which it will give to man to accomplish his plans, is not only the greatest invention of this age, but the greatest invention of any age. I see as an almost immediate effect, that the surface of the earth will be net-worked with wire, and every wire will be a nerve, conveying to every part intelligence of what is doing in every other part. The earth will become a huge animal with ten million hands, and in every hand a pen to record whatever the directing soul may dictate ! No limit can be assigned to the value of the invention.”

Prof. Morse, himself, shortly after an exhibition of his apparatus before the President of the United States and his cabinet

which gave great satisfaction, wrote to his friend and partner, Alfred Vail, as follows:

"Every thing looks encouraging, but I need not say to you that in this world a continued course of prosperity is not a rational expectation. We shall, doubtless, find troubles and difficulties in store for us, and it is the part of true wisdom to be prepared for whatever may await us. If our hearts are right, we shall not be taken by surprise. I see nothing now but an unclouded prospect, for which let us pay to Him who shows it to us the homage of grateful and obedient hearts, with most earnest prayers for grace to use prosperity aright."

The spirit of devoutness shown in the extract thus given seems to indicate this as the proper place to insert an extract from a letter written by Robert C. Rankin, Esq., now of Newburgh, New York, and for which we are indebted to Dr. Prime's work, which gives an insight into the thoughts of Prof. Morse in regard to his invention which are due to his memory. He writes of Prof. Morse to Rev. Dr. Prime, as follows:

"Mr. Morse said to me, in the progress of a long conversation on the subject of magnetism, that he had long been impressed with the belief that God had created the great forces of nature not only as manifestations of his own infinite power but as expressions of good will to man, to do him good, and that every one of God's great forces could yet be utilized for man's welfare. He thought that modern science was constantly evolving from the hitherto hidden secrets of nature some new development promotive of human benefit, and that at no distant day magnetism would do more for the advancement of human sociology than any of the material forces now known. He said that he would scarcely dare to compare spiritual with material forces, yet that, analogically, magnetism would do in the advancement of human welfare what the Spirit of God would do in the moral renovation of man's nature. It would educate and enlarge the forces of the world. He said he had felt as if he himself was doing a great work for God's glory as well as for man's welfare. Such had been his long cherished thought. His whole soul and heart appeared filled with a glow of love and good will, and his sensitive and impassioned nature seemed almost to transform him, in my eyes, into a prophet."

Activity was now essential. On every side rival inventors and

inventions were taken up and heralded. It was deemed necessary at once to secure patents in Europe. To aid in accomplishing this, Hon. F. O. J. Smith, a member of the House of Representatives, resigned and became interested in the invention. As member of Congress and chairman of the committee on commerce, this gentleman had already reported, April 6, 1838, in favor of an appropriation by Congress of thirty thousand dollars to give a test over fifty miles of telegraph, equal to one hundred miles of actual wire circuit. He now set out with Mr. Morse for England, and a patent was immediately applied for at the Patent Office in London. The time was unfortunate. Wheatstone and Cooke, of London, had already obtained a patent for a Magnetic Needle Telegraph, requiring six conductors between the points of intercommunication. It did not record, yet the inventors had obtained, as was natural, much *eclat* from their countrymen for what was indeed a meritorious and beautiful invention, although essentially different and very apparently inferior to the American. Morse made his application under such circumstances. He paid the customary fees and entered his caveats. These were matters of routine. The sanction, however, of the Attorney-General was now necessary. Wheatstone and Cooke and Mr. Davy objected to procedure. A hearing before the Attorney-General was ordered July 12, 1838. Morse took his apparatus with him to show its utter difference from the English telegraph. The Attorney-General would not even examine it. He summarily refused permission to proceed in the work of obtaining a patent, because the London Mechanics' Magazine for February 18, 1838, had published an article from Silliman's American Journal of Science, describing the invention in its number for October, 1837. This was a great blow. Efforts were urgently made to obtain another hearing, which was granted, but with the like result. The Attorney-General would not listen to argument. He decided that publication had been made, and that made procedure impossible. There was no appeal from this decision but to Par-

liament. That required influence, time and money. The first could have been obtained. Some of the most distinguished men in England became deeply interested in the invention. These included the Earls of Elgin and Lincoln, Hon. Henry Drummond, the Marquis of Northampton and others, and from whom he had the promise of assistance in any effort to obtain an act of Parliament. But time was too valuable and money too scarce, and the idea was abandoned.

France was very hearty in her recognition. A patent was speedily granted. Arago, one of the grandest men France ever gave to the world, introduced Morse and submitted the Telegraph approvingly to the French Institute at one of their meetings. Some of the brightest men of Europe were present. Its reception was in the highest degree flattering. Guy Lussac gave it his unqualified admiration. Baron Humboldt said that the Morse invention was the best of all the plans that had been devised, and in the presence of the Institute arose, took Morse by the hand, and congratulated him in strong and hearty terms. Alphonse Foy, Administrator in Chief of French Telegraphs, saw it and said he should report it as "*the best which had been submitted to him.*" The Paris papers also announced it in the most favorable terms. While on exhibition in Paris it was seen and admired by men and women distinguished in science or in letters from England, Spain, Russia, Italy and America, besides the Parisians and other Frenchmen. Robert Walsh, Esq., at one of these exhibitions, came to Mr. Morse and said: "The next word you must write is IMMORTALITY. The problem is solved; man may instantly converse with his fellow man in any part of the world." The press throughout Europe spoke of the invention with enthusiasm.

But this was all. France could issue a patent only on the invention being put in actual operation within two years. To meet this, an agreement was made with the St. Germain Railroad Company to erect a line of telegraph upon their road; but this

was made useless by the government interference, the establishment of a telegraph by private parties being regarded as against public policy, and that it must be a government monopoly. Here was tyranny with a vengeance. Thus success and congratulation and failure went hand in hand.

Many years of darkness and struggle and poverty were yet to come, which happily he could not see. In the meantime it became necessary to return to America, and accordingly he sailed for New York on the steamship Great Western, arriving April 15, 1839. In the following year the first patent, hitherto held back for prudential reasons, was issued.

Now followed years of the most painful character. We cannot enter into their detail. A few items only are given. Morse, in writing to Alfred Vail, about the close of 1841, says: "*I have not a cent in the world.*" To his partner, Smith, after another year of waiting and anxiety and poverty had passed, much praised but little helped, he wrote as follows:

"While, so far as the invention is concerned, every thing is favorable, I find myself without sympathy or help from any who are associated with me, whose interest one would think would impel them at least to inquire if they could render some assistance. For nearly two years past I have devoted all my time and scanty means, living on a mere pittance, denying myself all pleasures, and even necessary food, that I might have a sum to put my telegraph into such a position before Congress as to insure success to the common enterprise. I am crushed for want of means; and means of so trifling a character, too, that they who know how to ask (which I do not) could obtain in a few hours. One year more has gone for want of these means. I have now ascertained that, however unpromising were the times last session, if I could but have gone to Washington I could have got some aid to enable me to insure success at the next session. As it is, although every thing is favorable, although I have no competition, and no opposition — on the contrary, although every member of Congress, so far as I can learn, is favorable — yet I fear all will fail because I am too poor to risk the trifling expense which my journey and residence in Washington will occasion me. *I will not run in debt*, if I lose the whole matter. So, unless I have the means from some source, I shall be compelled, how-

ever reluctantly, to leave it. No one can tell the days and months of anxiety and labor I have had in perfecting my telegraphic apparatus. For want of means I have been compelled to make with my own hands (and to labor for weeks) a piece of mechanism which could be made much better, and in a tenth part of the time, by a good mechanician, thus wasting time—time which I cannot recall, and which seems double-winged to me.

“‘Hope deferred maketh the heart sick.’ It is true, and I have known the full meaning of it. Nothing but the consciousness that I have an invention which is to mark an era in human civilization, and which is to contribute to the happiness of millions, would have sustained me through so many and such lengthened trials of patience in perfecting it.”

Porte Crayon gives a sketch of one of his darkest days. It was very dark. Yet there is a glimmer in it. There is at least no despair. It was at a time when Morse taught as Professor at the New York University. He says:

“I engaged to become one of Morse's pupils. He had three others. I soon found that the Professor had little patronage. I paid my fifty dollars; that settled one quarter's instruction. I remember when the second was due my remittance from home did not come as expected and one day the Professor came in, and said courteously:

“‘Well, Strother, my boy, how are we off for money?’

“‘Why, Professor, I am sorry to say I have been disappointed; but I expect a remittance next week.’

“‘Next week!’ he repeated sadly; ‘I shall be dead by that time.’

“‘Dead, sir?’

“‘Yes; dead by starvation!’

“I was distressed and astonished. I said hurriedly:

“‘Would ten dollars be of any service?’

“‘Ten dollars would save my life; that is all it would do.’

“I paid the money, all that I had, and we dined together. It was a modest meal, but good; and after we had finished he said:

“‘This is my first meal for twenty-four hours. Strother, don't be an artist. It means beggary. A house dog lives better. The very sensitiveness that stimulates an artist to work, keeps him alive to suffering.’”

That was pretty dark. But it was the dark hour that precedes the day. The dawn was close at hand. When led out of this biting poverty, as he not long after was, it would be natural to

find some excitement. But the courtesy which dignified suffering, chastened exultation. See how it affects him as the day gives a glimmer of its coming. Writing to his daughter, he says :

“There are now indications of a change, and while I prepare for disappointment, and wish you to prepare for disappointment, we ought to acknowledge the kind hand of our heavenly Father in so far prospering me as to put me in the honorable light before the world, which is now my lot. With this eminence is connected the prospect of pecuniary prosperity. Yet this is not consummated, but only in prospect; it may be a long time before any thing is realized. Study, therefore, prudence and economy in all things; make your wants as few as possible, for the habit thus acquired will be of advantage to you, whether you have much or little.”

There is to be found throughout his history, both in the struggle with poverty as afterward in the more bitter and exasperating contest with men who sought to steal his fame and rewards, a quiet self-possession, a belief in himself as an agent of a Divine purpose. He believed with Thompson, that “Who his great purpose yields, he is the only villain of the world.” This gave him a self-poise and sublime fixity of purpose, which he never surrendered. It made him vigorous in the assertion of his claims as inventor. The Magnetic Telegraph was his child. He never hesitated to defend it. Yet he maintained even in controversy an unbroken gentleness of manner and mind. A dignified placidity in success as in disappointment, characterized him to the end. He stood before the crowned heads and in the presence of the finest minds of Europe unelated by the respectful homage which was finally every where paid to him, and toward the close of his life would sit with the writer of this at noon and eat his apple lunch, chuckling with a quiet laugh over some story of bygone days, with the simplicity and cheerfulness of a child.

It was during these years of darkness and uncertainty that Prof. Morse still with his mind bent on the possibilities of his

invention, prepared to make an experiment which would give a new proof of its value. In the summer of 1842 he insulated a wire of two miles in length with hempen threads well saturated with pitch, tar and surrounded with India rubber. On the 18th of October, on a bright moonlight night, he had this wire laid by aid of a reel and a small boat, between Castle Garden and Governor's Island, the professor unreeling the wire while one man rowed the boat. Before it could be exhibited, however, although not before several signals had been passed through it, the cable was drawn up by the anchor of a boat, and part of it carried off by the sailors. The experiment was renewed in Washington in the following December through the waters of the canal there with complete success. Both of these experiments are mentioned in detail in his letter to the Secretary of the Treasury, December 23, 1844.

After studying carefully Mr. Morse's life, so far as it has been revealed to us, during the four dark years preceding 1843, we find it to be true in his case, as in that of most other men, that these very years were of great value to him, although full of suffering from various causes. They gave him time to experiment on many points in which his information was more or less defective. The relation of the battery to the current and the conductor, the multiplication of pairs to secure certain distant developments of magnetism, the laws of resistance, the battery itself, as yet not thoroughly comprehended — all these needed study, experiment often and repeated under different circumstances to make him master of the situation and to render the necessary appliances of the invention perfect. It was the old London lesson of his Hercules repeated. So the darkness of these years, their poverty, their bitterness, the selfishness and meanness which crops out so markedly on the part of those most deeply interested — all these, dark as they seemed, were golden years to him — all of them needed to prepare him for his coming struggle. Even as late as 1841, he says: "At an early age of my experiments I found that the magnetic power produced in an electro-magnet, by a single

galvanic pair, diminished rapidly as the length of the conductor increased. I was aware that by multiplying the pairs in the battery, that is, increasing the intensity of its propulsive power, certain effects could be produced at great distances, such as a visible spark, the decomposition of water, and the deflection of a needle. But as magnetic effects, except in the latter case, had not, to my knowledge, been made the subject of careful experiment, and as the various effects of electrical action seemed, in some respects, to be obedient to different laws, I did not feel entirely assured that magnetism could be produced by a multiplication of pairs sufficiently powerful at a great distance to effect my purpose. From a series of experiments which I made, in conjunction with Prof. Fisher, during the last summer, upon thirty-three miles of wire, the interesting fact so favorable to my telegraphic system was fully verified, that *while the distance increased in an arithmetical ratio, an addition to the series of galvanic pairs of plates increased the magnetic power in a geometric ratio.* The weight upheld by the magnet from the magnetism produced by fifty pairs, gradually diminished up to the distance of ten miles, after which *the addition of miles of wire up to thirty-three miles caused no further diminution of power.* The practical deduction from these experiments is the fact that, with a very small battery, all the effects I desire, and at any distance, can be produced. In the experiments alluded to the fifty pairs did not occupy a space of more than eight cubic inches, and they comprised but fifty square inches of actual surface. The practicability of establishing my telegraph system is thus relieved from all scientific objections." In the attainment of knowledge so valuable as this, and in many other directions more or less important, these years, so apparently black and bitter, were full of the elements on which success was finally assured.

In one of his reports to the Secretary of the Treasury, Mr. Morse shows how valuable were these experiments. He says in allusion to some of them :

"The experiments alluded to were tried on Tuesday, and with perfect success. I had prepared a galvanic battery of three hundred pairs, in order to have ample power at my command, but to my great gratification I found that one hundred pairs were sufficient to produce all the effects I desired through the whole distance of one hundred and sixty miles.

"Some careful experiments on the decomposing power of various distances were made, from which the law of propulsion has been deduced, verifying the results of them, and those which I made in the summer of 1842, and alluded to in my letter to Hon. C. G. Ferris, and published in the House report No. 17, of the last Congress.

"The practical experience from this law is, that a telegraphic communication on the electro-magnetic plan may with certainty be established ACROSS THE ATLANTIC OCEAN. Startling as this may now seem, I am confident the time will come when the project will be realized."

Surely these experiments were not lost, even if they were performed amid the discouragements produced by poverty and human selfishness which all the world's great toilers have had at some time or another in their lives to meet and contend with before victory came.

"Man, like a cassia, is proved best being bruised."

To us, as we write, these clouded days seem like the darkness which nature deepens just before she pushes aside the purple curtains of the morning to let in the soft grey light of the dawn.

## CHAPTER X.

## SUCCESS.

“’Tis not in mortals to command success ;  
But we’ll do more, Sempronius, we’ll deserve it.”

HAVING now thoroughly completed his machinery, Morse went with it to Washington. On the invitation of the President it was successfully exhibited in the presence of himself and Cabinet, February 21, 1838, and elicited their warm and gratified interest. He now determined to ask Congress for aid to make a thorough public exhibition of its capacity on an actual line of such length as to make it a positive proof of what it could accomplish. In this he was encouraged by his friends. Acting upon this determination, on December 6, 1842, he wrote an exhaustive letter to Hon. C. G. Ferris, an influential member of the House committee on commerce, of which Hon. F. O. J. Smith had been chairman, in which he gave a minute history of the invention, stated fully the basis of his claims as the inventor, and asked that through his committee an appeal might be made to Congress for the means to erect an experimental line to prove its value. Mr. Ferris was much impressed with Mr. Morse’s paper, and became warmly interested in the man. After Mr. Ferris had submitted to Congress a most careful and interesting report on the subject, connected with the draft of a bill appropriating thirty thousand dollars for a public experiment, Hon. John P. Kennedy, February 23, 1843, offered a resolution “that the bill appropriating thirty thousand dollars to be expended

under the direction of the Secretary of the Treasury, in a series of experiments to test the expediency of the telegraph projected by Professor Morse, should be passed."

Mr. Morse sat in the gallery during the discussion which followed, a quiet but intensely anxious observer. The crisis of his life had come. His invention was in the hands of the Nation. Could Congress have anticipated the events of the next twenty-five years, how quick would have been the response. But now for a time the project was made the subject of ridicule. Irritated perhaps because the committee passed him in the control of the experiment, the Postmaster-General proposed to give half the sum appropriated by the bill to mesmeric experiments. Another proposed that Millerism have a share. The bill seemed doomed to be destroyed by ridicule. The debate was sharp. Finally, however, the vote was taken, and the bill passed by a majority of eight. New Hampshire, Georgia, Mississippi, Alabama and Arkansas voted, except a few neutral votes, solidly against. New York stood twenty-two for, eleven against. But it was victory. The dawn seemed to have come. Mr. Morse's letters announcing the glad news were calm and restrained, yet jubilant.

THE VOTE, FEBRUARY 23, 1843.

	Yeas. Nays.			Yeas. Nays.	
Maine .....	4	2	Kentucky .....	3	4
New Hampshire.....	..	4	Tennessee .....	1	9
Massachusetts .....	4	2	Ohio . . . . .	10	7
Rhode Island.....	1	..	Louisiana .....	2	1
Connecticut .....	5	..	Indiana .....	3	1
Vermont .....	4	1	Mississippi .....	..	1
New York.....	22	11	Illinois .....	1	2
New Jersey.....	6	..	Alabama.....	..	2
Pennsylvania .....	15	4	Arkansas.....	..	1
Maryland .....	3	1	Michigan .....	1	..
Virginia .....	3	13			
North Carolina .....	1	8			
South Carolina .....	..	4			
Georgia .....	..	4			
				90	82

But the bill had yet to pass the Senate. Its temper respecting it was unknown. It had much unfinished business. Day after day passed, but the bill had not been reached. Finally the last hours of the session came. Morse watched them as they passed, with anxious solicitude. It was getting late. Ten o'clock had already struck. Two hours only remained before final adjournment.

"Just then," says Hon. Fernando Wood, "one of the Senators came to Mr. Morse and advised him to go home. 'There is no use your staying here. The Senate is not in sympathy with your project. I advise you,' he said, 'to give it up, return home, and think no more of it.' Morse, feeling it useless to remain longer, with a heavy heart went to the hotel, paid his bill, including the morning breakfast, procured tickets for New York, went to his room, kneeled down, opened his heart to God and committed all his affairs to Him. He had done all he could to succeed. He felt that he had been anxious to benefit the world by an invention which he knew needed only a trial to prove its value. He counted his money, and found that after paying his bill and tickets he had thirty-seven and a half cents left. He then retired and slept the sleep of a tired but trusting child." It was just like him.

In the morning, refreshed by rest, yet grave and thoughtful, he came down to breakfast. While seated at table a visitor was announced. It was Miss Annie G. Ellsworth, the daughter of the Commissioner of patents. She was all animation, and taking him warmly by the hand exclaimed, with a voice full of unconcealed joy, "Professor, I have come on purpose to congratulate you."

"Congratulate me," "for what, my dear friend, can you offer me congratulation?"

"Why," she exclaimed gaily, as she enjoyed the professor's wondering surprise, and who was at the time really not in the fittest mood for pleasantries, "on the passage of your bill! The Senate, last night, voted you your money, \$30,000!"

She then informed him that her father remained in the Senate until the close of the session, and that in the very closing moments, the Telegraph Bill, to his great surprise and delight, was passed without division or debate! On reaching home he had communicated the news to his family, all of whom were much attached to the professor, and his daughter begged the favor of being allowed to go to the hotel to communicate the good news. It was the instinctive desire of a warm-hearted woman. So she had hastened on her pleasant errand. And now having told her story, she asked, "Am I really the first to communicate this to you?"

The news was so unexpected that for some moments he could make no reply, at length he said, "Yes, Annie; you are the first to inform me. I was until now utterly unconscious of the fact; and now I am going to make you a promise. When the line is completed the first dispatch sent upon it from Washington to Baltimore shall be yours."

"Well," she replied, "I will hold you to your promise."

Senator Paterson is reported to have said in his speech in the Washington Hall of Representatives, at the memorial meeting, after Mr. Morse's death, "When the passage of the bill was announced to him by Miss Ellsworth he sprang to his feet and hastened to the Capitol to know if it was true!" Mr. Morse was incapable of such an act. He gallantly accepted a lady's word.

Mr. Morse now arranged for the construction of the line. Government allowed him a salary of \$2,500 per annum during the test. He first employed as his assistants Dr. L. D. Gale and Prof. J. C. Fisher. Mr. Alfred Vail took charge of the machinery, and Mr. Ezra Cornell was made superintendent of construction.

It was most unfortunate for Mr. Morse that his mind from the very first seemed prepossessed in favor of underground lines, which had been adopted in England, how disastrously, he did not

then know. They gave to him the general impression of safety and permanence, and he adopted the plan without experiment. It was a grave error, and caused some of the saddest and darkest hours of his life. The route of the experimental line seemed somehow to his mind to favor the mode he had proposed. He had ordered to be made in New York forty miles of a five wire cable, inclosed in lead, and Mr. Cornell invented a plow to make the trench for its reception. This cable was laid from Baltimore to the Relay House, seven miles distant, but, on testing it, the escape was found so great that the necessity to abandon it was at once evident. That was a dark hour for all concerned. More than half the appropriation had been spent. Mr. Morse's mind was fearfully agitated at the result of his error. After much anxious thought it was now determined to place the wire upon poles, and it was finished in this way with two copper wires, No. 14, covered with cotton saturated with gum shellac.

The first insulation adopted on the government line shows how rudimental were the conceptions of men at that period. Mr. Vail had designed a plan, not stated, which Professor Morse at first approved, but which, on consultation with Prof. Henry, he rejected. The plan adopted was Mr. E. Cornell's. It was simply two plates of glass, between which the wire, after wrapping well with cloth, saturated with gum shellac, was placed, and over which a wooden cover to protect from rain and press the glass upon the wire and keep it in its place was nailed. These were afterward removed and the bureau knob pattern substituted.

Rev. Dr. French, in his memorial address, at Lynn, Mass., claims that Mr. Cornell first suggested the use of poles. If this means that Mr. Morse had not reflected previously on this mode it is a mistake. Mr. Morse described the pole plan as the cheapest to the Secretary of the Treasury, September 27, 1837. But the insulation was undoubtedly Mr. Cornell's, and his strong practical sense was of great value to Mr. Morse in many ways.



Indeed it would have been just like him to have urged the employment of poles, and likely his decisive mode of speech hastened the decision. Prof. Morse himself personally watched and supervised all the details as the work was now pushed rapidly on. He also personally disbursed the money, kept all accounts, and reported monthly to the government. His statements were models of precision, elegance and minuteness.

Prof. Morse was not apt as a mechanic. This made him dependent on others. He knew what he wanted, and his conceptions were all practical. Yet the process of adapting mechanism to his conceptions was laborious. Hence the great value to him of men like Alfred Vail and Ezra Cornell. Both of these men greatly aided in adjusting the practical features of the telegraph. Mr. Cornell was born January 11, 1807, at Westchester Landing, N. Y. His earliest occupation was in the machine shop of the cotton mill of Otis Eddy, which occupied the very site of the stately buildings of the now well known Cornell University in Ithaca, N. Y. In 1844, Hon. F. O. J. Smith found him at a plow factory in Albany, N. Y., and drew him to Washington where he became Prof. Morse's superintendent. He was a man of great practical talent, of strong convictions, of sinewy integrity, a rigid economist, a man of stern sound judgment. In after years, when the telegraph had made him rich, recollecting the struggles of his boyhood through which he had to pass without the aids to learning which give tools to brain, he gave \$500,000 to secure for his native state a grand institution where instruction in any study, to any person, could be given. He also presented 200 acres of land as a site therefor. Gifts to a large sum followed these munificent offerings to education. Thus, nobly did this man, without early culture, and out of the refinement of an honest purpose and manly understanding make his life coronal and his name immortal.

In about a year after the passage of the bill the line was completed. The first office in Washington was in a small room on

the east front of the capitol, and afterward in a room over the city post-office. The relays were of No. 16 cotton-covered copper wire, saturated in gum shellac, each weighing about 150 pounds, and so coarsely constructed that Mr. Vail kept the one in use in a back room where the operator had to run when it needed adjustment! The battery was 100 cells of Grove which was renewed three times a week. The circuits were left open when the line was not in use, and the instruments were so connected that each operator started and stopped the instrument at the distant station by the dropping of a break upon the fly-wheel when the manipulations of the keys were suspended. The magnets were soon after greatly improved, reduced in size and increased in power.

True to the promise he had made to his friend, Miss Ellsworth, Prof. Morse now sent for her, and to which she at once responded. She was invited to indite a message for transmission. It was promptly done in language long since historic, and in consonance with the inventor's own often expressed thoughts respecting the origin of his invention. Indeed the inventor may have suggested the language, "What hath God wrought?" The message was at once passed successfully over the wires, and the strip of paper on which it was imprinted was claimed by Governor Seymour of Connecticut in honor of the lady who was a native of his State, and of the inventor, who received therein his collegiate education.

In *Scribner* for March, 1876, there appears for the first time a couple of verses, probably addressed to Miss Ellsworth, and written in her album about this time, which gives a new evidence of the delicate and refined quality of Mr. Morse's mind, and to which he appends the following note:

In traveling on the Rhine some years ago I saw on a sun-dial at Worms the above motto; the beauty of its sentiment is well sustained in the euphony of its syllables. I placed it in my note-book, and have ventured to expand it in the stanzas which I dedicate to my young friend A——, sincerely praying that the dial of her life may ever show unclouded hours.

The verses are as follows :

To Miss A. G. E.

THE SUN-DIAL.

*"Horas non numero nisi serenas."*

*"I note not the hours except they be bright."*

The sun when it shines in a clear cloudless sky

Marks the time on my disk in figures of light.

If clouds gather o'er me, unheeded they fly,

"I note not the hours except they be bright.

So when I review all the scenes that have past

Between me and thee, be they dark, be they light,

I forget what was dark, the light I hold fast,

"I note not the hours except they be bright."

WASHINGTON, *March*, 1845.

SAMUEL F. B. MORSE.

During the year 1845 Louis F. Zantzinger and Charles T. Smith were in the Washington office. Smith was a practical and ingenious man, and carried on some important experiments for Prof. Morse. One of these was with some very fine wire covered with silk, received in spools, from Prof. Henry. The resistance was so great, the number being about thirty-six, that Morse fell back for a time on the idea that the wire of the magnet must approximate the conducting power or resistance of the outside conductor. Numbers 28 to 32 were however finally adopted, and the magnetic line soon after it was opened was provided with magnets of number 30 wire.

An incident now brought the telegraph into instant public recognition. The National Convention to nominate a president was in session in Baltimore; James K. Polk had been nominated president; Silas Wright, then in the Senate, and in Washington, was named for the vice-presidency. Mr. Vail communicated this, over the wires, to Mr. Morse, who immediately told Mr. Wright. In a few minutes the convention was astonished by receiving a message from Mr. Wright respectfully declining the nomination. The presiding officer read the dispatch. The convention could not

and would not believe its authenticity, but adjourned to await the report of a committee sent to Washington to confer with Mr. Wright. The committee confirmed the telegraphic message. This led to a conference between the committee and Mr. Wright by the wires. The fact was, of course, soon known, and the fame of the telegraph at once took wing.

It is related that about this time a distinguished functionary asked an assistant "How large a bundle could be sent over the wires, and if the United States mail could not be sent in the same way." Some wag did straddle a pair of dirty boots over one of the wires, and very seriously told an astonished citizen that they got dirty by coming so fast from Baltimore!

On the opening of the government line, O. S. Wood, at that time connected with the engineering department of the State of New York, was induced by his brother-in-law, Ezra Cornell, to give up his profession, and enter the office of Prof. Morse, at Washington. He then became Mr. Morse's first student. In November, 1844, he received from Baltimore the result of the presidential elections in the northern and eastern States, and with Mr. Vail, spent the winter of 1844 and 1845 in exhibiting the working of the telegraph to members of Congress, diplomatic representatives and to visitors attracted thither from all parts of the globe. He also transmitted to the Baltimore press a report of the proceedings of Congress for publication.

On April 1, 1845, the line which had been worked as a curiosity was opened for public business. The operators appointed were Mr. Vail at Washington, and Mr. Henry J. Rogers at Baltimore. The tariff fixed upon by the Postmaster-General was one cent for every four characters.

X During the first four days the receipts amounted to one cent. This was obtained from an office-seeker, who said he had nothing less than a twenty dollar bill and one cent, and with the modesty of his class, wanted to see the operation free. This was refused, because against orders. He was then told that he could have a

cent's worth of telegraphy, to which he agreed. He was gratified in the following manner: Washington asked Baltimore "4," which meant in the list of signals "What time is it?" Baltimore replied, "1," which meant one o'clock. This was one character each way, which would amount to half a cent. The man paid his one cent, magnanimously declined the change, and went his way. This was the revenue of four days. On the 5th, twelve and a half cents were received. The 6th was the Sabbath. On the 7th the receipts ran up to sixty cents. On the 8th, to \$1.32. On the 9th, they were \$1.04. Not a dazzling prospect that. Yet watchful eyes saw its value. It is recorded that about this time a certain good dame whose ideas of discipline were somewhat stern and fundamental, after surveying a pole recently planted near her door, placing her hands on her haunches exclaimed somewhat bitterly, "Now, I suppose, no one can spank their brats without its being known all over cree-a-tion."

The telegraph was now fairly started. It spoke for itself with no uncertain tongue. Its immense value seemed apparent. Prof. Morse offered it to government for \$100,000. The Postmaster-General replied, "That the operation of the telegraph between Washington and Baltimore had not satisfied him that under any rate of postage that could be adopted, its revenues could be made equal to its expenditures." The offer was thereupon refused. It was a fortunate fact for the inventor and for the country. Meantime, Mr. Morse, although the project was thus rejected by the American government, was lionized, and foreign ambassadors were assiduous in their attentions. The value of the invention in government hands was fast being perceived by the representatives of the governments of Europe, Russia especially interesting herself therein.

From this time on the American telegraph grew with great rapidity, and the inventor had the satisfaction of seeing long before his death his system acknowledged and in use in all parts of the world. Hon. F. O. J. Smith, in the preface to a work

published by him, to facilitate correspondence by telegraph, used the following language in a dedication to Prof. Morse :

“The great work of science which Franklin commenced for the protection of man, you have most triumphantly subdued to his convenience, and it needs not the gift of prophecy to foresee, nor the spirit of personal flattery to declare, that the names of Franklin and Morse are destined to glide down the declivity of time together, the equals in the renown of inventive achievements, until the hand of history shall become palsied, and whatever pertains to humanity shall be lost in the general dissolution of matter.”

Throughout his whole career there are frequent indications that there was fixed in Prof. Morse's mind a certain idea that his name would, some way or other, and at some time or other, become famous. It produced no excitement, but a quiet, exalted, chastened expectation. He looked at each step of his progress, even when it seemed one into utter darkness, as an incident necessary to the completeness of the journey. He was reverential in all his work. As he ascribed to God the original conception of the telegraph, so he interpreted as a divine direction every act of his mind, and every shaping circumstance until the end. He was now famous. But the man remained the same.

The following from a speech of Hon. S. S. Cox, delivered in Washington at the Memorial meeting, in 1872, shows the absurdities into which public speakers fall in the assumption of special knowledge out of their familiar realm :

“Bain's electro-chemical telegraph is vastly more original, vastly more ingenious than Morse's. But the world chooses to have Morse's. The Morse system, if we are not misinformed, enables its operators to transmit one thousand words, while the Bain, the House and the other systems give facilities for only about two hundred.”

Was ever such nonsense uttered by mortal man? Bain's system was stopped because it was a part of Morse's, and patented by him. He used Morse's alphabet; he used Morse's paper; he used Morse's clock. The allusion to the House machine is laughable. Yet it was spoken before the magnates of the Nation, and Congress has made it imperishable!

Yet here is a passage of great truth, uttered by the same distinguished speaker, which excuses the one quoted: "Morse invented his methods before he was sufficiently informed to be able to rationalize his laws. In this respect our great Morse was like Kepler. His genius transcended his skill. His single brain compassed more than his studies had enabled him to derive from all the world that had lived before him." In his whole character, in his struggles and in his triumph he signally illustrated the verse of Festus,

"The clouds which hide the mental mountains  
Rising nighest heaven are full of finest lightning."

Having now traced, though with much brevity, the history of the recording telegraph, it is pertinent to close with an extract from the paper of an eminent legal authority after an exhaustive examination into Prof. Morse's claims.

The following is from the elaborate paper of Justice Woodbury in his decision in the case of *Smith v. Dqwning*, in reference to the position held by Prof. Morse as an inventor :

"From that time forward (1832), Morse is entitled to the high credit of making attempts to construct a practical machine for practical, popular and commercial use, which would communicate to a distance by electro-magnetism, and record quickly and cheaply what was communicated, however imperfectly informed he may then have been of what had already been accomplished toward it, and he has the still higher credit among the experimenters of that time to 1837 of having then succeeded in perfecting what he describes at that time in his caveat and specification. Among about sixty-two competitors to the discovery of the electric telegraph by 1838, Morse alone, in 1837, seems to have reached the most perfect result desirable for public and practical use. By a lever deflected by a magnet, provided with a pen to write, with machinery to keep paper moving, so as to inscribe dots and lines, and more especially with an alphabet, he accomplished the great desideratum. Thus the fortunate idea was, at last, formed and announced, which enabled the dead machine to move and to speak intelligibly, at any distance, with lightning speed."

This became the language of all judicial decisions.

One word respecting the alphabet. Its simplicity and availability is wonderful. It can be used by sight, by sound, by touch, by taste, by sense of feeling. Men can wink it with their eyes, can beat it with their feet, and dying men have used it to speak when vocal organs and the strength to write were exhausted. The prisoner can tap it on the wall or grating of his dungeon. Lovers in distant rooms can converse by it on the gas pipe. Its uses are endless. It is the telegraphic language of the world.

And now we leave Mr. Morse for a while. Rejected by his own government he now stands at the door of the world to offer to it the finest and grandest gift of the human brain. It was the offspring of a century of thought. It was Professor Morse's great honor to lead it forth to the admiration and uses of mankind. A few chapters are now to be devoted to the history of its public reception before recording his more personal triumphs, and of the opening at last of the narrow door through which all the earthly toilers must one day pass, when the crown which the world placed upon his brow was exchanged for the brighter bays of the one eternal.

Away! away! through the sightless air  
Stretch forth your iron thread,  
For I would not dim my sandals fair  
With the dust ye tamely tread!  
Aye, rear it up on its million piers,  
Let it circle the world around,  
And the journey ye make in a hundred years  
I'll clear at a single bound.

At length the hour of light is here,  
And kings no more shall bind,  
Nor bigots crush with craven fear  
The forward march of mind.  
The words of Truth and Freedom's rays  
Are from my pinions hurled;  
And soon the light of better days  
Shall rise upon the world.

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## THE BEGINNINGS OF AMERICAN TELEGRAPHIC HISTORY.

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### CHAPTER XI.

#### THE MAGNETIC TELEGRAPH COMPANY.

GOVERNMENT having refused Prof. Morse's offer to sell his invention for the sum of \$100,000, it was at once determined to present it to the public, and to endeavor to enlist private capital in its development. In March, 1843, Prof. Morse had selected Hon. Amos Kendall, of Washington, as his agent. In this Dr. L. D. Gale and Mr. Alfred Vail, Mr. Morse's partners, also joined. F. O. J. Smith, the other partner, determined to act for himself.

Mr. Kendall is too well known in American history to require description. He was Gen. Jackson's Postmaster-General, incorruptible, able, an educated lawyer, clear-headed, methodical and ingenious. But he was somewhat rigid in his manners and methods, and lacked the dash and *bonhomie* which would have carried him successfully into the business centers of the seaboard cities, and brought capital largely and cheerfully to his feet.

Of personal magnetism, indeed, except in private intercourse, where he was eminently delightful, he had, at this period of his life, none. This made his work difficult, especially with railroad men. Yet the telegraph could not have been intrusted to more genuinely honest and able hands. On the part of those he represented this confidence was so complete, that their interests were committed to him without reserve.



Amos Kendall

AMOS KENDALL,

OF THE DISTRICT OF COLUMBIA.

Although without personal magnetism in the presence of strangers, Mr. Kendall had a gentleness not always apparent, but which, as his life advanced, shone out with the mellow lustre of his days' decline. When among intimate friends he showed a quiet playfulness which was exceedingly tender and beautiful. My contact with him was frequent and delightful. Our last business interview was especially memorable and grateful. It was at the Astor House, New York, in 1853, where we met to settle a controversy growing out of the division of southern business from the united southern lines at Louisville, Ky., of which I had, at that time, the direction, for the East. He had offered to refer the settlement of the dispute between us to his own Board at Lexington. The members of that Board were men of such high character that the offer, though apparently one-sided, and very unlike him to propose, was accepted. It resulted in my being unanimously sustained. Now we had come to settle details, and through a whole day we labored together, settling point after point, Mr. Kendall waiving many things he might have insisted upon, in a spirit so charming and delightful as to inspire me with a feeling toward him of filial and profound reverence. When night at last came, and we had dined together, as we came out into the hall he said, "Friend Reid, we have had a hard day's work, now we both of us need a laugh. Let us go over and see Burton." And so we ended our controversy, laughing till we were both sore at Toodles grabbing at his necktie. We never had another.

From Rev. G. W. Sampson, Mr. Kendall's intimate companion and friend, formerly president of Columbia College, Washington, the following note respecting him is just and appreciative :

"Mr. Kendall's mind, while not among the most comprehensive, was remarkable for acuteness in that range to which it was directed, and for its skill in bringing all its energies to bear on a single point. Under the administration of Gen. Jackson questions which divided the party in power as well as the people of the country, such as the removal of deposits, and the course pursued in opposing nullification, were in dispute. In cabinet debates, Mr. Kendall's position, as Postmaster-General, gave him, nominally, a subordinate place; yet his skill, often recalled in after life, in guiding, by seeming concurrence rather than

opposition, the indomitable will of Gen. Jackson, was the chief secret of the success, as well as of the tempered energy, which marked the measures of that administration. The fact that his own department was thoroughly reformed and molded into its permanent efficiency by his energies; and, yet more, the fact that on retiring from its emoluments, as well as its cares, he was a poor man, and compelled, for years, to depend on daily employ as an agent, must ever remain endearing monuments of his worth, as one of the framers and guardians of American institutions. Prof. Morse was indebted to Mr. Kendall's able pen for the clear expositions by which the congressional appropriations for his invention were finally secured."

Early in 1845 Mr. Kendall, after much consultation, took steps to organize a company to erect a line of telegraph from New York to Baltimore and Washington. It was thought best, however, to attempt its construction first between New York and Philadelphia, and to limit the request for capital to the probable cost of that section. The commerce between these great cities was large and active. The intercourse by telegraph would be, it was naturally presumed, also large and valuable. The telegraph once thoroughly established between these two leading commercial cities, and the invention fulfilling the high expectations now aroused respecting it, its onward progress would, it was believed, be immediate and rapid. To aid in securing capital for this purpose Mr. Ezra Cornell and Mr. O. S. Wood went to New York to exhibit the machinery upon a short experimental line. Offices were opened, one at 112 Broadway, and the other in a building near where the Metropolitan Hotel now stands. Permission, however, to allow the connecting wires to be strung along the tops of houses was obtained with great difficulty, and only after paying Prof. Silliman, Jr., \$50 for an opinion respecting its safety, which induced the owners of property to consent to their erection. The price of admission to see the telegraph at work was twenty-five cents. That seemed a strange way to enlist capital in a great city like New York. With this embargo, notwithstanding the wonderful character of the invention, there were not visitors enough to pay expenses. Every thing indicated poverty. The exhibitors were so poor that one of them was glad to use a couple of common chairs for his nightly rest. It was certainly a strange sight to

see the future princely founder of Cornell University making his breakfast out of the proceeds of a shilling picked up from the sidewalk of Broadway, and which he said was one of the best meals he had ever had in all his life!

The estimated cost of a line from Fort Lee to Philadelphia was \$15,000. It was a very modest sum to ask of the great city of New York. But the men of capital looked over their immaculate collars at the ticking machinery, and into the faces of the hungry exhibitors, and up at the wire straggling among the chimney-pots, and then down at the meagre furniture, and said "No." Each man feared to be the first fool. But what capitalists would not do, humbler men, and the friends of the patentees, did. One of the first men in New York to invest his money in the new device was the keeper of an eating-house in Nassau street, where chicken-pie could be got for ten cents a plate, and who afterward became one of its directors. The money needed was finally raised, but chiefly outside of New York. Mr. Corcoran, of Washington, was the first to contribute.

## LIST OF THE SUBSCRIBERS.

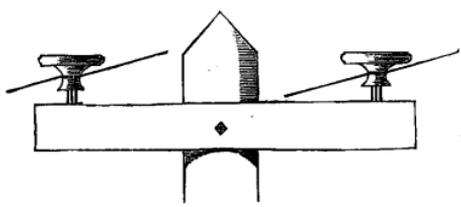
Corcoran & Riggs.....	\$1,000	Charles G. Page.....	\$500
B. B. French .....	1,000	George Templeman.....	200
Eliphalet Case.....	1,000	Henry J. Rogers .....	100
Charles Monroe.....	1,000	J. W. Murphy.....	100
Peter G. Washington ...	200	A. W. Paine.....	500
John J. Haley .....	500	F. O. J. Smith .....	2,750
John E. Kendall .....	300	J. Black.....	200
James A. McLaughlin...	350	Keller & Greenough....	500
Amos Kendall .....	500	J. S. Brodhead.....	500
Ezra Cornell .....	500	T. L. & A. T. Smith.....	200
Daniel Gold.....	1,000	A. Thos. Smith .....	100
Simon Brown.....	500		
J. J. Glossbrenner.....	500		\$15,000
John M. Broadhead .....	1,000		

It was provided, in this original subscription, that the payment of fifty dollars should entitle the subscriber to two shares of fifty dollars each. A payment of fifteen thousand dollars, therefore, required an issue of \$30,000 stock. To the patentees were issued an addi-

tional \$30,000 stock, or half of the capital, as the consideration of the patent. The capital was thus \$60,000 for the first link. W. W. Corcoran and B. B. French were made trustees to hold the patent rights and property until organization was effected. Meanwhile an act of incorporation was granted by the Legislature of the State of Maryland, the first telegraphic charter issued in the United States.

The incorporators were S. F. B. Morse, B. B. French, George C. Penniman, Henry J. Rogers, John S. McKim, J. R. Trimble, W. M. Swain, John O. Sterns, A. Sidney Doane, and associates, under the title of the "Magnetic Telegraph Company."

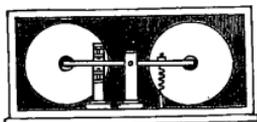
The construction of the line was given to Dr. A. C. Goell, an excellent, energetic man, who built, at a subsequent period, most of the lines through south-eastern Pennsylvania. Mr. Cornell personally directed the construction from Somerville to Fort Lee. The poles were small and two hundred feet apart. An arm thirty inches long, with a pin at each end, bearing a glass bureau-knob, an insulation proposed by Mr.



Cornell and approved by Prof. Henry, was secured to the upper end of each pole. Around the bureau knobs the conducting wires were wrapped. The wires were of copper, No. 14, and unannealed. The route of the line was from the Merchants' Exchange, Philadelphia, via the Columbia Railroad to Morgan's Corners, thence to Norristown, Doylestown and Somerville to Fort Lee, by the ordinary wagon road. It seems a singular route for such a grand public purpose between two great commercial cities, but it was the only one then attainable, the railroads refusing right of way except on terms deemed too oppressive to be accepted. Mr. Kendall and Mr. F. O. J. Smith had been commissioned to meet the New Jersey Railroad companies to obtain these rights of way, but had failed. This has been ascribed, probably with some justice, to enmity to Mr. Kendall, who as Postmaster-General

was exacting with public companies, and who, now that the situation was reversed, took occasion to dictate terms to him which he could not accept. At a later period, when acting as the Company's superintendent, and when public sentiment was thoroughly awakened to the value of the telegraph, I was able, after much patient attendance, to obtain on fair terms the occupation of their roadway from these companies, and built a new line thereon, via Trenton and Bristol, crossing the Raritan Canal at New Brunswick and Trenton by masts. The property was thus rendered secure, and the operations of the line became thereafter prompt and continuous.

Early in November, 1845, the line was first opened between Philadelphia and Norristown, Pa., distant fourteen miles, so as to gratify public curiosity, while the building was going on beyond. The office in Philadelphia was on the second floor of the Merchants' Exchange. Mr. Alfred Vail, until the completion of the line, had charge. I was his aid. Samuel K. Zook and William J. Delano assisted. None of us had any money; nor had we any salary. The first relay magnet used at Philadelphia weighed over one hundred pounds. It was composed of two coils, eight inches in diameter and about a foot in length, of No. 16 cotton-covered copper wire. The cotton was saturated with gum shellac. The core was a single bar of inch iron, in horse-shoe form. The ends of the armature, which



OLD STYLE MAGNET.

was a long soft iron bar pivoted between the coils, played within the coils against the split surface of the core. The magnets were inclosed in walnut boxes, and kept locked. So carefully were these boxes kept closed that it was some time before even I was permitted to see their action. These magnets were made additionally mysterious by multiplied convolutions of the cotton-covered wire before entering the boxes, and to which we at first attributed some mysterious meaning. Vail was a good, pleasant man, smoked a good cigar, and enjoyed the mystery and wonder he thus occasioned. These large magnets were made at a time when both he and Prof. Morse entertained the idea that the resistance of the wire of the magnet should not differ greatly from the resistance of the line

wire. Magnets, however, of No. 30 wire were in the meantime being made for service as soon as the line was completed to Fort Lee, by Clark & Son, Philadelphia. The battery employed was the Grove, which we renewed with fresh nitric acid, and amalgamated the zincs with mercury, every morning. We had a powerful main battery of eighty cells. It was a serious morning's work to renew. Our hands were yellow as frogs by contact with the acids. But we enjoyed even that. It was a badge of honor in which we secretly rejoiced. It was all glory then. Even the poverty which pinched us had in it a heroic element.

The office when opened was greatly thronged by all sorts of people. We did no business except a few messages to Norristown, just enough to provide means for a modest lunch. A little dapper fellow named Rufus Chadwick, whose shirt shone with gloss, and whose boots were immaculate, made a handsome revenue selling Vail's pamphlet. Great numbers of these were sold, and Vail smoked his cigar joyfully.

While thus serving together, Mr. Vail, who was a fine mechanic, and who constructed the early Morse registers, proposed to me to get up new forms for them. I drew my plan; and he drew his. Mine was in the shape of a harp, looked handsome and was a fine specimen of machinery. It was made by Clark & Son. Vail's was less showy, but substantial, and, of course, better than mine. He cared little for beauty. I always gave it prominence. I also had a key made without the lever. Nothing was seen but the knob. It was simply a plunger working within a spiral spring upon a platinum point, every part except the knob or button being sunk in the table. I had attached also an automatic break, not then knowing that the same thing had been done at Washington, by which a distant office could set my instrument in motion and record a message in my absence. Curiously enough while one evening Mr. Kendall, Prof. Morse and Mr. Swain were sitting by the elegant table on which the new machinery had been placed, and while I was temporarily absent, a message came, was recorded, and proved to be one complimentary to Prof. Morse, and which much pleased him.

One morning, not long after the line was opened, we guessed by the

tug of the magnet that the wire was broken not very far away. We had no repairer at Philadelphia, so it became Zook's duty to hunt the break and repair it. I therefore directed him to go to Norristown by cars and walk back till the break was found. He was then to send me a message by planting a piece of wire in the ground and tapping on it with the line wire. That done, he was to find a puddle of water, in which he was to stand, and, putting the line wire to his tongue, receive my acknowledgment. All went well until this latter performance, which was followed first by an ominous silence, and soon after by the hugest of Pennsylvania profanity. The truth was, the strength of the current had upset him, and when, an hour or more afterward, Sam came to the office covered with mud, and madness in his eye, we learned our first lesson in the dangers of line testing and repairs. What most grieved Zook was, that he had performed his electrical gymnastics in the presence of a large crowd, who had rather enjoyed his very original entertainment.

The line was completed to Fort Lee January 20, 1846. The Philadelphia office was given to me with a kind of general direction of the line, under the title of chief operator. Samuel K. Zook was my aid and chum. William J. Delano was book-keeper. The Fort Lee office was placed in charge of Charles T. Smith, of Washington, familiarly known as "Tap." He was an ingenious and faithful man, and prided himself greatly on his ability to adjust his magnet. This led to a very useful experiment. To test Smith's capacity to adjust, one morning when business was light, and for some time it was not very heavy, I sent Zook to the battery room with directions to reduce the battery gradually down to one-half. Smith, however, made no complaint, and received all we sent him as before. Then we went on reducing slowly until but one cell remained. It was all we could do to get the faintest wiggle of our armature. We could just make out a message from Smith asking, "What is the matter with your battery?" From that time we began to learn the economical use of our battery material, and greatly reduced the number of cells. Mr. Smith was the inventor of the modern climber, the most useful tool connected with the out-door service. The first pair was made by

Asa Vandergrift, of Jersey City, and the first man to use them was J. Craven, now Dr. Craven, of Newark, N. J. It ought to have been patented. The companies should compensate Mr. Smith even now. The other occupants of the Fort Lee office were R. C. Edwards, a grave character, who could not comprehend a joke, Francis S. Brown, known as "counselor," and, after a time, John D. Park, Louis F. Zant-zinger, Oscar W. Willis and W. H. Beebe. A lottery man with pigeons to send numbers to New York as they were received from Philadelphia, had a chair outside. The lottery men were among the very first to patronize the line. On the other side of the North River an office was opened in the house of Audubon, the naturalist, with J. H. Gregory for operator.

A lead pipe inclosing a cotton-covered copper wire, saturated with pitch, was laid in the North river, under the superintendence of Ezra Cornell, from Fort Lee to Audubon's. But it was a failure. Secretary T. M. Clark, who was a kind of ex-officio superintendent, employed two Whitehall boatmen to convey messages across the river for transmission from Audubon's to New York.

Charles S. Bulkley was made clerk in New York, at an office opened first at No. 16 Wall street, under the Express office, and not long afterward in Post's Buildings, behind the Merchants' Exchange. He had a little hump-backed assistant named Jordan. Mr. Bulkley, soon after this, became engineer and constructor of the Washington and New Orleans line, under John J. Haley, who obtained the contract for its construction. A wire led from Audubon's to New York, but was soon abandoned, and I was commissioned to build a line of two iron wires from Newark to Jersey City. When the wires reached Jersey City, a small room over the ferry house was used for an office, and messengers crossed at frequent intervals on the ferry boats with messages for delivery in New York. These young rascals soon started a private banking business by having a wood-cut made with "25 cents due" thereon, which they stamped on messages and collected, and which they carried on for some time before they were discovered. Mr. Edmund Clasback, one of the most faithful men ever in the Company's service, kept the books. He was assisted by Edward

Gordon. David Griffin was line repairer. Before the office at Jersey City was opened, messengers were sent six times a day by cars from Newark to New York. The Newark office was opened at the instigation of Thomas M. Clark as an experiment.

As soon as the line was complete to Fort Lee our sorrows began. The glass knobs as they glistened in the sun were splendid marks for boys and rifle shooters, and they went by the dozen. Sometimes riflemen would try to split the wire. There was much ignorance of the purpose of the structure, and, from many causes, the wires broke. Then came summer, and the wires drew out, became attenuated, and gave much trouble. During the first five months after it was opened for public business, the line was down for thirty-six entire days. This led to a curious undertaking by an ingenious man named B. Tucker, of New York, who, having contracted with the company to twist the two wires together, conceived the idea that by reducing the size of the wires by making them pass through a die, he would increase their tensile strength, and thus the two wires be preserved intact. A few miles were so reduced; but he was odd, and the repairers kept the line broken to annoy him. He finally gave up the undertaking, and was afterward engaged in connection with the erection of masts at the Hudson river.

The first great calamity to the new line, which resulted in the hasty removal of the copper wire, was when one night rain fell through a cold atmosphere and froze upon the wires. As the sun rose the next morning the sight was beautiful. The wires looked like two magnificent necklaces glistening with fairy sheen in the beauty of the morning dawn. But a change soon came. In an hour or two a sharp breeze came tripping up from the ocean. The wires swayed awhile to the music of the wind and looked more beautiful than ever. The wind stiffened, a moment more, and forty miles of wire went down as by a breath — every length broken short off at the poll. Part of it was stolen by the Arabs who are always around ruins. The balance was sold as old copper. An iron cord of three strands took its place, made partly by Hugh Downing, and partly by B. Turner, an ingenious mechanic in the Bowery, New York.

I think it is likely that I used the first iron wire employed on a telegraph line. One morning just after the line was opened, the copper wire was broken by a cart bumping against a pole, corner Broad and Callowhill streets, Philadelphia. Immediately Sam Zook and I started to repair it, for we had no repairers then. We had no wire. I tried to procure some of the same quality and metal as that of the line, but could only get some number 14 iron wire from a tinman, and we supposed that would never do. Neither of us had heard of Steinheil then. We consulted with lengthened faces what should be done. We finally concluded to put in the iron wire and see the result. We did so, making the joints with great care, and hastened to the office. Arriving there, we were overjoyed to find the line at work. The fact was immediately announced to Mr. Kendall. Iron wire was soon brought into common use.

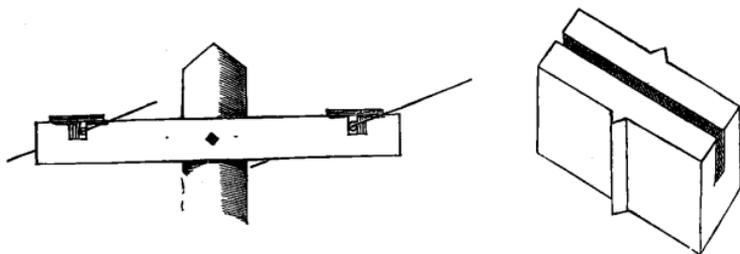
The only invention to which I can plead guilty was the construction of a lightning arrester, by making the current pass through a coarse wire magnet, the moving beam of which connected at one end with machinery and the other with the ground. A spring which adjusted the armature above the ordinary current held the bar on the brass post connected with the machinery. When a stronger current appeared the spring was overcome, and the whole charge was thrown off at the ground post. It worked very well, and Mr. Kendall made it the subject of an article in the *Washington Globe*. The Franklin Institute also gave me a silver medal. Not long after this, however, when we began to understand things better, David Brooks wrapped a piece of paper round the gas pipe, and by connecting the main wire thereto, discharged all superfluous lightning. All lightning arresters are now made on this general plan.

The line from Philadelphia to Baltimore was built in 1846 by Henry O'Reilly, under a contract for \$12,000, increased afterward to \$14,000, for a line of one iron wire. No directions were given about insulation, of which there seemed little knowledge. One curious order was issued. The wires were directed to be covered with tar! The originator of that sublime conception is unknown! In conformity with the order, however, a newly-landed Scotchman was engaged, who, with a tar bucket slung to his side, and a monster sponge in his hand, tarred

the wire as far as Wilmington, Delaware. There tar proved too much for him. He went to sleep and never woke. We buried him there.

When he was gone no one would take his place. Being then in charge of the men I took the bucket and the sponge and lathered the electric road to the Susquehanna. There O'Reilly made a bonfire of my saturated garments. It was a sad business. All the tavern keepers on that road long remembered the man with the tar bucket. At the town of North East they would not give me a bed. As I sat one night on the end of an empty cider barrel, in the bar-room of a small tavern, bewailing my fragrant condition, and anxiously trying the cleansing qualities of sweet oil, the two plump daughters of the hostess passed me with signs of unmistakable horror. From another room soon came the exclamation: "Oh, mother, how that fellow stinks!" How sweet, thought I, is the Saxon language on the lips of a North East maiden!

We insulated the wire as directed with bits of India rubber cloth



wrapped round the wire, and wedged in with plugs of Georgia pine. These soon tore out, and, as soon as I had authority to act independently, little blocks of grooved glass of fine quality were substituted.

It is a somewhat curious fact that while F. O. J. Smith, in defiance of all received views of the necessity of insulation, and the care with which it should be maintained, issued an order to fasten the wires by iron staples to the bare poles, Mr. Kendall, at a subsequent period, doubting the possibility of securing a perfect insulator, recommended the cutting down of every second pole on the Baltimore division, and which, to some extent, was carried out.

The stock for the section of the line from Philadelphia to Baltimore was taken as follows:

William M. Swain, Philadelphia .....	\$3,500
J. R. Chandler, Philadelphia.....	500
George Bush, Wilmington .....	200
Mahlon Betts, Wilmington .....	200
Merritt Canby, Wilmington.....	200
W. R. Sellers, Wilmington .....	200
J. R. Trimble, Wilmington .....	200
Furman Black, Washington.....	1,000
Henry O'Reilly .....	4,000

The line from Philadelphia to Baltimore was completed June 5, 1846.

The line being now complete throughout, it became necessary to organize the company under the charter granted by the Maryland legislature. Articles of association had been adopted May 15, 1845. These articles were carefully drawn, and specific. The principle of "first come first served, with a fair limit as to time of occupation," fixed at fifteen minutes, was laid down as the fundamental law of the business at the outset. The exception to this rule was stated to be to "Government messages, and for the arrest of criminals, and to prevent the commission or consummation of crime." These were to have priority. The President was charged with the duty of "making the business agreeable to those engaged in it, and to endeavor to crown it with honor and success." This was a most benignant provision. The "chief operator" of an office was recognized as the "main spring of the enterprise." The by-laws and the office rules evinced much practical wisdom, and were undoubtedly the work of Mr. Kendall.

On January 14, 1846, the stockholders met for organization under the articles of association.

The first Board of Directors was elected as follows :

Amos Kendall, B. B. French, A. Sidney Doane, John J. Haley, John W. Norton, T. M. Clark, John O. Sterns, Wm. M. Swain, J. R. Trimble.

The Board was organized by the election of the following officers:

President — Amos Kendall.

Secretary — Thomas M. Clark.

Treasurer — A. Sidney Doane.

On October 6th the active management of the line on account of Mr. Kendall's ill health was ordered to be given to a General Superintendent. James D. Reid was chosen for that service, and which he had practically filled for some time previous. In the following year, having been chosen to a similar position on the western lines, and called on to decide between the two, he resigned April 6. 1847, and was succeeded by Samuel K. Zook, a brave fellow, who afterward fell while gallantly fighting at the head of his regiment at Gettysburg.

The economy of the newly-constituted board, and its prudence are shown by a vote "to print half a ream of paper, with the rule declaring that stockholders were not responsible for debts, conspicuously printed thereon." My first appointment from Mr. Kendall, at Philadelphia, had a heading warning me that I must look to the office receipts alone for pay. Some days Mr. Kendall would have been glad to have had access to office receipts. More than once in the first year of his presidency he could not leave his hotel in New York for want of money.

The force of the line was, by resolution, arranged as follows :

Washington, 1 operator.

Jersey City, 3 operators.

Wall street, 1 clerk and 4 boys.

Philadelphia, 3 operators, 1 clerk and 3 boys.

Wilmington, 1 operator.

Baltimore 2 operators and 1 boy.

All messages were received by paper on the Morse register.

George H. Hart and George C. Penniman became directors May 22, 1846, and on July 7, 1846, Mr. Hart was elected treasurer.

The first reports of business done upon the line were not inspiring. Men nibbled carefully and the service was imperfect. On the 7th of July, 1846, the treasurer reported the profits of the three preceding months to have been :

At Philadelphia.....	\$223 50
At New York, Jan. 1 to June 6, 1846 .....	<u>293 17</u>

The line, on account of the frequent breaking of the copper wire,

had been down thirty-six days! Of course every thing was then done very modestly. The following were the rents paid:

	Per annum.
New York.....	\$250 00
Philadelphia.....	150 00
Baltimore.....	150 00
Washington.....	<u>50 00</u>

The cash receipts of 1846 were \$4,228.77. In 1852, they were \$103,641.42. By the latter year right of way had been obtained along the Jersey railroads, and the service was prompt and regular.

The rates were as follows: Baltimore to Washington, 10.1; New York to New Brunswick, 10.1; New York to Philadelphia, 25.2; New York to Washington, 50.5.

July 6, 1847, Hon. B. B. French was elected president, Mr. Kendall declining election on account of ill health. Mr. French was a good, well developed New Englander, a delightful man, who liked a good dinner, and made a good faithful officer. But he had little faculty of discipline, and what was unfortunate inasmuch as he was expected to act as general superintendent, he knew nothing of either mechanics or electric science. He did not walk much over the line, although he performed a great amount of honest labor. The "boys" were sometimes too much for him. One morning he came from New York to the office at Philadelphia, and summoning the operators to him, as he stood in the middle of the floor said, in his peculiar way, "Young gentlemen, I have a complaint to make. Mr. Edwards of New York (the man who never knew a joke) tells me he received a message from this office signed 'Julia,' addressed to John Smith, New York, marked 'collect.' Mr. Edwards sent it to several of that name, but they abused the boy, and one of them kicked him out. He then asked this office for a better address, and directions what to do, when he got the reply 'send a copy to all, and charge each!'" Just then Thayer from Rochester, an inveterate wag, who made up and sent the message, burst out with a great roar of a laugh, such as seldom astounds human ears. It was caught up by the rest, and the good-natured president seeing the fun, gave in, saying, "Boys, well I'm sold, but don't do it again."

Mr. French ordered the boys to be docked for absence, but it seemed to hurt him. He once ordered all way offices between New York and Washington put on one connected wire! That was in 1847. He learned better soon after.

In 1850 two new iron wires were erected from Washington to New York. The insulation of these wires was a source of great perplexity to Mr. French, although by that time glass had been adopted by all the western lines. Mr. French says: "The insulation used for the new wires was formed of a mixture of brimstone, gum shellac and resin. A heated mass of the mixture was used to confine a piece of iron into each end of a piece of wood about three feet in length, which piece was placed across the posts and the wire attached to the pieces of iron by a washer held fast by a screw and nut. I regret to say that the composition used for a great many of them was not properly prepared, and during hot weather it melts, and the irons drop out." The brimstone insulator was one of the most unfortunate scientific devices ever conceived. It was indeed the "brimstone age," for it was being tried by various lines and seemed epidemic. At Pittsburg an iron hat filled with brimstone was invented as an insulator, which caused very copious and emphatic profanity. Mr. French afterward recommended a gutta percha insulator of the form of the ordinary modern glass insulator, and which was partially introduced. An insulator made by Z. C. Robbins was also recommended.

From Mr. French's report of July 12, 1849, an insight is had into the condition of the lines even at that comparatively late date. Speaking of the working of the two wires put up from Washington to New York, he says: "I do not intend to say that *both* wires have worked *independently* of each other, or that the line has worked through without repeating, but that it has been in the power of the company, with but few interruptions, to send messages from Washington to New York." The Magnetic Company's line was, at this date, suffering unconsciously from an evil which became very widespread. This was caused by joints carelessly or ignorantly made, and which was particularly destructive on the seaboard lines, where the wires being plain, rusted rapidly, and the oxide upon which was hard to remove. The line suffered also from an

attempt, always fruitless, of making a superintendent of a president, especially one who, with all his noble qualities, was utterly without technical knowledge, and who knew absolutely nothing of the causes operating against a clear and steady current upon the wires. The introduction of English galvanized wire of enlarged size, imported and afterward manufactured by Marshall Lefferts & Co., of New York, and first used by Henry Wells, of Buffalo, in the year 1847, in Canada, was the first thorough relief to the lines, although the soldering of joints and the thorough clearing of the wires did much to reduce the difficulties under which they labored.

Mr. Charles F. Wood, whom everybody knows and regards, and who still smiles radiantly in Boston, one of the men who carry sunshine in their eye, a capital hand at a story, and a good judge of a dinner, after managing with much characteristic vigor the New York office, was for a time connected with the active management of the line, and infused into it much of his personal *bonhomie* and life. Among other experiments, one somewhat startled and surprised him. He found in one of the offices an operator roaring with rheumatism. This stirred his great stomach, and having heard of magnetic treatment to suffering men he decided to attempt relief to his subordinate. The patient uncovered his leg, and Mr. Wood undertook to connect the poles of a large Grove main battery to either side of the suffering limb. In doing so, however, he was greatly surprised and alarmed to see his patient spin into the air like a stung kitten before a bee-hive, and filling the atmosphere with expletives more forcible than polite. Mr. Wood never repeated the experiment.

No attempt was made for a long time to cross the Hudson, although Prof. Morse and A. Sidney Doane were commissioned to effect a submarine crossing at Fort Lee. Several efforts were made, but the materials used were imperfect, and no success followed the experiments. In the newspapers there were endless schemes proposed. Balloons, pigeons, submarine ploughs to imbed enormous cables, water circuits, and masts were in turn presented. The legislature passed a bill in 1845, under certain restrictions, for a pier in the North river on which to erect a mast to bear the wires. An anchored ship was much discussed.

Nothing came of these projects, however, until in the winter of 1846-7, the knowledge of gutta-percha as a non-conductor came from Europe. Its discovery in the eastern archipelago led to the formation of a gigantic English company of which Samuel T. Armstrong of New York became the American agent. Dr. Craven, of Newark, N. J., then connected with the construction service of the Magnetic Company, an ingenious man, heard of this new product and made an experiment with a piece of wire covered therewith, which he submerged in the fall of 1847 at Bound creek near Elizabeth, N. J. To this he attached the wire of the main line and found out that it worked without escape. This was a most important discovery, and resulted in laying a similarly covered wire at the drawbridge of the Passaic river, besides raising a hope that the great obstacle in crossing rivers would at last be overcome.

The following year the secretary of the company, Thomas M. Clark, whose devotion to the company's interests was very marked, and who, before it came to earn a steady revenue, had often relieved it when pressed for means, attempted to effect a crossing at Jersey City by a gutta-percha covered cable to New York. It was carefully prepared, but without outside armor as now, and was successfully laid by the help of a tug-boat at 5 A. M., June 15, 1848. But although it gave promise of success, it was soon torn up, and a committee composed of John Brodhead, J. W. Norton and H. J. Rogers soon after reported that "even if it were practicable to communicate perfectly by a wire on the bottom of the river, it would be so constantly liable to destruction or damage, that it would not be judicious to attempt it." They advised a line 105 miles in length via West Point, which Mr. Norton soon after built on a contract, for \$17,000; an offer of \$20,000 from F. O. J. Smith having been rejected. The line crossed at the Horse-race, below Anthony's nose, on the Hudson river, a mast erected on the island there bearing the wires.

This might have been a successful project, but the line was finished by men who evidently knew nothing of their business. The two wires scarcely ever worked separately, and it was afterward found that the insulators were tied down to their bearers by wires which connected with the conductors, and that many trees were used into which the

wires soon sawed a way to the sap. The mast also was imperfectly stayed and soon came down.

In a report by Mr. French of the improved working of this line, after making a laborious journey over it, and aided by Henry W. Cleveland, doing much needed work in removing obstacles, the following curious language occurs: "After finishing my journey, I sent a message from New York to Washington, which, on comparing it afterward with the original, I found *had been received word for word.*" Such a triumph gives a singular insight into the telegraphic condition of the times. In April, 1850, Mr. French became so annoyed with the West Point line that he laid successfully two gutta-percha covered wires across the river at Fort Lee, and which for a time did good service, and led to the abandonment of the West Point line.

Mr. French seems to have been so thoroughly occupied with the constant and irritating demands upon him of all kinds, as to have somewhat isolated himself from current knowledge on the subject of the difficulties under which not only his own, but many other lines were then laboring. It is a notorious fact that for some time the business of the early lines was done very largely at night. No line, indeed, could at that time boast of its transmitting capacity. Mr. French, however, did a large amount of honest energetic labor, and was always personally popular. It became, however, more and more evident that the business, now large and exacting, demanded a stronger and better qualified man to direct it. The line was notoriously unequal to the transmission of the business offered. Both transmission and delivery were fearfully mismanaged. To add to all this, one is astounded to know that in an office like Philadelphia, doing business with the great city of New York, and whose busiest hours of all the day are from 1 to 3 P. M., these very hours, if we are to believe the company's secretary who records the fact, were taken by the operators to go to dinner! Such a looseness of discipline on such a line seems incredible, and must have been exceptional. All this, however, led to the evident necessity of a change. On July 9, 1850, therefore, the board unanimously elected William M. Swain, who had from the first been a member of the board, and the first Philadelphia stockholder, to the presidency of the Company.



*Eng<sup>d</sup> by A. E. Ritchie.*

*Wm. Swain*

WM. SWAIN.

OF PENNSYLVANIA.

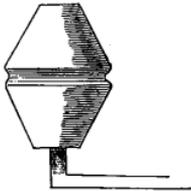
## WILLIAM M. SWAIN.

Mr. William M. Swain was what Dr. Chalmers of Scotland used to call a "man of wecht." He was a man of very positive character. He was proprietor of the *Public Ledger*, of Philadelphia, and watched it with curious and almost ferocious fidelity. At any hour of the night until the paper went to press, he could be found watching the doors of egress, and looking over the face of the sheet before the printing commenced. His countenance was not prepossessing. It bore a morose, thoughtful, distrustful look. He had the appearance of a man who had made a large venture and was watching its issue. One of the Philadelphia papers in sketching him thus wrote, "In good sooth he had an unquestionably dubious face, to which his cold frowning habit of countenance gave an almost sinister expression. His friends used to advise him, jocularly, to keep clear of the court-house, as he certainly would be arrested some day, on the evidence of his features, for a fugitive from justice." That was a picture, of course, purposely exaggerated. Yet there was a likeness. Few men were more difficult to understand. He was taciturn and cautious to excess. Yet to friends he was communicative and kind. I knew him to have most genial qualities of mind and heart. He was a good and steady friend. At the time of the Mexican war we often slept on the same table together, as we waited in the office night after night the arrival of army news at Baltimore.

One morning Mr. Swain stood in the office of the Ledger conversing with a friend. A poor woman had just offered an advertisement which she lacked money sufficient to pay, and was referred by the clerk to Mr. Swain. She begged hard for a reduced price, but Mr. Swain said "No; we treat all alike here." Mr. Swain's friend handed the woman the money needed, and accused Mr. Swain of hardness. Mr. Swain made no reply, but beckoning to the woman, inquired into her circumstances, found them hard, and handed her a gold piece. "I never mix business with charity," was his terse reply to his friend's questioning look. "Business is business," was his favorite motto.

As a telegraph officer, he at once gave vigor, method and responsibility to the business. His predecessor was far too delightful a man for such a position. The change of administration was felt at once when

Swain took the reins. He first had the outward structure carefully inspected. Although a large man he personally accompanied the inspectors of the line on foot over every inch of the route from New York to Washington! He reported having found 3,000 escapes and removed them all! He accepted nothing at second-hand. He had the whole line stiffened, straightened and cleared of obstructions. Not a leaf was allowed to touch the wires. Not a pole was allowed to lean. He then studied insulation, and made a sketch of what is known as the egg insulator. "That," he said, taking me into his office one day,



"is the insulator of the future." He deemed good glass good enough, and the egg shape the form of maximum strength. That was the feature which he wanted. The line was quickly stripped of its former insulation and equipped with egg insulators, first on wooden brackets and afterward on iron pins. The long gaps of hours during which the service of the

line had often been suspended by rains and crosses and escapes and broken wires, soon disappeared.

The first act of his administration after his personal survey of the line, was in connection with the messenger service. He ordered that a messenger should not be allowed to take out more than one message at a time, and that he must be timed, and obtain a timed receipt. In his order he used the following pithy words: "Boys must wait for messages, not messages for boys." This quickened the service. All felt it. The business at once increased. In an order he said, "I am desirous to have the Magnetic Telegraph Company become a model for other telegraph lines to follow in its manner of conducting business, its correctness, promptitude and fidelity to the public."

As an evidence of the peculiar cast of his mind and the particularity of his methods, I was once amused by a call from him to inquire with a very grave face, who was meant by the signature J. D. R., to a message received by him. On acknowledging it as mine, he said, somewhat sternly, "Are you ashamed of your name? when you write me again give me your name in full." On expressing the thought that the initials were sometimes enough, he took the reply up sharply. "Never. Give me

your whole name or nothing." It is easy to imagine how a nature like Mr. Swain's sharpened and invigorated and gave certainty to the service. He adopted from the first extreme views of the company's responsibility. He claimed that the company in taking a message assumed absolutely the responsibility of its prompt and perfect delivery. He took it with all its hazards, and made every man feel that his head depended on the accuracy of his work. Responsibility was vigorously impressed and felt in every detail. In the National Telegraph Convention held in Washington March 5, 1853, among the delegates to which were Amos Kendall, J. K. Morehead, William Tanner, F. O. J. Smith, D. S. Crockett, J. D. Reid, J. D. Caton, J. N. Alvord, J. M. Veitch, W. M. Swain, B. B. French, A. C. Goell, H. O. Alden, James Eddy, Tall. P. Shaffner, Geo. C. Penniman, and W. J. Bacon, Mr. Swain spoke in his usual earnest way as follows, in reference to a resolution presented by Mr. Kendall, proposing to insure dispatches :

"There is too much of cheapness and looseness in all departments of the telegraphic service. Why don't your lines pay? Why is it that we hear of companies going into debt, and pleading poverty? Why are there, on some lines, a set of boys, without a thought of responsibility resting upon them, intrusted with, and undertaking to do, a business of vast consequence, and often involving so fearful results to individuals? It is because you have *belittled* your business. You have courted a sickly flattery from the public for doing the business cheap, and a cheap, a very cheap business you have made of it. In England, it is otherwise. Their rates may be too high, but there you find educated and intelligent men to wait on you. They charge you a good price. They deliver your message, not by a poor boy picked up from the streets to deliver messages at a small weekly pittance, but by a man — a porter — who charges his portorage, cab hire and insurance, and takes a receipt. *But you are afraid to do that.* You are afraid the people will cry 'extortion!' And what *do* you do? You take a message involving thousands of dollars, transmit it for *ten cents* (uttered disgustedly), and deliver it free, and think you have done a meritorious public act! And then, having no profits, you come with long faces, and want help, instead of doing business at living rates like sensible men."

In consistence with his habits of order, he had a resolution passed making it obligatory for offices to make a public announcement of

the exact hours of opening and closing, these hours always to denote local time, and advocated the following resolution, presented by Judge J. D. Caton, of Illinois :

*“Resolved, That no operator ought to be employed on any line after having been qualified or employed previously on any other line, unless he shall produce a satisfactory written recommendation for capacity, integrity and industry, from the President or Superintendent of such other line. And that, whenever an operator or employee shall wish to leave the service of one company, it shall be the duty of the proper officer of such company to give him a just statement of his qualifications, unless he shall be deemed unworthy of further employment.”*

It was still further characteristic of his careful habits to offer the following :

*“Resolved, That it be deemed important that, in the receipt, transmission, and writing out of messages intended to be passed over to connecting lines, the full and explicit address of its designation to be given in letters, and that no abbreviations be suffered to be made by the operator or copyist in any message of a customer ; and further, that in all messages passing over any line, the number of words of which the message is composed be checked.”*

During Mr. Swain's administration messages were required to be received upon the Morse register, and the strips of paper bearing the record were all preserved, with the name of the operator, and the time indorsed thereon. He would not allow messages to be received by sound.

Mr. Swain had a habit of occasionally bringing in a friend with him to the office. His associates were all men of marked business ability. While standing near the manager or clerk on duty he would usually start a conversation full of the most valuable hints on business methods and rules, directed to his companion, but really designed for the instruction of those around him. This was his plan of elevating the service. He made himself felt in every department. These conversations are still vividly remembered by those who heard them.

It need not be said that under such exact and thorough discipline the business inspired universal confidence. The outside structure also became unsurpassed for its reliability and careful construction.

Mr. Swain, however, had interests outside of the telegraph which demanded much of his time. He could readily see, also, that the telegraph interests of the country were approaching a point at which they would require the undivided service of men of the first qualities of executive ability and vigor. He also early recognized the necessity of organic union of the leading lines, and aided its accomplishment. But he, at the same time, felt that his own work was over, and determined to resign. This he did July 1, 1858.

The following is from Mr. Swain's closing address to the Company on declining re-election :

"I congratulate you that we are entirely free from debt; that we have ample funds to pay the semi-annual rent of \$11,500 to the Washington and New Orleans Company (which the Company had leased); the quarterly dividend of three per cent upon our capital of \$375,000; and have besides \$30,000 in reserve to rebuild our lines and defend our rights.

"I entertain the impression that, at the commencement of telegraphing, the tariff of prices was too low for the true interests of the companies and the public. I favor as low prices as a customer, in any business, can be well served for. But I have little doubt that had the prices of transmission of messages been double what they were, the lines would have been better, superior ability would have been employed with a better remuneration, the public would have been better served, and the tariffs now might have been lower than they are.

"Express companies have a different price for transporting very valuable articles from that for the transportation of articles of less value. The telegraph companies, however, charge a poor widow for a despatch announcing her affliction, the same tariff that they charge to a banker or merchant for a message involving tens of thousands of dollars. Now could the tariff of rates be proportioned in some degree to the responsibility involved, it would be in accordance with the principles of strict business justice.

"We may look upon Electric Telegraphy as still in its infancy. I doubt not that the globe is yet to be girdled and the earth threaded in every direction with conductors. How far this newly-applied power is to be instrumental in accomplishing the fulfillment of Scriptural prophecy, that all nations shall speak one language, and that 'nation shall not lift up sword against nation, neither shall they learn war any more,' I must leave future history to tell."

This is but an abstract of a long and thoughtful address. The author of it and almost all his companions in the Board are now dead.

Among Mr. Swain's orders were the following:

Messengers with blanks and pencils will enter the cars at every station, to enable passengers to send messages without leaving their seats.

January 21, 1851. Mr. Swain issued an order forbidding abbreviations of any kind in transmission, and ordered "where quantities, amounts and numbers are mentioned in a message, the operator sending will repeat them, so that the receiver may compare and be doubly certain of having it correct."

January 30, 1851. The addresses of senders of messages were ordered to be written on the back.

February 2, 1851. Ordered offices to keep strings off the wires as offensive to taste and indicating carelessness, as well as being hurtful.

March 19, 1851. Order issued refusing right to operators to be gatherers of news.

April 7, 1851. Ordered every message to be acknowledged before sending a second.

On October 16, 1850, Mr. Swain addressed the operators:

"I am desirous to have the Magnetic Telegraph Co. become a model for other lines to follow in its manner of transacting business, its correctness, promptness and fidelity to the public. I am desirous of this, as well for the credit of each of us as for the interest and prosperity of the Company itself.

"The only correct principle of competition in business, and which I consider to be the only safe one for any person to rely upon in any business, is to serve customers better than a competitor can serve his. It appears to me that any person is safe in business if he unite a consciousness of ability to do this, with a determination to the same end.

"If the Magnetic Telegraph Company can acquire the reputation of being the model line of the country, and it can only be acquired with the aid of all its departments, it will secure the greater proportion of business, and those employed upon it will be sought for by other companies at higher rates of compensation than to those from lines of less repute.

"Now, to acquire this desirable reputation, the line, in all its manage-

ment, must be not only in reality pure but, like Cæsar's wife, above suspicion. It must be so in appearance as well as in fact "

All this and much more of a like quality was in connection with an order to exclude every one from access to the operating rooms except those on duty, and which resulted in large placards being at once placed on every office entrance to the operating rooms — "NO ADMISSION UNDER ANY PRETENSE EXCEPT FOR CLERKS AND OPERATORS OF THIS COMPANY."

In reference to property the following order was issued :

"The property of the Magnetic Telegraph Company should be marked so that it can be described, distinguished, sworn to, and recovered when lost. Do me the favor to mark every thing markable with ink, knife or file, with four straight marks or dots, intended to represent the four words of which the name of our Company is composed."

On July 14, 1853, Thomas M. Clark, who had been a Director from the organization of the company, and for several years its active, energetic and watchful secretary, and to whom the company was indebted for much enthusiastic service outside of his official duties, declined re-election as a member of the Board.

On June 20, 1854, the Morse patent covering the local circuit was renewed for seven years. Alfred Vail was elected a Director July 1, 1855.

Acting under Mr. Swain's counsel, the Magnetic Company, June 2, 1854, entered a disclaimer of the eighth claim of the Morse patent, which claimed "the use of the motive power of the electro or galvanic current, *however developed*, for making or imprinting intelligible characters or signs at any distance." The breadth of the claim was regarded dangerous.

On August 1, 1855, the basis of twenty words as the minimum of the first charge on messages, with a rate five cents less than a message of similar length under the former tariff, was inaugurated, and was reported as a success. The number of messages and receipts increased. It is somewhat curious to note that at this time an attempt was made to annex Brooklyn by laying a cable across the East river, and opening an office in Montague street, but which was, after a few months,

abandoned, the messages only averaging one per day, and the receipts for three months being \$31.14.

MAGNETIC TELEGRAPH CO. STAFF, 1852.

*New York.*

Charles F. Wood, *Chief.*

Joseph Beach, James L. Lillis, W. W. Porter, E. Clasback,  
A. H. Cummings, J. S. Brown, R. H. Woodward, George Stoker,  
T. L. Lillis.

*Baltimore.*

John H. Witman, Geo. K. Witman, John Butler, Philip Crook,  
James Menzies, A. S. Cook.

*Philadelphia.*

W. P. Westervelt, *Chief and Superintendent.*

Joseph F. Beatty, E. F. Hunt, C. H. H. Pannell, C. E. Northway,  
Jno. P. McLearn, R. J. Beall, Jos. S. Greene, E. M. Heist,  
Thos. P. Bladen, L. Eglee.

*Washington.*

J. Read Bailey, J. Mitchell, A. H. Hall, Romulus Gai,  
J. M. Towers, Lambert Tree.

The Magnetic Telegraph Company under Mr. Swain's management was not only exact but liberal and enterprising. In 1856, it leased for a term of ten years from July 7, 1856, the lines of the Washington and New Orleans Telegraph Company, and carried into that line some of the vigor which Mr. Swain had infused into his own. The terms of the lease were four per cent per annum upon its capital and half of all profits over eight per cent. On the leasing of this important line John Kendall became General Superintendent of the united lines. He was not a success. One of his orders was to fine the operators five dollars for errors. Yet he was a most excellent and faithful officer.

Mr. Swain early saw the danger of the segregated condition of the companies of the country, and had he not been tied down with local duties would have taken a more active part in their union. It is an evi-

dence of his liberality, as well as his wisdom, that although it was his interest to foster southern business by his own lines, he leased to the Atlantic and Ohio Company a wire from Philadelphia to New York expressly to enable it to compete with his own line for southern business as well as for prompter western service. He gave the same facility to Mr. Kendall, from Baltimore, and treated all with uprightness and justice.

Up to 1855, the crossing of the North river was a source of constant anxiety and outlay. The cables made from time to time were feeble and imperfect. Mr. Swain, early after his election, ordered masts of great height erected at and opposite Fort Washington. On these five wires were suspended in summer. In winter gutta percha-covered wires were submerged and successfully used. On January 12, 1856, the masts were broken for the third time by sleet and storm. On February 12, 1856, Samuel C. Bishop supplied an armored cable with three conductors, which Superintendent W. P. Westervelt saw successfully laid across the North river opposite the Stevens' estate, at Hoboken. That cable was the first practical solution of cable crossings for our large rivers. A similar one was laid at the Susquehanna, and soon after at the Bush, Darby, Gunpowder, Brandywine, Trenton and Raritan rivers. Masts were everywhere abandoned. Indeed, so great was the success of the cable movement that subterranean lines were proposed. All experience, however, was against them. The project was abandoned almost as soon as entertained.

Mr. Swain showed, in his watchfulness over these cables, the practical quality of his mind. They were kept down by heavy weights with square ends. Anchors caught these square weights, and the cable had to be sacrificed in almost every case. Mr. Swain saw this, had the weights made oval, allowing anchors to slip over them, and the breaks thereafter became rare. Nothing escaped him.

From its peculiar field it was natural that the Magnetic Company should be the first to meet with opposition. And so it happened that when Royal E. House invented his beautiful device for recording by the use of the electric current, messages in Roman characters, and obtained his patent, a company was quickly organized to test its merits

and compete for public business. Accordingly in June, 1848, the "New York and Washington Printing Telegraph Co." was organized, and under the presidency of Hugh Downing, of Philadelphia, took a moderate share of the business. Had Mr. Downing been a more practical and discreet manager it might have been a formidable competitor. St. George T. Campbell, January 21, 1852, notified the House Co. that any attempt to build south of Philadelphia would be resisted on the plea of an infringement of the Morse patent. The opposition of the House Printing Telegraph Company between New York and Philadelphia was, however, never seriously felt. The "Magnetic Telegraph Company" had a much more serious competitor in the "North American Telegraph Company," or "Bain Line," organized also in 1848, under the vigorous presidency of Zenas Barnum, of Baltimore, and of which Henry J. Rogers was superintendent. The Bain machinery used on that line was claimed by Prof. Morse as a flagrant piracy of his own invention. Even the Morse relay and local circuits were used. The Magnetic Company therefore commenced proceedings in equity against the new company, the result of which was that the Morse claims were thoroughly established, and on January 1, 1852, the property of the Bain line was surrendered to the Magnetic Company for an issue of \$83,000 of Magnetic stock, all damages by reason of alleged violation of the patent to be waived. It is proof of the vigor of the opposition and of the business which the contest had developed, that immediately on their union the receipts of the Magnetic Telegraph Company increased one hundred per cent. The Bain line owed much of their fine working capacity to the use of number eight galvanized wires, manufactured by Marshall Lefferts & Co., of New York, and which, for a time, the Magnetic Company refused to employ.

The dividends of the first five years of the Magnetic Telegraph Company, ending with 1852, were severally six, nine, two, two, and nine per cent per annum. In 1853 and 1854 dividends of thirteen per cent per annum were declared. After this, quarterly dividends of three per cent were regularly paid, at the same time that a good surplus was invariably retained in the Treasurer's hands for emergencies, and all this was accomplished in the face of a vigorous opposition.

In 1859, when the American Telegraph Company, then under the full prestige of a wealthy and influential executive and backing, had incorporated all the chief lines on the eastern seaboard, had obtained possession of the House Printing Telegraph Company's line south of New York, and was projecting other important lines under the Hughes patent, the Magnetic Telegraph Company, through its chief stockholders, Prof. Morse, Amos Kendall, William M. Swain, Zenas Barnum, Merritt Canby, Samuel C. Bishop, B. B. French and others, favored consolidation with the American. Every thing tended toward a unification of telegraph interests on a wide scale, as the means of preserving the value of telegraphic property. George H. Hart, William Heaton, George Griscom, Jerry Walker and others, protested against surrender. But the wise men won, and on receipt of \$500,000 American Telegraph Company stock, transferred to the American Company, \$369,300 of the Magnetic Company's stock, a fund of \$103,000 furnished by the American Company having been successfully used to purchase the stock of the protestants. Three out of eight directors were secured to represent the Magnetic Telegraph Company stockholders in the American Company, and Zenas Barnum, President of the Magnetic, was elected President of the consolidated companies.

The Treasurer of the Magnetic Telegraph Company, George H. Hart, suited Mr. Swain. He was severely exact, systematic, conservative. His motto was, "There is no friendship in business." In 1859, when the consolidating processes began to be active, and Swain shook hands with Sibley, Mr. Hart sold out and retired. Mr. Thomas P. Bladen, a most excellent man, took his place. Joseph Sailer remained Secretary to the last. He was a cultivated gentleman and a steady friend.

No company organized in America has had its affairs managed with more scrupulous honor, or minute care, or intelligent vigor, than the Magnetic Telegraph Company under Mr. Swain, and to him must ever be accorded the first rank as a telegraph administrator.

It is not too much to say that the example of that company, the carefulness of its instructions, the safeguards it adopted, the sense of responsibility it inspired, had much to do in shaping the telegraph administration of the country.

## CHAPTER XII.

## WASHINGTON AND NEW ORLEANS TELEGRAPH COMPANY.

MR. KENDALL early regarded the South as the most valuable field for the employment of the telegraph. He was thoroughly familiar with its commerce and necessities. In a letter to a friend in New York, dated September 18, 1846, he wrote, with more than his usual warmth, as follows:

"The line south is the great commercial line of the country. The results of the Express Mail run by me from New York to New Orleans, when Postmaster-General, gave me confidence in the telegraph as a source of revenue. It carried letters at triple postage, and slips for the newspapers free. It obtained no revenue on the correspondence between New York and Philadelphia, where was a railroad mail, and none between Mobile and New Orleans, where it was carried by steamboat. Yet the gross revenue yielded by that mail exceeded \$280,000 per annum, being over \$200 per mile from New York to New Orleans, or *more than enough to build a telegraph of two good wires.*

"From the following facts you can judge whether a telegraph on this line will not yield an income three or four times greater than that produced by the Express Mail:

"1st. The *charge may be doubled*, by which the income would be doubled without any increase in the number of communications.

"2d. The number of communications will be greatly increased. It took two weeks to exchange communications between New York and New Orleans by the Express Mail; by telegraph it can be done several times a day. The express was a *daily* mail; the telegraph is an *all-day* mail. Experience shows that parties in New York and Philadelphia often exchange communications three or four times a day. The same would happen between New York and other eastern cities on the one hand and New Orleans on the other.

"3d. The press paid the Express Mail nothing; it will pay the telegraph over ten per cent of its income.

"4th. The local correspondence between New York and Philadelphia paid the Express Mail nothing; it now pays the telegraph more than half its income. Between New Orleans and Mobile the same advantage is to be gained by the telegraph.

"5th. The Express Mail derived no income from the western correspondence with New York and the East, but the telegraph will obtain a large accession by sending all western telegraphic dispatches from Philadelphia to that city.

"I will not carry out the estimate of income which these facts justify, lest it should startle credulity itself; but I will suppose that it will but double that of the Express Mail, producing the gross annual sum of \$560,000. Suppose the annual expenses be \$110,000 (at least \$30,000 more than they will be), it would leave a net annual income of \$450,000. *This is more than enough to build a line of four wires from city to city.* It is equal to six per cent on a capital of \$7,500,000.

"There is no other chance in the world for creating so great a property by so small an expenditure. A capital of \$150 per mile will carry a first-rate line of wire from this city to New Orleans, and that wire would soon give the means to put up another.

"That it was the *through-going* business which produced most of the revenue to the Express Mail is shown by the post-office accounts, viz.:

Total charge on mails sent, as officially reported, for three quarters, ending 30th September, 1837, \$179,406.

New York .....	\$64,998
Philadelphia .....	10,940
New Orleans...	51,235
Mobile .....	26,482

In all..... \$153,655

"This, you will perceive, is more than five-sixths of the whole amount; all the intermediate cities giving but \$25,751. Several small offices made no returns, but they would not have varied the result \$10,000.

"The aggregate of New York and Philadelphia is \$75,938, and of New Orleans and Mobile, \$77,717.

"These facts show how the *great* commercial business of the country is concentrated at or near the extremes of the northern and southern line, the intermediate places being of little comparative importance.

"AMOS KENDALL."

Acting upon the evidence in his possession of the great value of a telegraphic connection with the cities of the south, measures were early taken to construct a line to New Orleans via Wilmington, Charleston, Montgomery and Mobile. The lesson learned by the lack of particularity in the O'Reilly contract had been already learned, and in November, 1846, a contract, remarkable for its detail and careful statement of particulars, was executed between the patentees and John J. Haley, of New York, for the construction of the line. The patent was placed in the possession of three trustees, with directions to issue it only on the fulfillment of the contract and the completion of the whole line by October 1, 1848. The terms of the contract were, \$150 per mile of a single wire line and \$200 for one of two wires. The patentees were to receive an amount of stock equal to that issued for the construction. The patentees' interest in construction does not appear. It was complimentary to the New York, Albany and Buffalo Telegraph Company that its line was to be recognized as the model for the construction of the line south, except that the number of poles *were not to exceed twenty per mile*. This was Mr. Kendall's plan to secure insulation, by diminishing the points of contact. The articles of the Magnetic Telegraph Company regulating the powers of trustees were adopted as the basis of their powers south. Instead of tacit understandings, as proved so disastrous in the case of O'Reilly, every thing was clearly and fully expressed in the contract. The contractor was held firmly to his agreement. Subscriptions were speedily and easily obtained for the whole line, with ten per cent paid down at the time of subscribing. Mr. Kendall's letter, already quoted, was printed and largely circulated, and, although it scarcely required it to convince southern men of the value of such a mode of communication, it materially aided the contractor in closing his subscription list. The amount subscribed was in all \$280,850. The capital stock was \$561,700.

The line was no doubt built in ordinary good faith, but men's ideas of a reliable structure at that period were not exalted. Mr. Haley was a good man, and made good pies in Nassau street. He was a relative of F. O. J. Smith, and had offered a bonus for the contract. To him

the building of the southern line was a matter of money making. He chose a good assistant in Charles S. Bulkley, who left the New York office to be Haley's engineer. Had the experience of twenty years gone with them, the rosy visions of Mr. Kendall's letter might have been at once realized. But, in spite of all care, and after all the fidelity of trustees and agents, the line when finished was not the reliable permanent structure it has since become. When it was opened for business it was flooded with messages, and became an important feeder of the line to New York. When the communication was unbroken, the volume of business was very large. Yet such was its irregularity that the Magnetic Telegraph Company, in order to control and develop it, were enabled to lease it, July 7, 1856, for ten years, at an annual rental of four per cent on the capital stock and half of all profits over eight per cent. The necessities of the line were made apparent by the terms of the lease. By it the lessees agreed to spend at once \$25,000 on permanent improvements, and all the excess over four per cent, in rendering the line thoroughly reliable and equal to its best portions. One of these improvements was an increase in the number of poles. The commissioners of the Washington and New Orleans line in perfecting this important contract were Amos Kendall, Edward G. Hyde and W. M. Goodrich. John Kendall was appointed General Superintendent of the united lines from New Orleans to New York. Since that period the history of the Company has been merged with the Magnetic and American and Western Union Companies, under whom the route has been made one of the most reliable and uniform of any in America. The whole structure has been thoroughly rebuilt, furnished with wires of the highest capacity, and planted along the railroads.

For some years after the construction of the Washington and New Orleans line, Charles S. Bulkley acted as Superintendent and Elam Alexander as President. Mr. Bulkley, while so engaged, invented the earliest of the automatic repeating instruments which now form so valuable a part of American telegraphic machinery, and which enabled messages to be sent direct from New York and Washington to New Orleans. In doing so the line was divided into ten circuits, with a

repeater for each. It is not now used. It was called an open circuit repeater, and was ingenious and useful. By some it is still regarded as unexcelled. Davis and Rae, in their beautiful hand-book of electrical diagrams, omit mention of it. Prescott describes it in full.

Frank L. Pope thus neatly and concisely describes its action :

“Bulkeley arranged the terminal main batteries upon each circuit, so that when the line was at rest the action of each battery opposed and neutralized that of the other. The signals were sent by an ingenious transmitter, worked by a local circuit and key. The transmitter reversed the poles of the battery at the sending station every time the key was depressed. It was the precise arrangement now forming an important portion of the quadruplex apparatus. The relay thus brought into action at the distant station, worked by a local circuit another transmitter for the next circuit, and so on. Of course it would operate equally well in either direction, as it mattered not which battery was reversed to bring it into harmony with the other. This repeater was justly regarded as a marvelous triumph of ingenuity.”

Bulkeley concealed his invention from prying eyes and expert “improvers,” by adopting Vail’s plan of fitting up the connections by such a wondrous maze of wire ringlets as effectually bothered and defeated investigation.

Like all other lines, much of the value of the Washington and New Orleans line grew out of the patience, the skill and fidelity of its employees, some of whom are still in service. Among the more devoted of these men were J. R. Dowell, of Richmond, J. A. Brenner, of Augusta, E. W. Barnes, of New Orleans, W. Sanford and C. G. Merriwether, of Mobile, C. H. Edwards, of Pollard, and the excellent W. M. Nettles, sometimes called “Peach Tree,” of Selma. The name of “Peach Tree” grew out of some honest haste to do his duty during the war, which induced him to pull up a peach tree to which his horse was tied, rather than wait to untie it, and thus miss a chance at the Yankees.

The final value of this line, when its great points of profit were connected under a single administration and reached by a single writing, was another revelation of the secret of telegraphic success, which every year made more and more apparent.

## CHAPTER XIII.

## THE WESTERN TELEGRAPH COMPANY.

THE Western Telegraph Company was organized at Baltimore, Md., November 10, 1848. The route of its line was from Baltimore to Wheeling, via Harper's Ferry and Brownsville. The distance was 277 miles. It included also a branch from Frederick to Washington of 45 miles. Subscriptions were freely obtained even at the smallest places. Cumberland and Uniontown each subscribed about \$10,000. Baltimore, where the value of the telegraph was first realized, gave \$50,000. The builders, Messrs. E. M. and E. D. Townsend, of Trenton, N. J., were allowed \$300 a mile for a single wire line, with 20 poles per mile, the wire to be three-ply, number 14, iron wire, and to be painted as put up, to be insulated with square glass blocks, set in the end of the poles, with a glass cover, and a wooden roof ten inches square. The poles were to be of white oak, chestnut or cedar. The subscription of \$96,600 was readily obtained, and promptly paid. Yet the contractors left numerous debts along the line to annoy the new company. Of the \$300 per mile allowed for construction, the patentees had a share in the profits. The structure could not have cost more than \$100 per mile. Poles were cheap and convenient. A committee reported the line as thoroughly built and complete. They would not swear to it now. William Reynolds and John F. Pickrell were the Trustees. In those early days a wiggle of the magnet was success. The by-laws were carefully drawn by James Faulkner, Thomas J. McKaig, Howard Kennedy, George R. Dodge and James Gittings. The contractors of their own accord built a branch from Brownsville to Pittsburg — 32 miles — to turn an honest penny by a sale to the company. This whole route was

spoken of as the legitimate Morse line to the west. It was to be fed by the Magnetic at Baltimore. Hence the ease in obtaining subscriptions. The limitation of the number of poles to 20 per mile was Mr. Kendall's idea, and the object was to improve the insulation. A single winter's experience proved its fallacy, and 35 became the standard number.

The first officers were John F. Pickrell, President; Thomas G. McKaig, Treasurer; Howard Kennedy, Secretary. The Secretary was also Superintendent. F. O. J. Smith refused to join in the conveyance of the patent. That was like him. He wanted half the capital for the patent. Kendall settled three-fourths of the patent interest at a quarter. The stock issued to him for Mr. Morse, Mr. Vail and Dr. Gale was \$22,325. This made the capital \$118,925. The first Board of Directors was composed as follows: Marcus Denison, John H. B. Latrobe, George R. Dodge, A. B. Hanson, James Giddings, C. J. Faulkner, Geo. W. Cass, J. C. Acheson, J. R. Baker, Amos Kendall. The staff of the line, when opened, was as follows:

		Salaries.
Baltimore .....	Allen Paine, Jr.....	\$600
Baltimore .....	John A. Thompson .....	250
Baltimore .....	John H. Miller.....	300
Washington, D. C.....	E. Colton .....	500
Frederick .....	C. Schroeder .....	400
Harper's Ferry .....	W. H. Heiss.....	250
Martinsburgh .....	C. D. Hebb .....	300
Cumberland .....	John R. Mingle .....	400
Uniontown .....	W. H. Parish .....	300
Brownsville .....	W. H. McCalla .....	300
Washington, Pa.....	A. Morgan .....	300
Wheeling .....	B. Howard, Jr .....	500

William H. Heiss, who took the office at Harper's Ferry, became afterward connected with the "Magnetic" Company in 1847. He built in company with Samuel Porter the line from Sandy Hook to Long Branch; became Superintendent of the Washington and New Orleans Company after Charles Buckley entered the military telegraph service; and was Superintendent of military telegraph lines

under Gen. Stager. After the war he became Superintendent for the American Telegraph Company, and then, for seven years, was Superintendent of the International Ocean Telegraph Company until it came under the jurisdiction of the Western Union Telegraph Company.

It was not long after the line was opened before the high expectation formed of a close connection with the seaboard line was dispelled. The Atlantic and Ohio Company, Philadelphia to Pittsburg, obtained control of a line built by George C. Penniman and Henry J. Rogers, from Harrisburgh to Baltimore. It could readily have made a connection at Philadelphia with the House line to New York. It was doing a large and profitable traffic. The Magnetic decided not to make it an enemy. So President French withdrew an order given to connect at Baltimore with the Western Company. This enraged them. A committee of three protested in vain. The result was that on November 1, 1849, the President reported a deficit of \$1,558.83. This was discouraging.

A new programme was now ordered. The President was made Superintendent. The officers were to receive no salaries. The elected were George R. Dodge, President; Samuel McCubbin, Secretary; Phillip Sittig, Jr., Treasurer, and a new set of Directors. But matters did not improve. The connecting line at Wheeling down the Ohio to Louisville was already useless through poverty and neglect, and by the close of the year Mr. Kendall made a rash offer to lease and work the lines from Baltimore to New Orleans via Louisville himself. He offered to pay three and one-half per cent on the capital the first year, and six per cent during the next four. So he was made President, and his reign commenced December 24, 1850. His first act was to lease a wire of the Magnetic Company from Baltimore to New York, to enable him to compete with the Atlantic and Ohio Company who had leased a wire of the same company between Philadelphia and New York. It was enterprising, but there was no outlet at Wheeling, and the Ohio River line which led to New Orleans was and was not. Mr. Kendall's trouble commenced by T. C. H. Smith, the manager of the New Orleans and Ohio line, shaking hands with J. H. Wade and sending southern business via Cleveland. This was the subject of a contract July 1,

1851. The result was that at the end of the first year Mr. Kendall had lost money. To add to the general unhappiness the wire leased from Baltimore to New York, which for economical reasons was also to be used by the Washington and New Orleans Company, fell into the control of the latter power, which took a hostile attitude to the western route. There were tears at both ends. It may well be wondered how two parties, aiming at the same objective point, by two routes, could be else than hostile. The net income of 1851 was \$550. The lease was given up. Mr. Kendall was re-elected president, without salary, which he offered to accept, so that he might test the merits of a repeater he had, in connection with Mr. Joseph B. Tree, invented, and by which he still hoped to reach New Orleans. Messrs. Kendall and Tree, in the claim made for this repeater say, "We claim to be the first who have discovered and carried into effect, a plan by which two or more closed circuits, with one battery in a circuit, or more than one with corresponding poles, can be so connected together, that any one station on the circuits combined can interchange communications with every other station on such circuits, without change of any mechanical arrangements, and without repetition by any operator, as readily as if the stations corresponding were on the same main circuit." Nothing seems to have come of this. Mr. Kendall was an old man. He was pressed with other duties and an immense correspondence. At the close of 1852 the treasurer showed a balance on hand of \$905.13, and debts due, \$1,337.37.

The control of the lines south of Louisville, Ky., having changed hands, an agreement was entered into between Mr. Kendall and James D. Reid, Superintendent of the People's line to New Orleans, and who was also the superintendent of the lines east, first to unite the New Orleans and Ohio line south of Louisville, with the People's line, under Reid's superintendence, and secondly, a division of business for the east between the Western Company and the O'Reilly lines. This was the bow of promise. It meant peace. It brought Baltimore and Washington business to the Western Telegraph Company at Wheeling and Pittsburgh without relying on the river line. The wire to New York was surrendered. John Mingle was made superintendent of the Western Company, Nov. 15, 1852. George R. Dodge was elected president,

and in August, 1853, a dividend of two per cent was declared. In 1853 an important arrangement was made with the Baltimore and Ohio Railroad Company for mutual benefit, but which, for some time, was unsatisfactory. It became effective as the parties understood more clearly their mutual interests. In 1854, J. H. Wade secured the Western business of the Company for his lines at Wheeling, and on the election of Samuel Maccubbin as President and C. Westbrook as Superintendent, the lines were extended to Chambersburg, Pa., and Parkersburg, Va. The Treasurer reported November 1, 1854, a deficit of \$1.10 as the result of the year's business.

In 1855 Jacob Carman was elected President. The line of the Marietta and Cincinnati Telegraph Company was purchased and a valuable contract made with the Cincinnati *Gazette* for independent reports from Washington. This gave the Company prominence and value. It led to an offer from the Magnetic Telegraph Company of a thirty years lease on an annual rent equal to six per cent on its capital of \$174,600, which was consummated August 13, 1858.

The Charter of the Western Telegraph Company expired February 3, 1877. To re-establish its existence the stockholders became incorporated December 28, 1876, under the General Laws of Maryland, chap. 471, Act of 1868, as "The Western Telegraph Company of Baltimore City," for 39 years and six months, electing as Directors, Charles Kerr, C. J. M. Gwinn, Arch. Wilson, Jr. William Orton and Cambridge Livingston, and choosing January 29, 1877, Arch. Wilson, Jr., as President; R. H. Rochester, Treasurer; J. B. Van Every, Auditor, and John J. G. Riley, Secretary. The new company also formally accepted the Act of Congress "An act to aid in the construction of Telegraph lines and to secure the Government the use of the same for postal, military and other purposes approved July 24, 1866, with all the powers, privileges, restrictions and obligations conferred and required thereby."

On the expiration of the Charter of the Western Telegraph Company the Baltimore and Ohio Railroad Company, claiming its extinction, seized its property. The Western Union Telegraph Company, who inherited the lease, stopped payment of the rent. The case is before the courts.

## CHAPTER XIV.

## THE O'REILLY CONTRACT.

ON the 13th of June, 1845, Henry O'Reilly, a citizen of Rochester, N. Y., entered into a contract with the Morse patentees for the extension of the Morse telegraph over a region of territory wider and more valuable than any which had been yet contemplated under a single assignment. The contract defined the limits of O'Reilly's operations as follows :

"The said Henry O'Reilly undertakes on his part, and at his own expense, to use his best endeavors to raise capital for the construction of *a line* of Morse's Electro-Magnetic Telegraph to connect the great seaboard line at Philadelphia, or at such other convenient point on said line as may approach nearer to Harrisburg, in Pennsylvania, and from thence through Harrisburg and other intermediate towns to Pittsburg, and thence through Wheeling and Cincinnati, and such other towns and cities as the said O'Reilly and his associates may elect, to St. Louis, and also to the principal towns on the lakes."

In entering into this arrangement Mr. Kendall had in view, as he asserted, a large and dominating western management, which, by its control of the great channels of intercourse between the east and west as well as south, would of necessity become immensely valuable. This interpretation is expressed by two words only, "*a line*," which are placed in italics to note them. Its great connecting points with other organizations were to be Philadelphia, Louisville, St. Louis, Chicago, and Erie, Pa. The contract gave O'Reilly no powers of organization. These were to be vested in trustees. If Mr. Kendall is to be believed, the value of the contract made with O'Reilly had its chief value in

securing over this whole region a single and undivided ownership and control. It was a wise purpose. Unfortunately, however, for him, and unfortunately for his principals, this chief feature of the contract, and underlying its value, had no adequate expression in the contract such as its important character demanded. This seems to have been left as its natural and necessary outgrowth. Under such an expectation the contract was an expression of great confidence in O'Reilly, and which was a confidence sincerely entertained. Yet it was a trust which had no justification as an act of business.

Henry O'Reilly had previous to this time been Postmaster at Rochester, N. Y.—Mr. Kendall being Postmaster-General. In connection with that office, he had voluntarily become the active agent of the Post-Office Department, in the pursuit and punishment of mail robbers in Western New York. He was indefatigable, carried on an enormous correspondence, was successful in his pursuit of offenders, and gave reputation to the Department. Mr. Kendall saw in all these things the proofs of a man suited to the trust he now reposed in him.

Henry O'Reilly was in many respects a wonderful man. His tastes were cultivated. His instincts were fine. He was intelligent and genial. His energy was untiring, his hopefulness shining. His mental activity and power of continuous labor were marvelous. He was liberal, generous, profuse, full of the best instincts of his nation. But he lacked prudence in money matters, was loose in the use of it, had little veneration for contracts, was more anxious for personal fame than wealth. He formed and broke friendships with equal rapidity, was bitter in his hates, was impatient of restraint. My personal attachment to him was great and sincere. We were friends for many years, until he became the agent of F. O. J. Smith, and my duties threw me in collision with him.

The contract further stipulated that

“When the said O'Reilly shall have procured a fund sufficient to build a line of one wire from the connecting point aforesaid (*i. e.*, the seaboard) to Harrisburg, or any points further west, to convey the patent right to said line so covered by capital in trust for themselves and the said O'Reilly and his associates, on the terms and conditions set forth in the Articles of Agreement and Association constituting the Magnetic Telegraph Company, and providing for the government

thereof, with the following alterations, viz. : The amount of stock or other interest in the *lines* to be constructed reserved to the grantors and assigns shall be one-fourth part only, and not one-half of the whole, on so much capital as shall be required to construct a line of two wires. No preference to be given to the party of the first part in the construction of connecting lines, nor shall any thing herein be construed to prevent an extension by the patentees of a line from Buffalo to connect with the lake towns at Erie; nor to prevent the construction of a line from New Orleans to connect the western towns directly with that city; but such lines shall not be used to connect any western cities or towns with each other which may have been already connected by said O'Reilly.

"Unless the line from the point of connection with the seaboard route shall be constructed within six months from date to Harrisburg, and capital provided for its extension to Pittsburg within said time, then this agreement, and any conveyance in trust that may have been made in pursuance thereof, shall be null and void thereafter, unless it shall satisfactorily appear that unforeseen difficulties are experienced in obtaining the right of way along the public works, and in that event the conditional annulment shall take effect at the end of six months after such permission shall be given or refused.

"And the party of the second part shall convey said patent right *on any line* beyond Pittsburg to *any point of commercial magnitude*, when the necessary capital for the construction of the same shall have been subscribed, within the period contemplated by this agreement."

Such, omitting a few unimportant sentences, was the O'Reilly contract, which was destined to become the root of a powerful and dangerous opposition to the Morse patent, and which never yielded a dollar to the patentees until many years thereafter, when a purse was made up by various companies interested in stopping litigation, and which was paid to F. O. J. Smith, one of the owners of the patent, to extinguish forever this and all outlying patent claims.

It will be readily granted, notwithstanding Mr. Kendall's claim, that there is nothing expressed in the language of the contract to prevent, but rather to encourage, the idea of sectional organizations, as the construction of the lines reached points of commercial importance. One feature of the contract is extraordinary. It virtually gave the right to the patentees to sell the same territory over again for lines to carry

the business created for or from territory outside the O'Reilly limits. The New Orleans and Ohio Company was organized, Mr. Kendall averred, on this right. Mr. Kendall's plan is related by himself thus :

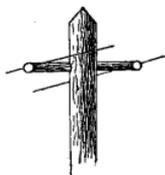
" This range was intended to be embraced in one company, in which the patent right should constitute one-fourth of the stock. The design was to bring over this line all the telegraphic correspondence between Philadelphia and points east on the one hand, and the entire western country from Erie, Pa., to an indefinite point on the lower Mississippi, on the other."

There can be little doubt that Mr. Kendall's plan was the only true policy to secure value to telegraphic property. Why it was suppressed in the contract is not clear, and throws a doubt as to its being then a matured thought. There is no evidence to show that Mr. Kendall, by letter or by conversation, impressed Mr. O'Reilly with this project of a single company, so as to indicate it as a dominating idea in the work before him.

Immediately on the execution of his contract Mr. O'Reilly went to Rochester, N. Y., where he had long resided and where he was held in high esteem. He at once called together a few leading citizens, who promptly provided money to build forty miles of an initial line from Lancaster to Harrisburg, Pa. The members of this original compact, called the Atlantic Lake and Mississippi Valley Telegraph Company, were Jonathan Childs, Samuel L. Selden, Henry R. Selden, Elisha D. Ely, Hugh T. Brooks, Micah Brooks, John S. Skinner, Hervey Ely, Alvah Strong and George Dawson, all well-known and influential men. Henry R. Selden was made President, George Dawson, Treasurer, and Henry O'Reilly, Secretary. At O'Reilly's request also, James D. Reid, who had been his post-office assistant, and who was then serving with Anson Stager in the office of the Rochester Daily Democrat, the first as book-keeper and the latter as "devil," joined him early in September, of the same year, to aid him in organizing his work.

The building was commenced at Lancaster, Pa., in September, 1845. The builders were Capt. John O'Reilly and Bernard O'Connor. They had no experience, and were without instructions, except of the most indefinite character. The line was built along the route of the

Lancaster and Harrisburg Railroad, the officers of which were very courteous and friendly. The poles erected were small and had pins resembling chair rungs inserted through an augur hole near the top to bear the wires, which were to be wrapped round either end, and for which purpose a shallow groove had been worked near either extremity. If there is beauty in simplicity, it was surely here. As to insulation, it was a long word few of us understood.



Vail's pamphlet, however, came to our relief, and it was faithfully studied. In it we were directed to dip cotton cloth in bees wax, as a method of securing good insulation. That seemed a simple and easy process, to which we were quite equal. David Brooks, a relative of Mr. O'Reilly, being keen at a trade, was delegated to purchase a supply of bees wax, and to contract for cotton cloth. He superintended also the melting process, and so imbibed his first lesson in insulation. From bees wax to paraffine was not a difficult ascent. The rags were cut up by Henry Hepburne, a young fellow from Rochester, now a Wall street broker, but who didn't take to the business much, and who made himself useful chiefly in making sport with Brooks' wax-pot. It was a merry party. Henry O'Reilly wrote letters and smiled benignantly on the proceedings. Professor Silliman could not have expressed more quiet delight over the scientific aspect of things, than did O'Reilly with his round, rosy face. The room, however, with the waxed rags laying round to dry, looked much like a hospital in preparation for a wounded host.

The wires were No. 14 unannealed copper. They were ordered to be drawn up tight. The idea seemed to prevail that the curving of the wire might affect the destination of messages, and that there was safety only in their being pulled up so as to present a straight line. The notion at least seemed sensible, and all the wiremen of the party stroked their chins over it. So wrapping the waxed cloths around the grooved pins the wires were embedded in the grooves and strung tight from pole to pole. The line looked very trim and handsome, as in the evening of a fine October day we looked at our first day's work. We noticed that some enterprising bees, not yet frightened by the gentle

frosts of the October nights, came to our waxed rags, no doubt to replevin on their lost stores. But their opportunity was brief, a heavy rain and a sharp frost soon left our cotton insulation fluttering in the air, and bees wax and cotton soon disappeared.

It was while this line was in progress that our first lesson in atmospheric electricity and earth currents was learned. We had seated ourselves on the bank by the side of the railroad to eat our noon meal. The wire hung from a pole near us, with the end reaching to about five feet from the ground. Just then a bull calf, with an investigating turn of mind, walked up the bank and sniffed around the pole. Finally seeing the dangling wire, and possessed with a desire for knowledge, it reached up its nose and putting out its tongue licked the wire. It had no sooner done so than, with a prodigious baa and tail uplifted high, it leaped over our dinner dishes, cavorted over the fence into an adjacent field, from between the bars of which it gazed back in grieved wonder at the source of its alarm. We discussed the subject over our milk, and began to see. We got so far advanced, indeed, that on the instruments being set up at Harrisburg, some of us succeeded in sending a message by means of a wire dipped into the water of the canal, forming by short and long plunges the Morse signs. It was thought a wonderful feat, and certainly indicated progress.

On Thanksgiving day, November 24th, the line was finished from Lancaster to Harrisburg, forty miles. We had two excellent registers sent us by Mr. Vail. The magnets came from Mr. Ezra Cornell. They had eight coils, and from their peculiar construction and action, were called the wind-mill magnets. These magnets were strong and sensitive, with armatures at each end of two long levers, crossed diagonally. But the mechanical arrangement of the parts and defective construction prevented easy adjustment. The cores also were not thoroughly annealed, and with a stiff battery on, the armatures stuck. These magnets were accompanied by a paper for signature, recognizing them as an improvement, which O'Reilly refused to sign. Just then, also, a storm came on, the weather became severe, deep snow fell, and our tight drawn copper wire broke in a hundred places. Away out on the line, therefore, we had to travel, many a long weary mile. We

could not afford a conveyance. We were all poor. As we came home at night, sore and lame with fatigue, only to renew the same tedious work in the morning, the glory of the enterprise became visibly dim. Between the effect of this storm and trouble with the magnets, the offices were soon closed, and were not re-opened until January 6, 1846. Meantime I spent December with Mr. Vail at Philadelphia.

The six months named in the contract had expired December 13th. One link of forty miles, connecting two interior towns only, had been completed. Seventy miles yet lay between Lancaster and the seaboard. F. O. J. Smith claimed the contract as forfeited, but no official or other notice of the claim was served. Mr. Kendall also held that the subscription for the line to Pittsburg had not been filled as the contract required. Yet O'Reilly had done the best he could, and no man could have been more earnestly industrious.

On opening the offices again, we had received two large magnets from Washington, constructed by Mr. Charles T. Smith. The coils were of No. 16 copper wire, cotton covered and saturated with gum shellac, the whole magnet weighing about seventy-five pounds. They were similar to those first used in Philadelphia. We were now very anxious to get to work, for the money was all gone. So we arranged every thing with great care, had our Grove battery steaming up splendidly, and hoped for success. During December, the wires had been slackened, and we congratulated ourselves that the winter of our discontent was past.

But the line did not at once respond. We could hear the big iron cores throb with the effort to speak to us. It was sometime, however, before we got the wiggle of the thing; at last, however, after much careful adjusting, it came and we were happy. I had learned the Morse idiom by dint of tapping out the alphabet, day and night, with my finger-ends on tables, on car windows and my bedpost, having had no other means of learning. No schools for plugs had yet been opened. I had practiced so earnestly on my imaginary line that the "correspondent," as Prof. Morse happily called his key, came quite readily to me, and I was delighted to find I could manipulate a message. And now we sighed for business. Our board bills were waxing large.

We needed material aid. So when the first visitor came in, looking cautiously before him, we felt that the age of gold had come. How kindly he was received, no tongue can tell. Others followed to whom we delivered learned lectures on electricity and made a good deal of the word "polarity," which sounded euphonious and inspired evident respect. But nobody proposed to send a message. Seeing this, and our needs being great, we proposed to do as they had done at Washington, send the names of visitors to and fro for six cents a piece, the letters to be "punched in the presence of the passengaire." Of this we did a small business, just enough to procure the material for a taffy-pull in the evening, which was the diversion of the time, when, after the day's anxieties, we met in the parlor of our boarding place. Yet we laid down our weary heads in hope.

It was two or three days before any one offered to send a message. No one seemed willing to be the first fool. At last a brave burgher offered a message for Lancaster, for which he paid a silver quarter. How beautiful it looked only the hungry soul can tell. Happily it brought a quick reply. This elevated our feathers. The fame thereof quickly spread. Good old Governor Shunk and his family came down to see us, and who kindly wished us all manner of success. But just as it seemed to be coming, another storm desolated the line. The breaks were many. It was a pitiful sight to see us straggling out again through the deep snow, crawling home at midnight, worn and sore, to our welcome beds. We braved all this awhile, but it was no use. Bravery would not pay bills. So, after a time, it was determined to take down the copper wire. This was done, and the wire sold. Our debts were paid. The line was not opened again until September, 1846, when, having been extended to Philadelphia, along the route of the Columbia or State Railroad, and supplied with an iron wire composed of three strands, made by Hugh Downing, of Philadelphia, the offices were opened for business. By this time, also, we had learned something of the secret of insulation; glass blocks were introduced to bear the wires, and the golden era at last seemed to have arrived.

Meanwhile, O'Reilly spent much of his time at Philadelphia, endeavoring to awake an interest in telegraph matters. He was successful in

this. He took the contract for building the Magnetic Telegraph Company's line to Baltimore from Philadelphia. He also secured several valuable subscriptions in Philadelphia for the line West, which was now pushed forward toward Pittsburg. William McKee, an aged merchant, but active, intelligent and enterprising, was among the first to subscribe, and when his name went down for \$5,000, light broke rapidly, and others speedily followed his example. The days of poverty were ended. At Pittsburg the scheme was received with much favor. Joshua Hanna, a man of influence and energy, first welcomed Mr. O'Reilly, and became his agent. Through him numerous valuable subscriptions were obtained, one of the first being from Gen. J. K. Moorhead, and thus abundant means were provided to complete the line to the iron city. The route selected was via the railroad through Carlisle to Chambersburg, and thence by the stage road through Bloody Run and Bedford to Pittsburg.

And now things were pushed with so much vigor that, on December 29, 1846, the line was opened from Philadelphia to Pittsburg for business. The insulation was chiefly with square blocks of glass, flanged at either end and grooved to receive the wire. The upper edge of the groove was oblique, so as to retain the wire when once entered. A wooden roof covered the glass. The conductor was of three-ply No. 16 iron wire. This was, after some years, discarded for single No. 9. Our knowledge of many things came to us by bitter experience. The twisted wire added to the griefs of these early days. The method of plaiting or cording left a wild twist in it, so that when the wire broke, as it sometimes did, it would curl up wildly and become entangled in the wheels of passing trains; sometimes a car top would show where the wire had sawed its way in, while an involuntary shudder would pass over us as we imagined that car top to represent a neck. But there was much gallantry in the service then, and all the engineers were our friends. We often went out together on a midnight train with lanterns to hunt breaks, to sleep afterward on the banks of a railroad cut, and be at work early in the morning, reaching the city at break of day, on coal trains. The staff of the line was, in 1847, as follows:

Pittsburg — David Brooks, Manager ; Isaac Livingston, Anson Stager.  
Bedford — Rufus Chadwick.  
Chambersburg — Ira Amsden.  
Carlisle — Donald Mann.  
Lancaster — H. E. Reddish, W. Johnston.  
Harrisburg — C. T. Smith.  
Philadelphia — James D. Reid, Superintendent ; James M. Lindsey,  
Manager ; W. W. Downing, C. T. Miller.

Gen. Stager entered the service in October, 1846, and served at Lancaster and Chambersburg before going to Pittsburg. When the office was opened in Pittsburg great crowds flocked to it. A low partition separated the multitude from the operating table. Mr. Brooks was the object of special wonder as he patiently explained the mechanism, and the meaning of the sounds. A long-legged hoosier, who had gazed at the "crittur" for some time, at last determined to turn his chance to practical account. So stepping over the barrier he walked rapidly up to the register, and placing his mouth very near the instrument, said in a kind of confidential and yet anxious voice, "I say, mister, can you tell me the price o' corn?"

The management of the line, on its acceptance from the contractor, was arranged as follows. It is given as a part of history, and to show the honor with which the interests of the patentees were guarded :

At a meeting of stockholders, held at the American Hotel, Philadelphia, March 1, 1847, on motion of Hon. Samuel L. Selden, of Rochester, N. Y.,

*Resolved*, That, until permanent and satisfactory arrangements can be made for conducting the business of the line of telegraph between Philadelphia and Pittsburg, now surrendered to the company by Mr. O'Reilly, the constructor of said line, the same be placed under the management of James D. Reid as superintendent thereof, as far as compatible with his duties to the Seaboard lines, said superintendent to have instructions to employ, with the concurrence of the president and secretary of the company, such telegraphers, clerks and other assistants as may be required for the advantageous and profitable working of the line ; to deposit all moneys received with the treasurer of the company, first paying out of the earnings of the line all necessary expenses ; to keep an accurate account of all receipts and expenditures, and to

reserve, in the hands of the treasurer, one-fourth of the avails over and above the expenses, for the use of the patent or invention which may be used upon such line, the residue to be kept for division among the other persons interested, in proportion to their respective interests in said line, said superintendent reporting weekly, at least, to the president the principal facts in the operation of the line, and having his books open for the inspection of the stockholders at all proper hours."

Hugh Downing, Esq., was made provisional president. The treasurership was offered to John B. Trevor, Esq., but was declined as incompatible with his duties as cashier of the Philadelphia Bank. It was given to William M'Kee, Esq., a venerable citizen of Philadelphia, a man juicy with humor, full of enterprise, shrewd, generous and just.

It is but justice to Mr. O'Reilly to say that he demanded an inspection of the line, and offered to remedy every defect. No one was willing to adjudge his work. It was a time of generosity. No claim was ever made for defective service. Yet, within a few years, the whole line had to be rebuilt, and that portion of it between Philadelphia and Harrisburg as early as the fall of 1849. That was more or less true of all early telegraphic structures.

## CHAPTER XV.

### THE ATLANTIC AND OHIO TELEGRAPH COMPANY.

THE first regular organization of the line from Philadelphia to Pittsburg, known as the "Atlantic and Ohio Telegraph Co.," was held July 4, 1848, at the American Hotel, Philadelphia. A. B. Cummings, Esq., of Philadelphia, represented the stockholders at Pittsburg. Alvah Strong, Esq., of Rochester, one of the original organization at Rochester, represented that city. On my presentation of the business of the company, an eight per cent dividend was declared from the profits of the preceding six months, and quarterly dividends were ordered thereafter. The directors elected were :

William M'Kee,	J. K. Moorhead,
William Sperring,	Thomas Bakewell,
M. S. Wickersham,	Charles Avery,
Henry O'Reilly,	Alvah Strong,
	George Dawson.

The officers elected were :

Gen. J. K. Moorhead, of Pittsburg, *President*.  
 William M'Kee, *Secretary and Treasurer*.  
 James D. Reid, *Superintendent*.

The capital of the line from Philadelphia to Pittsburg was fixed at \$300,000. Of this, the patentees were to receive \$75,000. To Mr. O'Reilly was issued \$75,000. To cash subscribers were issued \$150,000, for which they paid \$50,000 in cash, which was O'Reilly's consideration for building the line. The patentees claimed that Mr. O'Reilly had forfeited his contract by its own terms, and refused to accept their share of the stock. Mr. O'Reilly desired it to be issued to him, and con-

veyed in trust to Gen. Marshall Lefferts, of New York, but the company refused to issue the patent stock, except to the patentees.

At a later period Mr. F. O. J. Smith, one of the partners, offered a settlement of the patent interest on the basis of the issue to himself and associates of one-half of the capital. He required the entire O'Reilly lines to be treated as a unit. He accompanied this offer by the following language: "The profits of construction, which are the legitimate perquisites of the patentees, are, by my proposal, surrendered." The idea of construction profits to the patentees is nowhere expressed in the open contracts, was essentially vicious, and whenever insisted on was productive of evil. Prof. Morse and Mr. Vail early refused to participate in them.

Mr. Kendall wrote respecting Mr. O'Reilly at this period:

"I fully admitted the breaches of contract, but was averse to a quarrel. But discovering that O'Reilly had undertaken to mar the whole plan of the western telegraph by severing it into many companies, and had, without conveyance of the patent right, or the consent or knowledge of its owners, issued certificates of stock purporting to represent an interest in said patents, I concluded that O'Reilly was not to be trusted, and that a breach with him was the least of two evils."

The immediate result of this was the issuance, by the Morse patentees, of contracts for the construction of the Erie and Michigan line from Buffalo to Milwaukee — Livingston and Wells building from Detroit to Buffalo, and John J. Speed, Jr., Detroit to Milwaukee — the design being to take the western business via Buffalo instead of Philadelphia. A line was also projected from Cleveland to Cincinnati and Louisville, Ky. This was the first act of a long and bitter war.

The plan of organization adopted by O'Reilly was, perhaps, the only one possible under the circumstances, yet was the source of much mischief, and the cause of final extinction. He circulated addresses, in which, in large type, he proposed to divide his lines into sections which should be *entirely independent of each other*, as to ownership and control, but were to be united by mutual councils, so as to be able to legislate respecting common necessities, and provide against common dangers. This was very beautiful and very dignified on paper. Nobody dreamed of danger then except the patentees, and they were not consulted.

The appeal to the dignity of local control was agreeable to average human nature, and secured, no doubt, some of the subscriptions—perhaps many of them. And so it came to pass that the field of the O'Reilly contract was divided among six distinct companies, absolutely independent of each other. They were so independent that, in coming days, when Sibley and Wade, the great line gobblers, commenced their western campaign, they found these companies as Napoleon used to delight in finding his enemies, in detached armies, whom he fell upon and demolished in detail.

There can be no question that Mr. Kendall expected to control organization by trustees who would exact terms to correspond with the policy he had adopted. Organization without the knowledge of the patentees, with such an expectation and with so immense an interest at stake, seems inconceivable, and should have been impossible. Mr. O'Reilly acted under the idea that the plan of organization, the price of construction and the assignment of capital was his right, and that his contract was unbroken by any lapse.

The Atlantic and Ohio Company was a success from the start. Its early dividends were as follows :

August 1, 1847 . . . . .	5 months . . . . .	3 per cent.
January 1, 1848 . . . . .	5 " . . . . .	6 "
July 1, 1848 . . . . .	6 " . . . . .	8 "
October 1, 1848 . . . . .	3 " . . . . .	4 "
January 1, 1849 . . . . .	3 " . . . . .	2½ "
April 1, 1849 . . . . .	3 " . . . . .	3 "

For some years I kept all the accounts, examined all the check sheets (which I think I was the first to originate), audited and paid all accounts, and at the close of each month made up a condensed statement, which I sent with the balance shown due to the Treasurer.

The stock of this company was held in high estimation, and never afterward lost its character. Meetings of the board by telegraph were ordered to be recognized as valid. One of the first acts of the company after its organization under a charter granted by the State of Pennsylvania, was to offer to the patentees their stock and all accrued profits, whenever they were willing to transfer the patent papers to the company. All attempts to settle, however, were fruitless.

In July, 1849, Hon. Simon Cameron, of Middletown, and Joshua Hanna, of Pittsburg, entered the board. A. B. Cummings, Thomas W. Woodward, John B. Trevor, George H. Hart, John H. Berryhill, A. C. Wilson, E. H. Hale, Robeson Lea and Alex. Osbourne also became directors. The patentees having commenced the construction of opposition lines starting out of Baltimore west, the board ordered all money reserved for patentees to be used as current revenue for the general purposes of the company. As a further measure of defense and strength, and as a necessity to secure due attention to an important source of revenue, the line of the "American Telegraph Company," Harrisburg to Baltimore, was leased. This was an important connection, and greatly aided and led to the enlargement of western business. In 1851, also, I leased for the company the upper wire of the Magnetic Telegraph Company between Philadelphia and New York, paying therefor a certain portion of each message. This was necessary in order to secure New York and New Orleans business, which the Magnetic carried via Washington. Immediately on the execution of this lease an office was opened for western business in the half room adjoining the rubber store of Samuel C. Bishop, 181 Broadway, and the public were soon astounded by the fact which soon became known that messages were being sent from thence direct to Cincinnati and Louisville. It was the first time that New York was made to feel its proximity to the far West. John Horner became Receiver here for a time, and on securing afterward quarters at 3½ Wall street, Samuel K. Zook became manager, and afterward Mr. Benj. F. Ely. The Atlantic and Ohio Company now held New York, Philadelphia and Baltimore as its great seaboard base.

Almost from the organization of the Atlantic and Ohio Company an antagonism was felt in its direction. At first it was very mild in its action, and took the form of mere local jealousy. It became more marked as the lines opened toward the far west, and the sense of dependence on distant sources of business became more and more evident. It took a more distinct personal form when, from the simple instinct of safety, and without any action on my part, the western companies selected me as their superintendent, to manage their joint interests. In those

early days the executive work of the company, and indeed much of its general policy, was in the hands of the general superintendent. When, therefore, the lines were extended to St. Louis, and to Detroit and Buffalo, and some of the directors at Philadelphia and Lewistown saw that the west was the real center of control, and that their superintendent had charge of all, that he was seldom with them, and had to make his headquarters in Pittsburg, it was natural that men, accustomed to local control, and to whom Pennsylvania was all the world, should fret over their apparently diminished influence. It was, however, many years before this feeling ripened, and its growth into positive malignance was largely due to causes so paltry and personal that they cannot be named. It became, however, very positive in its character when it was proposed, as a measure of safety, to unite the lines, by positive contract, from Philadelphia to St. Louis. This measure was strongly favored at Pittsburg, the more so as, in 1852, it became known that the connection with the line from Louisville to St. Louis was already in danger. It was also pressed by the more intelligent eastern directors, Allin Robinett, A. B. Cummings, William Pettit, A. C. Wilson and William M. Swain. The wisdom of Mr. Kendall's plan of a single company became more and more self-evident. Curiously enough the chief fomentor of opposition was a man long in the service of the company, but who, in entire consistency with his narrow nature, and in the teeth of the most convincing evidence, depreciated the value of the western connections, and sought to accomplish a disruption by the basest personal detraction, and for purely personal ends.

As the success which recent years has given to telegraphic operations has amply justified these early efforts at union, it is instructive to observe more closely the relation of the parties, and this too, aside from the mere personalities which disfigured but had nothing to do with the actual contest. The lines west of Pittsburg, which reached out to the great centers of commercial activity and profit, were, of course, dependent on the lines east for ability to reach the seaboard. They needed direct and constant connection with New York. It was clearly, therefore, the duty and the policy of the Atlantic and Ohio Company to give these facilities. And yet that involved an expenditure which could

only be justified by a reasonable assurance that the western connections were secure, although it was a potent means of securing them. The safety, and for that reason the value, of organic unity with the lines west seemed self-evident. A letter written by me to the Board, giving an insight into the difficulties which beset these early times, will show the destructive effect of the separated condition of these lines, and how I had to beg from each Company what was essential to their common interest.

LOUISVILLE, KY., *March 25, 1851.*

*President and Directors Atlantic & Ohio Telegraph Co. :*

GENTLEMEN— The condition of your line and the business transacted over it, is such as to make it due to you that I present the following statement, praying your earnest and immediate attention :

By a sketch inclosed you will see your line, the relative position of your offices, and your connections with the lines leading to Pittsburg, from the south, north and west. The confluence, if I may thus term it, of the St. Louis and New Orleans business at Louisville, rendered it necessary to have two wires from thence to Pittsburg, both of which are constantly occupied, and have been for two years past. At Pittsburg, however, your line, instead of having an increased number of wires to enable you to transmit the accumulating business there, has only one, which is burdened with several way offices, and, yet, by which, alone, the connection between Baltimore, Philadelphia, New York and the Atlantic seaboard with Pittsburg and the rapidly-increasing business of the great west and south, has to be maintained.

The great disadvantage of this may be seen as follows :

“ Active business commences, usually, at about 9 A. M. Pittsburg has on file messages for Baltimore, Philadelphia, New York, Boston and way offices. Baltimore is first put in connection with Pittsburg, and the files of each are cleared in say one hour. At 10 o'clock, Philadelphia is connected (way offices coming in and taking at least half an hour), and the following hour and a half is consumed clearing the mutual Philadelphia, Pittsburg and western business. It is now noon, and not a word has yet reached or been received from New York. From 12 to 1, New York has the circuit, and so on throughout the day. The effect of all this is as follows :

“ Baltimore is idle from 7 to 9 ; 10 to 1:30 ; 2:30 to 6 ; 7 to 10.

“ Philadelphia is idle from 7 to 10:30 ; 12 to 2:30 ; 4 to 5 ; 6 to 9.

“ New York is idle from 7 to 12 ; 1 to 4 ; 5 to 9:30.”

I need not say that, thus limited, your line is utterly inadequate to

public necessities. With proper facilities for communication, the business of your line must largely increase; but whether this were to follow or not, the public will demand of you the prompt transaction of their business, or give it to others, who may provide them advantages denied by you.

JAMES D. REID, *Supt.*

Had these lines been organically united, would it have taken two years to have decided on the necessity of additional wires on such a line? And yet here was a fine line and route absolutely choked, and a magnificent business already, from the necessity of the case, seeking new outlets, and ready to break through its barriers just as the Mississippi bursts the Louisiana levees when the upper waters crowd it from its bed on its progress to the sea. I ought to add that my appeal was at once responded to, and the patentee reserved fund was ordered to be used for a new wire. The Board also sanctioned a thorough work of improvement, which included the reconstruction of a large portion of the line and the occupation of the route of the Pennsylvania Railroad from Harrisburg to Pittsburg. It embraced, also, part of the line between Lancaster and Philadelphia.

One night a number of us were at Paoli, a small station near Philadelphia. The material of the new line had to be distributed after midnight. The last train up was due at 12:15. As soon as it passed, we pushed our hand-car on the track, with material and five men. About half a mile from the station, John Reed, who was in charge, stopped the car and had it carried, with much labor, to the other track. He gave and had no reason for ordering it, and he was obeyed in silence. The car had not, however, proceeded a hundred yards on its way before a special locomotive, of great size, flew thundering past on the track just left. The thrill of horror which shot through the brain of the men, as they saw the danger they had escaped, for a time paralyzed all hands. None of them had ever been so near death.

One of the modes of insulation adopted for a short time, as a third



FIG. 1.

wire became necessary over a part of the route, was as shown in Fig. 1. The glass was excellent, but the design imperfect. When the arm for two

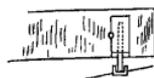


FIG. 2.

wires was first introduced, a cylindrical glass, Fig. 2, into which an

iron shank terminating in a double hook was cast, was inserted into an auger hole from beneath, and held suspended by a wooden pin. As an insulator it did very well, but the lightning destroyed great numbers of them, and they were very soon abandoned. Mr. Kendall was the inventor of the hook. Mr. Brooks constructed an iron cylinder, into which he inserted brimstone and asphalt to hold the hook, but it was a thorough failure, and it was some years before he obtained the reputation he has since acquired, such as it is, as a maker of insulators.

In 1851, a branch or loop line was built from the main line to Westchester, a smart inland town near Philadelphia, which was hastily opened for business on the second Tuesday of October, in order to receive election returns. It was built at the expense of a few citizens, who organized a company, of which Judge Butler was secretary, but who sold it in 1852 to Mr. Jos. Painter. While the line was being built,



MRS. T. T. SMITH.

a young lady named Miss Emma A. Hunter qualified herself to be an operator, and when the wires were brought to Westchester, they were led into her room, and she became the manager of the office. She was to receive \$50 a year, but this was soon changed to \$12 a month, and at the close of the year a purse of \$150 was presented to Miss Hunter, as a token of respect and as a reward of fidelity.

Instantly on Miss Hunter's appointment the effect of the presence of a lady on the circuit of the line was felt—just as it always is when a true woman enters society. It stopped

vulgarity. The influence of Miss Hunter's presence on the line was every way healthful, and she remained manager for many years. She was a lady of superior ability and character, and the first lady operator, at least west of the Hudson, appointed in the United States. The next appointment of this character was by Mr. Charles F. Wood of Miss Ellen A. Laughton, an unusually quick and intelligent girl of 14 years of age, to the management of the office at Dover, N. H., in March, 1852. She was taught by Frank Nelson, now cashier of a prominent bank in Bangor, Me. Mr. Wood writes, "When Miss Laughton, in 1856, was in charge of our office, at Portsmouth, N. H., I regarded her as one of the best operators I had ever seen." She is now Mrs. G. W. Thompson, of New Bedford, Mass. Miss Hunter is now Mrs. Thomas T. Smith, and still resides at Westchester. It is claimed that F. O. J. Smith had an operator named Miss Sarah Bagley in 1846.

Of the President of this Company, Gen. J. K. Moorhead, gratitude requires a word. He entered heartily into the idea of unity. In the midst of my work in 1850, I encountered at Louisville the builders of the O'Reilly or People's line to New Orleans. They were Dr. A. S. Doane, E. F. Barnes, Bernard O'Connor and others. They had not a hundred dollars among them all. The line was not working. New Orleans was cut off by an immense crevasse at Bonnet Carre. Debts were due along the whole route. The operators were all unpaid. Knowing the value of a New Orleans connection to the companies I served, I first bantering and then formally offered to take the line as it was, if given to my sole control, at a rent of \$13,500 a year. It was accepted. I needed much money. The line was one thousand miles long, and in bad condition. Gen. Moorhead confided in me. I asked him what I should do. He instantly said, "go in, do your best, and draw on me personally for all you want." That was the language of one of nature's noblemen. Had Gen. Moorhead put his genius and enterprize into the telegraph as he did into iron, and backed up the \$20,000 he gave me, and which I paid back with interest, with \$100,000 more, he might easily have held to-day the fibers of the whole continent in his hands, and the combined fortunes which they have produced for other men. He resigned the presidency August 1, 1854, and Allin Robinett, of

Philadelphia, a just, clear headed, straight forward gentleman of ample fortune, succeeded him.

The friction, occasioned by the question of union, terminated in one of the fiercest conflicts at the annual election of 1855. Nothing equal to it has ever been known in telegraphic circles. The storm was made evident by the activity shown in the purchase of the stock. Every shareholder was interviewed, and, if doubtful, induced to sell. Enormous prices were paid for it. The election was held at Harrisburg, at Buehler's hotel. There was a large delegation present. Fred. V. Beisel and R. F. Raley were tellers. Passmore Williams was judge of election. My report was listened to with ill-concealed impatience. Finally the balloting began. We supposed ourselves beaten. Williams footed up a majority for the opposing party, and they rushed to the office and announced their victory over the line. While standing behind the tellers, however, I found out that, by a figure which was out of line, an error had been made, and that we had a majority of thirty. So I challenged the count, and the judge acknowledged the error. Cummings shouted for joy, and at once ordered two baskets of champagne. He was immensely happy. The operators were much mystified by a message I sent home, which bore only the two words "Good egg." It was the vote of William M. Swain which carried the election. After that the contest took another shape. There was no more election fights.

Referring to the union of the lines, which had been accomplished January 6, 1853, by a simple agreement, based on a division of receipts, but without corporate change, and very largely owing to its zealous advocacy by Dr. William Pettit, of Philadelphia, President Allin Robi-nett said, in his report to the stockholders:

"Of the advantages of that union, I cannot entertain a doubt. Could we, with entire safety, stand alone and receive the business of other lines, without association with them, and be secure of its continuance, there would be more simplicity in our management and less occasion for labor or anxiety. Yet with the proof before me of the ease with which our connections can be broken, I am confirmed, as are the majority of the board, of the wisdom of the act of union."

Respecting the patentees, he said:

"Standing, as we have ever done, on the faithful observance of the

original contract, willing at all times to meet its terms, and determined to demand recompense for its infraction, I regard it due to self-respect, and the true position of an honorable company, who thus place themselves on rights solemnly pledged by clearly expressed contracts, that no farther advances be made by us."

He closed with the following remarkable statement :

"After another dividend shall have been declared, the Atlantic and Ohio Telegraph Co. will present the unusual spectacle of an enterprise which, in spite of many discouragements, want of experience, outlay for reconstruction so soon after delivery, of almost the whole line, and opposition, *will have returned to its stockholders the whole of its original cost.* It is the only line in America which I know to have done so."

Up to July 1, 1855, thirty dividends had been paid.

A. B. Cummings, Esq., one of the best men and friends the Keystone State ever saw, was unanimously elected president July 17, 1856, but resigned the following year, when Mr. Robinett was again unanimously elected.

Mr. Cummings had an affectionate faith in me and in all I did. One amusing instance of this Gen. Moorhead related to me with a sense of great amusement. Our annual meetings were often held at Bedford Springs. It was a nice, cool, shady place. I was usually there and read the reports. Once I was absent, and Gen. Moorhead had to read them. After he was through he proceeded to fold the papers up in usual style, when Cummings hastily interrupted him and put his hands on the papers. "Don't do that," said Cummings, with a kind of puzzled anxious look—"Don't!" "Why, what's the matter, Cummings?" asked the astonished President. "Oh," replied Cummings, with a solemn voice, "he—he always rolls them, Reid always rolls them!" Was there ever a sublimer instance of human faith? It was touching.

After the election of 1855 the Western Union Company, disappointed in the result of the conflict, pushed their operations in the west. The "Ohio and Mississippi Company," one of the O'Reilly links, was leased. Then came the news that the Pittsburg, Cincinnati and Louisville Company were following in the same direction. It roused much feeling.

Mr. Berryhill, a somewhat independent director, indignant at the apparent breach of faith, aroused by these rumors, urged inquiry. The

following letter, after some delay, was received from the President of that Company :

"COLUMBUS, *July 19, 1856.*

"GENTLEMEN : Pardon my delay in answering your letter of the 10th instant. It was unintended. The Pittsburg, Cincinnati & Louisville Company have made a lease, or rather a contract, which is yet unexecuted, for a lease to the Western Union Telegraph Company of their line from Pittsburg to Louisville, subject to all its business connections and arrangements with other companies. Full provision is made for the discharge of all existing obligations of the Pittsburg, Cincinnati & Louisville Telegraph Company.

"It is proper for me to say, however, that no provision in it is, in my judgment, prejudicial to the Atlantic & Ohio Telegraph Company. The contract was simply a measure of self-preservation on the part of the Pittsburg, Cincinnati & Louisville Company against a competition ruinous to itself and its rival in business, and beneficial to nobody; an object which it has sought to accomplish by means injurious to none.

"Yours truly,

"Messrs. BERRYHILL, CUMMINGS and SWAIN."

"S. P. CHASE.

This chapter seemed closed, yet the dignity of the case seems to suggest an obituary. The death of the Atlantic and Ohio Company was no ordinary demise. The manner of its "taking off," entering as it does into the grief at its departure, is not without interest.

The attempt made to change the directorship in 1855 failed. The contest, however, though it ceased with the local parties, many of whom were ignorant of the animus of the fight, was not given up. It led to one of the most successful strategic movements known in telegraph history, the full particulars of which would make somewhat racy reading for some of the parties concerned.

Immediately after the Harrisburg conflict, David Brooks became Superintendent of the telegraph lines of the Pennsylvania Railroad Company. He was a genuine Yankee — shrewd, persevering, unscrupulous. An act had been passed granting the Pennsylvania Railroad the right to build a telegraph line for their own use, and early in 1856 this line had been built to a considerable extent. The railroad company had bought the Morse patent for this purpose. Parties intimately related to the Mississippi Valley Printing Telegraph Company now acquired the power to dispose of the House Printing Telegraph patents

in Pennsylvania. They proposed to organize a company to be called the "Pennsylvania Telegraph Company," for the purpose of building a line through the State to connect with the lines west, all of which were already in their possession, except as an unexpired contract of connection with the Atlantic and Ohio Company, held them together. The capital of this new company was fixed at \$500,000 — that of the Atlantic and Ohio Company, with two routes fully equipped, being \$312,600.

It was now adroitly suggested to the Pennsylvania Central Railroad Company that it would be of vast importance to them to have a special line of telegraph which would be worked by such machinery that no information sent by it could be taken off en route, the machinery to be placed only in the chief offices of the company. It was also intimated that a sublime machine of this character could be obtained without cost to the company, upon the terms of *a simple grant of permission to erect a wire upon the poles of the railroad company*. Here was a most captivating offer! The committee of the railroad company, Messrs. Spangler and Howell, accepted it gratefully. In return therefor, and in token of gratitude, they gave the agent of the new company not only the right to put a wire on their poles and to occupy one end of their cross-arms, to be worked for the use of himself and assigns, but they agreed to maintain the poles and arms; to instruct the repairers of their own wire to repair both — the telegraph company to furnish the wire and insulators. The railroad company also provided that the telegraph company should have a hand-car, and such other facilities as the Superintendent might provide; agreed to carry all persons, material, etc., and to give them the use of the railroad wire when the wire of the new company was out of order. All that was asked in return for these liberal grants was simply that the new telegraph company should erect a good galvanized wire of good size for its own use, put printing instruments at Philadelphia, Lancaster, Harrisburg and Pittsburg, and give the railroad company the free use of it in sending railroad messages when necessary, and to have the right to its sole and private use for private correspondence, but "not longer than fifteen minutes at a time." Is there any thing lovelier recorded in the histories of human affection?

Of this company, now shrewdly named the "Pennsylvania Telegraph Company," giving by its very name an idea of alliance with the great railroad, H. H. Shillingford was elected President and R. T. Kensit, Secretary.

Of course the purpose of this organization was coercion. The Atlantic and Ohio Telegraph Company held the west by a contract, now virtually in the hands of the new company, who now opened offices in sight of their own at their great termini in Pittsburg and Philadelphia. The Atlantic and Ohio company was thoroughly outflanked. It was accordingly not long before the new company made proposals of connection. It was proposed that the Atlantic and Ohio company should obtain the right to increase its capital stock to \$650,000, the Pennsylvania Telegraph Company giving up \$167,000 of its capital stock for this friendly purpose and accepting \$335,000 of the joint capital.

It is recorded that the Atlantic and Ohio company saw in this union great advantage to its interests! Of course it did. It was a question of extinction; and as a blushing bride cheerfully surrenders her name forever, the Atlantic and Ohio company fell lovingly into the arms of her captor.

As these two lines thus joined hands, the Western Union company, smiling serenely on the delightful spectacle, with beautiful tenderness stepped in and covenanted to save the Atlantic and Ohio company harmless from any breach of its covenants with the western lines, and not long afterward took them into the Western Union family by an issue of \$833,400 of its stock.

" Thus they who had loved in life  
In death were not divided."

A few of the mourners of this funeral received \$80,000 each for funeral expenses.

In the staff of the Pittsburg office, in 1850, John P. Glass, afterward Speaker of the House of Representatives, was book-keeper and receiver. He was an excellent and generous-hearted man now long since dead. He had for an assistant a chivalrous Marylander named H. Courtenay Hughes, who could dispose of a couple of dozen on the half shell with a gusto seldom possessed by ordinary men, and was a good, true and faithful

man and friend. There was also in the office as messenger, in 1850, a little lad named Andrew Carnegie, who, with his widowed mother, had lately arrived from Scotland, his native land. He was prompt, intelligent and industrious; was happy with his three dollars a week, and performed his duties well and cheerfully. He was given an opportunity to learn to telegraph, became skillful at it, and when the Pennsylvania Railroad Company wanted an operator was recommended by his superintendent for the place. Here he showed great skill in the handling of trains by telegraph, and was transferred to the railroad superintendent's office at Altoona. During the war he made himself useful to Col. Scott; was successful in some coal and oil ventures; started the sleeping car arrangement at Pittsburg, and rapidly attained wealth. He is now a well-known millionaire, highly honored and respected, and one of the largest owners of the iron works of the Iron city. In Philadelphia, also, there were at different times, many estimable men. Among these there was none more worthy, none truer to their company and superintendent than Fred. V. Beisel, Charles T. Miller, and James M. Lindsay, to all of whom I was greatly attached. William Johnston at Lancaster, John Campbell at Carlisle, William G. Reed and W. Blair Gilmore at Chambersburg, John Reed at Johnstown, and Howard Larcombe at Altoona, were all most worthy and devoted men. Perhaps the most popular man on the line was Jacob Campbell, one of the cheeriest hearted and willing souls that ever served as a builder or repairer of lines. He was every man's friend — simple, innocent, willing, capable, untiring. He is now in Mexico, where he has built most, if not all, of the government lines, and where he is implicitly trusted and much respected. Mr. David Brooks became Superintendent September, 1856, immediately after my resignation.

In a Bible presented by me to the Philadelphia office, in 1847, and still preserved, the following record of parties connected with the office up to 1856, appears in the "Family Record."

PHILADELPHIA.

James Douglas Reid, Scotland.	John C. Bowles, Bedford.
James M. Lindsey, Baltimore.	F. V. Beisel, Harrisburg, Pa.
Charles T. Miller, Philadelphia.	Chas. F. Simmons, Po'keepsie, N. Y.
H. E. Reddish, Adirondac, N. Y.	W. B. Wilson, Harrisburg, Pa.
D. C. Hough, Philadelphia.	Joseph S. Greene.
S. G. Lynch (pretty boy), Auburn, N. Y.	J. Pickard.

## PHILADELPHIA.

James Bailey,	Heber C. Robinson,	J. Bradley,	J. T. McGonigle,
A. H. Seymour,	Sam. M. Brown,	Charles Bowman,	Benj. F. Woodward,
William Curtiss,	J. C. Ziegler,	W. Porter Curl,	Matt. Jolly,
W. E. Tinney,	C. H. Erwin,	E. S. Simmons,	Street Gilbert,
J. S. Zimmerman,	F. O. Gilbert,	E. A. Steacy,	G. Clarkson,
	Y. Smith	Flattery.	

## LANCASTER STATION.

David Brooks,	Don Mann.	H. E. Reddish,	C. Westbrook,
J. M. Lindsey,	Anson Stager,	Andrew Dennison,	F. X. Ziegler,
William Johnson,	Ira K. Amsden,	J. T. McGonigle,	Ambrose A. Ziegler,
	Henry C. Hepburn, (please 34), Park Spring, N. Y.		

## HARRISBURG STATION.

J. M. Lindsey,	C. T. Smith,	A. F. Small,	G. M. Williams,
E. E. Warrington,	S. H. Brooks,	H. L. Harris,	T. R. Smith,
W. W. Downing,	O. W. Sees,	H. Schotte,	D. C. Williams.

## CARLISLE.

H. E. Reddish,	C. M. Worthington,	F. A. Kennedy,	John Campbell.
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## CHAMBERSBURG.

W. G. Reed,	Blair Gilmore.
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## BEDFORD.

Rufus Chadwick,	S. H. Brooks,	J. H. Larcombe,	D. Brooks, N. J.,
	Ellwood Harmer,	John C. Bowles,	J. S. Mower.

## GREENSBURG.

Ellwood Harmer,	Joseph Taylor,	Richard O'Brien.
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## PITTSBURG.

Anson Stager,	David McCargo,	Col. H. C. Hughes,	Marion H. Markle,
E. C. Bush,	Saml. Fulwood,	W. Blair Gilmore,	David Fleming,
E. W. Culgan,	George E. McLain,	J. G. Kendall,	Geo. W. Johnson,
John P. Glass,	W. O. Hughart,	R. P. Glass,	F. Stumm,
	J. D. Maize,	F. T. Bickford.	

## DECEASED.

A. W. Dennison,	Ellwood Harmer,	W. H. McCalla,	Joseph Mount,
G. M. Williams,	Ed. A. Stacy,	O. W. Sees,	Chas. H. Morrison,
	Frank Thomas.		

The Atlantic and Ohio Telegraph Company leased its lines to the Western Union Telegraph Company April 1, 1864, upon an agreement by the latter to pay quarterly dividends of two and a half per cent on all of the outstanding capital of the former other than that held by the lessee. This lease is still in force.

## CHAPTER XVI.

### PITTSBURGH, CINCINNATI AND LOUISVILLE TELEGRAPH CO.

**M**R. O'REILLY was received at Pittsburgh with great heartiness and warmth. If there was no champagne sparkling up amid the grim gratitude of the Iron city and little speech making, there was a solid welcome. As he walked the street with his sparkling face and his eye merry with triumph, many a grimed visage looked up at him as if he were

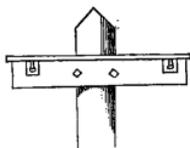
Hephaistos, sprightliest of mortal messengers,"

who had leaped by flash of a strange fire into their midst,—not from "Hermæan steep of Lemnos," but from the great cities of the sea. The commercial interests of Pittsburgh were so linked with the Atlantic seaboard, that the introduction of the telegraph came to it like the infusion of a new life. The black smoke of her furnaces seemed to curl higher, and the glow of her many fires to flame out with intenser brightness. And there were some imaginative souls who all but persuaded themselves that they heard the dash of the waves that lash the beach at Rockaway whispering to the muddy waters of the Alleghany and Monongahela as these met and married and mingled into the Ohio at the city's base. Nothing ever so charmed and cheered and elevated the popular intellect and heart.

But the work was just begun. The great west had only been entered. The route of a line to Cincinnati and Louisville, Ky., was therefore mapped out, and measures at once taken to procure subscriptions and contract for material for its construction. Meanwhile assurances were received from every important point that capital would not be wanting. The route selected was by the north shore of the Ohio

to Steubenville and Wheeling, thence by the national road to Cincinnati via Zanesville, Columbus and Dayton, and thence by the ordinary wagon road to Jeffersonville, via Lawrenceburg and Madison, Indiana, crossing to Louisville by masts.

The line was built by Bernard O'Connor and Capt. John O'Reilly;

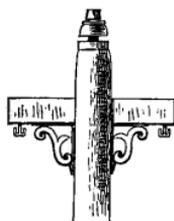


was mounted with a single iron wire, resting on square block glass insulators; poles, twenty-five to the mile. It was completed to Cincinnati August 20, 1847, to Louisville, Ky., Dec. 29, 1847, and was incorporated with a capital of \$173,000. The

office at Wheeling, Va., was opened July 8, 1847, by Henry C. Hepburn; Zanesville, O., August 5, 1847, by S. K. Zook; Columbus, O., August 11, 1847, by S. K. Zook; Dayton, September 10, 1847, by W. J. Delano; Cincinnati, August 20, 1847, by S. K. Zook and C. T. Smith; Madison, Indiana, Sept. 29, 1847, by Rufus Chadwick. Louisville, Ky., Dec. 29, 1847, by Eugene S. Whitman.

The capital stock actually issued was \$138,400, or 2,678 shares. Of this about \$35,000 was issued to Mr. O'Reilly, in addition to \$150 per mile for the construction of the line. In 1849 stock to the amount of \$35,200, or at the rate of \$75 per mile, was issued for the erection of a second wire, the profits on which were about \$40 per mile.

There was not much difficulty in obtaining right of way through cities for the poles and wires, yet there seemed propriety in making the structure as pleasant to the eye as possible. When, therefore, arms became necessary to bear additional wires, I had an iron bracket made as a mere ornamental appendage, and which, when the poles



were painted, gave a very tasteful appearance to the general structure. At Louisville, also, for a like reason, I had erected in front of the office, at a very moderate expense, a neat iron pole, which much pleased the public taste, and which seemed a very economic method of securing the public good will.

There was a suggestion, both of permanence and spirit in it. At that time iron was cheap, and it seemed then as if it might be quite practicable and, in the end, economic, to plant iron

poles, on stone bases, with an upper finish of wood, along well-established routes; or, what might have been better, to plant iron bases, which might easily be cast into elegant and appropriate forms, in which to elevate neat wooden poles. I thought, with Ruskin, that all things useful, if made also in elegant forms, are doubly useful. Even a telegraph pole can be made to contribute to the cultivation of the public taste. The "highway of thought," as the telegraph has been happily named, can be made to express, at least to some extent, even in its outward form, something of the grandeur and the beauty and beneficence of its mission. Nature suggests to a cultivated taste both the forms and the colors which please the eye, and which might render a wire bearer as attractive as a tree.

While the telegraph was thus being extended westward the Morse patentees had determined on active measures to arrest Mr. O'Reilly's progress. That these proceedings were not instituted sooner was owing to Mr. Kendall's reluctance to begin a contest which might scandalize the whole enterprise in the popular estimation. It was easy to see that O'Reilly had already secured a firm footing in the west. Cincinnati and St. Louis and Chicago were hailing him onward. Their language was, "Come on, and settle your disputes afterward." The real source of the mischief, which from henceforth followed the O'Reilly contract, was in F. O. J. Smith. He was a born litigant. Keen, unscrupulous, full of a cold, mental vitality, querulous, grasping. His correspondence at this period was bitter, insolent, irritating. He had treated Morse as a coarse man treats a menial. At times his language is full of a curious literary mystery. In reference, for example, to a proposition to have Mr. Kendall go west in carrying out the fight he had forced him to commence, he says: "If you enlist for a new term of three months' service west, will it not be better to traverse Chapultepec till you have got the hostile army intimidated and scattering under your fire, than trust taking the city of Irish Aztec with new recruits?" Mr. Kendall, perhaps, had the key to such language. Strange as it may seem, to Mr. Smith, the holder of a minor interest, with his nature and character well known, was the management of the whole controversy now given. It was even made irrevocable. It was

evidently the result of deep personal dislike and a feeling of hopeless mutual negotiation. Smith promised to squeeze the O'Reilly orange and give up three-quarters of all he got out of it to his associates. And they actually trusted him. Smith's views of the contract he expressed as follows :

"There is no such thing in existence as a legal line of telegraph, limited by Philadelphia and Pittsburgh. Did I ever agree to assign, or you to accept, or did I ever purchase of you an interest in such a line? It would be a positive infraction of all our hitherto entertained understanding of the subject, and of the chief point of quarrel with O'Reilly and his confederates. If the men of the Philadelphia section wish to treat for peace, they should be turned over to me." "Ah," he chuckled, in a letter to Kendall, "you were the father of that idea, and I am your faithful disciple."

As a preliminary to turning over the O'Reilly controversy to Smith, the trusteeship of the patent interest was invested in Eliphalet Case of Cincinnati, Mr. Smith's brother-in-law, giving to Case the right to select other persons as associate trustees. His associate trustees were John C. Wright, L. Worthington, George S. Coe, Abel C. Thomas, Henry O'Reilly. Announcement was also publicly made that the O'Reilly contract was void and would be treated as such. Thus apparently the future of the telegraph in the great west was placed in the hands of F. O. J. Smith, and every thing done to make his power absolute.

The first disastrous result of this movement was felt upon the application made to the Judge of the U. S. Court at Philadelphia for an injunction to stay further proceedings by O'Reilly. The injunction was promptly refused by Judge Kane, on the grounds "that the title to the patent was in the Cincinnati trustee, and that as the case was presented, the remedy, if complainant were entitled to any, was at law, and not in chancery." The judge added "that he saw nothing in the merits of the case which could have led him to a different decision."

This decision gave great joy to Mr. O'Reilly and his friends, and the work was ordered to go bravely on. The stockholders of the line, now finished to Louisville, Ky., were invited to meet at Cincinnati to organize the "Pittsburgh, Cincinnati and Louisville Telegraph Company," and elect officers.

"The stockholders of each section," said O'Reilly again, in his circular which he circulated freely, "will have an independent organization CONNECTED only by a GENERAL COUNCIL for adopting regulations for the mutual benefit of the companies and the public."

The company was organized at Cincinnati in September, 1847. I was invited to meet the delegates and prepare the rules for the management of the line. The members of the board then elected were

J. K. Moorhead.	J. D. Phillips.	R. W. McCoy.
Joshua Hanna.	Joseph Means.	D. H. Lyman.
E. M. Stanton.	J. C. Wiley.	T. S. Bell.
Lewis Hutchinson.	James C. Hall.	John Cornwall.
J. P. Wiley.	Thomas Moodie.	E. G. Whitney.

James C. Hall was elected President; Joshua Hanna, Treasurer; and, with the consent of the Eastern company and in connection therewith, James D. Reid Superintendent.

Mr. M. B. Bateham, one of the members of the now organized board, was a newly-married man. His home was in Columbus, where he had left his young wife. On finding it necessary to remain in Cincinnati until another day, he performed the very proper duty of sending a message to Mrs. Bateham, stating the fact. It was the first message the lady had ever received. It was destitute of all the tender prefix and suffix which had marked their anti-nuptial correspondence. On reading it, she told the boy, with a good deal of indignant emphasis, that it was an imposition, that were it genuine, it would have begun "Dear Mary," and ended with "Yours affectionately." And so a loving message brought tears. But the lesson was soon learned.

James C. Hall was, at the time of his election, President of the Chamber of Commerce, a man of fine presence and of much nerve and ability. He served for a single year, but, on account of numerous outside engagements, resigned. Gen. J. K. Moorhead, of Pittsburgh, the President of the Atlantic and Ohio Telegraph Company, became his successor. Thus the lines were practically connected from Philadelphia to Louisville. The Companies soon felt the value of united councils and their natural identity of interest. The business became large and valuable, almost from the first. A second wire was soon necessary, and, when provided, greatly facilitated business.

Although the title of patent had passed from his control, Mr. Kendall saw in these effective arrangements the assurance of an ultimate union, practically such as he had himself desired. He wrote as follows:

"I deem a compromise of the interests I represent on almost any terms, less mischievous than lawsuits of indefinite duration."

In this state of things the Cincinnati trustees proposed a compromise with O'Reilly, but which, as it traversed existing contracts, was necessarily rejected. June 4, 1847, a proposal to issue three-eighths of the stock west of Pittsburgh, and one-quarter east, to the patentees, was earnestly pressed by Mr. Kendall, and which would have been granted by the companies, but which Smith refused. Mr. Case urged its acceptance by Smith, but in vain. Mr. Kendall said very wisely "I had no doubt that in rejecting this second overture, although I had regarded the trustees as having acted unwarrantably, the public would think the patentees most unreasonable, and that not only the community generally, but the most influential of the trustees themselves, impelled by a desire to enjoy the benefits of the telegraph, would encourage and aid O'Reilly in constructing it. So clear to my mind was this result, that I was determined to carry it out if the concurrence of the trustees and O'Reilly could be obtained." But Smith was inflexible. He proposed to buy the whole Morse interest, and Kendall proposed to buy Smith's. But nothing came of either offer. Mr. Kendall finally left a standing proposition to accept, on behalf of his principals, three-fourths of one-fourth of the capital, thus taking the actual basis of the O'Reilly contract. The effect of this was to give new value and recognition to the contract, and aid O'Reilly in pushing forward his work, which he did with immense energy and success.

The O'Reilly contract was well calculated to test, although it never disturbed, Professor Morse's faith in Mr. Kendall. Its vagueness was undeniable. Professor Morse wrote of it as follows:

"We bind ourselves to convey patent right when O'Reilly shall have procured funds to connect to Harrisburg *or ANY POINT farther west, or on any line beyond Pittsburgh to ANY POINT of commercial magnitude.*" Now this is very loose and very general, and since the court has sanctioned his reading of the contract (however adverse to your intention,

or to his understanding at the time), let us see how he reads it. He reads, of course, "that are to be constructed in the Ohio and lake country," no matter between what points, so that they but connect "*points of commercial magnitude.*" Again, he says, such a route constitutes "first section;" such another "second section;" and so onward in the prolongation of these and OTHER LINES to the Mississippi at St. Louis and ELSEWHERE. You will see that he intends to cover the whole west indefinitely under his contract, to Oregon and California, for aught that I see to the contrary. I hope there is a remedy, and that you can retrieve the lamentable oversight, but I confess the more I think of it the more hopeless it seems."

In reference to the resort to legal measures, Mr. Morse used the following characteristic language:

"I wish as much leniency as possible to be shown to the opposing parties. However we may have "spoken daggers, let us use none;" and let us make every allowance for honest mistake, even where appearances are at first against such a supposition. O'Reilly may have acted hastily, under excitement, under bad advisement, and, in that mood, have taken wrong steps, yet I still believe he may be recovered, and, while I would use every precaution to protect our just rights, I wish not to take a single step that can be misconstrued into vindictiveness or triumph. I am the more inclined to make every allowance for O'Reilly and his associates, from the fact that Mr. Smith's design (as stated to me by yourself), in desiring to set aside their contract, was not *morally* right, if it were *legally* so. Your views and mine accord in not desiring to take advantage of lapse of time, if that alone had constituted their offense."

Such language shows clearly enough where the difficulty of settlement lay. Smith had other plans. His loss would be small and he could afford to sacrifice it. Injury to his associates never disturbed him. As a part of the battle Smith now waged with companies with whom he had engaged to effect a settlement, he issued an order September 18, 1847, that intercourse between his New England lines and the O'Reilly lines should cease. Thomas M. Clark, Secretary of the Magnetic Company, gave notice that all messages from the O'Reilly lines for New England would be mailed at New York. This ended all idea of compromise. No settlement was thereafter possible. The Smith lines in the West advertised an exclusive New England connec-

tion. This stirred public resentment. Mr. O'Reilly offered a premium for new inventions, and issued circulars of defiance. He used Morse's name and invention with the most bitter contempt. Bain and House lines sprang up as if by magic. Mr. Kendall stated the loss on the lines between Philadelphia and St. Louis, and which he attributed solely to Mr. Smith's fraudulent treatment of his trust, as follows:

Atlantic and Ohio Company, cash value .....	\$23,437 50.00
Pittsburgh, Cincinnati and Louisville Co.....	40,312 50.00
Ohio and Mississippi Telegraph Co .....	22,265 62.50
Cash dividends due .....	12,615 00
	\$98,630 62.50

Mr. Morse might have had Mr. O'Reilly as his friend, but for Smith. Gen. Moorhead wrote what was no doubt true. "I believe we could have compromised with Mr. Kendall at any time had the contract by which the settlement was placed in the hands of Smith not existed."

It is a curious circumstance that in 1840 Mr. O'Reilly sat for his daguerreotype to Professor Morse, and while thus occupied accidentally broke an eight dollar lens. To some minds the breaking of that lens may seem a prophecy of a wider and more disastrous injury. On that occasion O'Reilly spoke enthusiastically of the embryo telegraph, and urged Morse to present the subject to Congress. In 1848, before the courts decided so emphatically the validity of the Morse patent, O'Reilly ignobly denounced it in language of unexampled bitterness and hate, as a gross public swindle. It was his nature to be intense, and he scattered his philippics of vengeance and scorn far and wide.

It is difficult to interpret F. O. J. Smith's policy upon any other theory than a determination to sacrifice the whole O'Reilly contract, and build up interests in which his ownership of the patent gave him control. Every thing aided him in this course. Mr. Morse and Mr. Vail gave up to him full control in the States of Ohio, Indiana, Illinois and Michigan. He made Ezra Cornell and John James Speed, Jr., his sole agents for these States. They built first the Erie and Michigan line from Buffalo to Milwaukee, and then the New York and Erie line to form a grand trunk line from New York. Through side lines they

tapped Pittsburgh, Wheeling, Zanesville, Columbus and Cincinnati. Smith indeed openly avowed his purpose to smite the O'Reilly lines by opposition. This gave the O'Reilly companies a basis for a claim of damages equal to the amount of the patent claim, and made settlement impossible. He thus utterly sacrificed Morse and Vail's interests. It is a notable circumstance that in the one offer Smith made of settlement, he stipulated for his share *in cash*. He asked \$36,000 as his share of the settlement, but demanded the greenbacks. He did not want the stock he designed to destroy.

At the opening of the office in Louisville, Ky., the first operator was Eugene L. Witman, or "Bible back," as he was called, who afterward went on the southern line. Then came Jimmie Leonard, as he was familiarly and lovingly known, a type of the pure in heart. He was a prince of operators, and his exceeding amiability made all, who knew him, love him. He was so poised mentally that he could carry on a conversation while receiving or sending messages without the least apparent disturbance, and was never caught in an error. R. S. Millar was another of the most excellent of men, true, conscientious, capable. Billie Barr, with his black eyes and his thorough-bred ways, was there also. Albert Jones was receiver. After him came Richard H. Woolfolk, the genial jovial Dick, now an opulent merchant of Louisville, a man with a splendid nose, and a big heart. Finally there came to Louisville, from the east, Benjamin F. Ely, now of the auditor's department, New York, one of nature's gentlemen, a quiet, steady, amiable, educated man.

At Cincinnati I was much embarrassed at the very opening of my work. There was use for about four men, and Mr. O'Reilly had already a dozen excellent, nicely-dressed fellows connected with the office, each expectant of position and income. Four qualified men, one of whom was E. F. Barnes, formerly of Rochester, were notified of their appointment and salaries. It resulted in a mutiny. I immediately notified all hands that I was equal to the work alone, and did not need a man. That settled it. Soon after this I invited Anson Stager to take the management of the office and wires. He was then at Pittsburgh, and had shown great skill in handling business. He at once

infused efficiency into the working of the line, and was, confessedly, the most skillful operator in the service at that time. He had for his assistants Frank Stevens, afterward manager, Chauncey Kingsbury, Byron Hoyt and William Cody. In 1850 Mr. Stager originated the system of working various wires from a common battery on a closed circuit. This was a very valuable discovery. Mr. Vail had previously worked two wires from a single battery on the now abandoned plan of an open circuit. Stager's chief value was in his promptness, his quick perception, his ability to work off large collections of business with skill and rapidity, and in working the wires to advantage. He had tact, a true ear, patience and ingenuity. He resigned January, 1852, to my great regret, to accept the superintendency of the Mississippi Valley Printing Telegraph Company.

There was scarcely a second-rate man on the company's staff. Leonard and Millar at Louisville, Stager, Stevens, Kingsbury, Hoyt and Cody at Cincinnati, E. C. Bush at Pittsburgh, Joshua N. Alvord at Wellsville, Perkins sweating at his key at Wheeling, Garlock at Zanesville, T. S. Gates at Columbus, I. H. Kiersted, bless him, at Dayton, Charles W. Temple at Lawrenceburg, C. C. Taylor at Madison, and John P. Cox at Jeffersonville, were all diamonds of the purest water. Calvin Holmes, now a millionaire at Toledo, O., was the receiver at Cincinnati. He was exceedingly neat and gentlemanly in his personal appearance, most courteous in his manners, remarkably patient and skillful in his treatment of men. He was much respected. In the operating room there was also a young man of rare gifts and of great purity of character, named George Durfee. He seemed a natural duplex. He could send on one wire, and meanwhile listen to and afterward record a coming message on another. He had a younger brother of nearly equal skill. Their kind, quiet faces still live in our memory, although they have both long since passed away.

With such a staff, my position of Superintendent was delightful. Mr. Jackson Duncan, a most excellent man, and to whom I am indebted for much kindness, soon after became superintendent of construction, and a few years later the superintendent of the line. Jack McCandless, a good fellow, was foreman of repairs. Edward Creighton, builder of

the California line to Salt Lake, had one of his first contracts in re-building the line from Cincinnati to Jeffersonville.

One of the finest characters connected with this company was George B. Hicks. Exceedingly gentle and gentlemanly, he was also active, capable and efficient. He was a fine operator, and invented one of the most useful of modern telegraphic appliances, known as "The Hicks Automatic Repeater," patented first in 1858, and again, with an important improvement connected with the circuit changer, at a later period. He was, for some time, connected with the Cincinnati office, and afterward became the Western Agent of the New York Associated Press, a post he filled with great acceptance and fidelity. When I became Lessee of the Kentucky line, from Louisville to Cincinnati, I gave the care of it to Mr. Hicks. He made it such a success, that Mr. Wade bought up the unexpired lease, on terms which suited us both. Hicks' Repeater was one of the great triumphs of electric art, and by making it possible to work to great distances, led to the erection of special wires for direct communication between the great commercial centers, and which has done so much to quicken and enlarge telegraphic intercourse. Direct communication is the vital feature, and the condition of the success of the whole telegraphic system.

In Pittsburgh were five messenger boys who merit special record. Each of them, indeed, has made a record of his own. I have already written of Andrew Carnegie. In the same office with him, and serving as messenger was Robert Pitcairn. He bore character on his face, gentle, steady, prompt, true. He went after a time to Altoona as Carnegie had done. There he became Railroad Superintendent of the Middle Division of the Pennsylvania R. R. Co. He is now Superintendent of the Pittsburgh or Western Division of that vast corporation, an efficient, highly respected officer and gentleman.

In the same office also serving as messenger was David McCargo. He was cheerful, active, willing, of fine disposition and of a pleasant thoughtful face. He rose rapidly. It was not long before he also became, successively, Superintendent of the Pennsylvania Central Railroad, the Oil Creek Railroad Company, the St. Paul & La Crosse Railroad, the General Superintendent of the Pacific and Atlantic Telegraph

Company, and now General Superintendent of the Alleghany Valley Railroad Company, a noble, generous, modest, much respected man.

There was another boy who has also since made his mark. George K. Leet was a messenger. I cannot recall him so well. When the war broke out he went west to seek his fortune and enlisted as a common soldier at Chicago. By dint of bravery and dash he rose rapidly in the ranks, and soon afterward became Adjutant-General to General Grant. Some of these messenger boys had grand histories.

In the opposition office at the same period was a boy, now one of Pittsburgh's honored citizens, Mr. T. B. A. David. He served the N. O. & O. Telegraph Company, was faithful to his trust and became manager at Wheeling, served as assistant to Gen. Stager, while military superintendent through the war, became District Superintendent of the Western Union Telegraph Company, and is now President of the Central District and Printing Telegraph Company. There are no better men than have sprang from the messenger service of Pittsburgh, Pa.

Charles T. Smith, who was a careful reader of current electrical literature, called attention to the necessity of care in the preparation of glass, based on an observation by Faraday, on whose experiments the most absolute reliance could be placed. It led to a marked improvement in insulation, even with an awkward and objectionable outward form. At that time, all insulators, for western lines, were made at the Novelty Works, Pittsburgh, Pa. Faraday's note is as follows:

"In experiments upon the manufacture of glass for optical purposes, I have found that with such as contained no alkali, but consisted of silicia, boracic acid and oxide of lead, the insulation was so perfect as to equal if not surpass that of lac resin. This glass is not at present in use, but may hereafter, because of this and other properties, be very useful in electrical investigations."

"Ordinary glass has such an attraction for water, that, at common temperatures, its exposed surface is constantly moistened to a certain degree; in consequence of which, it becomes a conductor of electricity of such tensions as are sensible by the gold leaf electrometer, and is, therefore, a bad insulator. Resins are very superior to glass, and hence, a varnish of lac resin in strong alcohol, on glass, is recommended."

By 1849, operating by sound was becoming prevalent. It was vigor-

ously interdicted by the "Magnetic" and other companies. I shared in the apprehension, felt by telegraph boards and managers, of its danger, and discouraged it. Yet, its superior safety was gradually asserting itself. The reception by register, the constant winding, the mistakes made by the copyist caused by imperfect hearing, the whirr of the wheels, the breaking of the weight cord and the howl caused by damaged toes, the rough copy retranslated for delivery, the delay, the labor of all this was palpable and sought deliverance. The advantage and practice of receiving by sound came first and most pronouncably from the Pittsburgh and Louisville line. Stager, Leonard, the Durfees, and a few others, settled the question. Other lines, notably the "New York, Albany and Buffalo," where it was earliest demonstrated, followed suit. It soon became, for all large offices, universal. It saved time, labor, money, and secured both promptitude and correctness.

I was guilty of causing a good deal of excitement and indignation, by the transmission of the annual message of President Polk, in 1848, the longest, perhaps, ever issued from such a source. The lines were not in the best of order. The weather was tempestuous. We had only one wire to transmit it over; yet to meet the wishes of the western press it was undertaken, and arranged to be sent from Philadelphia to Buffalo, Detroit, Pittsburg, Cincinnati, Louisville, St. Louis and Galena, by a single writing, and which was, at that time, regarded as a piece of presumptuous enterprise. Every precaution had been taken. Repairers were stationed at various points ready for instant service. Finally transmission began, and seemed likely to be a great success. Numerous visitors flocked to the Pittsburgh office to see the automatic action of the sounders, as they manipulated into the western and northern circuits, branching off in the same manner at Cleveland to Detroit and Buffalo. For several hours nothing could have exceeded the excellence of the work done. It was the first time it had been attempted, and the fact that by the operation of a single hand these widely separated cities were thus placed within sound of a common voice was grand and inspiring. A bitter storm, however, set in as night came on, and transmission became tedious and difficult. Operators changed with each other during the night, but there was no sleep for me. Daylight

came, and I ordered commercial business to be resumed, much to the indignation of the Press. This continued until night, when the balance of the message was demanded. It was commenced again, but the connection of the circuit was no longer possible, and it had to be repeated by hand. E. C. Bush, of Pittsburgh, labored away gallantly until about 3 A. M., when he broke down, and had to go to bed. This was my third night up, but I was the only man left, so I seated myself and sent the balance of the message, ending it with my eyes almost glued together with sleep. As I reached the last words I was naturally in a thankful mood. Santa Anna was then busy issuing his pronouncements, ending with the well-known phrase "God and Liberty, Santa Anna." So in the sleepy joy of the moment I expressed my gratitude by interjecting the words "God and Liberty" before the name "James K. Polk," and then hurrying home, buried myself in the blankets for a long sleep. When I awoke the air was full of "God and Liberty." The paper boys were yelling it in the streets. Who did it? All along the line it was copied by all the papers, "God and Liberty, James K. Polk," just as I had sent it. Prentice, of the *Louisville Journal*, had it in large letters, although he said bitterly he didn't know what Polk had to do with either God or liberty. Lyman, of Zanesville, was particularly mad. It seemed as if somebody was going to be dismissed. Storm signals were out. Prentice wanted the offender sent to Louisville to be beaten through the streets with Santa Anna's wooden leg. What was I to do? I could not well discharge myself. Finally, I wrote to Dr. T. S. Bell, of Louisville, an explanation, which Prentice printed, and which secured his forgiveness. A few days afterward I was a good deal amused in passing through Baltimore by hearing a paper boy singing out, "Explanation of 'God and Liberty.'"

Much has been said about the elements of successful executive authority. In an English volume, written by a man of ripe experience and of large heart, I read, early in life, the words: "If you would be mighty, be kind." It was somewhat in Shakespeare's view when he said, in Timon of Athens:

"What thou wilt,  
Thou rather shalt enforce it with thy smile  
Than hew to't with thy sword."

The terseness and newness of the sentence arrested attention. Is then kindness a force? I asked. It led me to experiments very curious and fruitful. I was, of course, anxious to know the elements of true power. In the large field, which for some years I occupied, embracing the care of thousands of miles of line for different companies, and in which I was without clerical aid or deputy, performing a vast amount of labor, and with many men under me, I found the words of George Moore everywhere true. It is true in all things else. Kindness is the highest potential known in the alchemy of moral force. With this thought upon me, I entered every office as a friend. I made it a rule to shake hands with the messenger boy, as with the manager. So far as place and duty was concerned, indeed, I regarded the one as valuable as the other. The telegraph owes its enlargement, not more to its upright managers and skillful operators, than to its faithful boys. Never did an officer on any line secure more thorough discipline, or more prompt obedience. Some of the friendships, established in these long ago years, are deathless.

In these royal days, when devoted labor, which had no hours and no complaints, went hand in hand with generous recognition and mutual courtesy, the staff of the line had some noble friends. To one of these a word is due. My headquarters at Cincinnati were at the Burnett House. A. B. Coleman was its royal head. It amused him to watch my confusion, as, in his grand way, he politely ushered me into his bridal rooms, sent wine to my table, and afterward bade me farewell with a receipted bill. It was just like him. In every difficulty he was ready with his generous help. He was every inch a king.

In 1851 I had built, under the superintendence of my friend Jackson Duncan, a line of telegraph from Madison to Indianapolis, Indiana, for Governor Brough, the Morse patent for which I purchased from Tal. P. Shaffner. It became a very useful feeder of the main line. Mr. Brough soon learned to operate, had an instrument in his own office, and manipulated his own messages. By an arrangement, Nov. 17, 1854, with Mr. George Frey of Springfield, the connection with the Cincinnati and Sandusky Telegraph Company was secured. A line from Columbus to Chillicothe, Ohio, also became a feeder by partial pur-

chase of its stock. These, with the Erie and Southern, St. Louis, and Philadelphia lines made most valuable connections.

One of my pleasantest recollections of these bye-gone days, is the memory of E. M. Stanton, who was a member of the Board. I had a good deal to do with him. He was a ferocious worker, but I was always welcomed by a hearty half laughed "come in." As he lifted up his great brave face from his work, with the sweat standing in big beads upon his bright, round brow, his coat off and his shirt sleeves rolled up like a man thoroughly in earnest, and entered into a genial conversation, speaking to me as a refined man would address a lady, so gentle, so full of kindness, so encouraging, so full of splendid, jolly vitality, — I felt how royal was his nature, and, since his sad death, how splendid a gift he was to his Country. He was a member of our board at the same time with Salmon P. Chase. Chase was grand, and in an imperial way genial, but did not relax like Stanton. Chase preserved the judicial air. His conversation was massive and instructive, speaking like a man who was mentally at work, and was yet master of his thought, a loftier man than Stanton, but not a greater. It was a royal council where these men sat.

The members of the board on whom executive management chiefly devolved, were Gen. Moorhead and Mr. Joshua Hanna. To the latter, especially, the stockholders looked for counsel and information. He was a man of fine talents, of clear and excellent judgment, and was widely known and respected. Gen. Moorhead was so full of numerous other enterprises, that he trusted much to Mr. Hanna, in whom he had implicit confidence, yet gave much and patient attention to the attempted settlements with the patentees. Gen. Moorhead was a man of surpassing executive ability, of clear, prompt judgment, and of granite will. God made him my friend. Mr. Wiley, director at Wheeling, was a man of great and simple excellence. He proposed to plant locust trees along the route, to be the future bearers of the wires. All the directors were delightful men. Their homes were all open to me.

On March 8, 1849, Joshua Hanna, J. K. Moorhead and Charles Doane, as commissioners of the O'Reilly lines, executed a paper in which it was hoped a final statement had been arrived at with the

patentees. It was agreed to by Mr. O'Reilly, by Professor Morse, by Mr. Vail and by Mr. Kendall. It covered the entire territory. The fight seemed over. Everybody was happy. A letter written to the late Judge S. L. Selden of Rochester, from Pittsburgh, says:

"O'Reilly is here, and thinks it hard that the fight is over. To face the 'bull' had become almost a luxury. Generous, passionate, impulsive, sensitive of fame, regarding money with contempt, and yet as selfish as the rest of us, he laughs, sips his hot punch merrily, clinches his fist, hits Fog another dig, and laughs again."

But the settlement was not made, and the fight went on.

The career of this company was comparatively smooth and free from the contests which agitated its eastern companion. During its existence, except for a brief period, when under reconstruction, it paid regular quarterly dividends, averaging three per cent. It had to be reconstructed from end to end inside of five years from its reception from the contractor, and much of it within three.

Mr. O'Reilly had pledged the original stockholders at Rochester, one-eighth of the capitals of the lines west of Pittsburgh, in consideration of the risk of their early advances, amounting to about \$20,000 in all. I made the demand on their account; the claim was for \$29,000; but there had been no reservation for that purpose. The stock was never received.

With the building of railroads, now so numerous in Ohio and Indiana, the P. C. & L. line, as first built and subsequently renewed, has wholly disappeared and its route has been abandoned. The *corps d'esprit* has also somewhat changed. During the earliest years a deep fraternal feeling prevailed. It was marked and delightful. Patience and politeness marked all official intercourse. These are not absent now, but the bloom has gone. The joy of labor has lapsed into the routine of duty.

Another feature of the early times has also gone. The Press was served with great liberality in supplying general reports. But a bitter rivalry caused the sending of "specials," *i. e.*, messages in addition to the regular reports. As these were charged the ordinary tariff rates, resort was had to a language of cyphers, so as to condense a paragraph

in a single word. Some of these were of a most extraordinary character. Here is a specimen.

Caserovingedsable,	Rehairoringed,
Rehœingedableness,	Retackmentativeness.

Of course this practice had to be stopped, and bitter protests followed. But good sense came by degrees to rectify all errors, and, as the telegraph made journalism compensative, journalists found it for their interest to pay liberally for a liberal service.

The Pittsburgh, Cincinnati and Louisville Telegraph Company was leased to the Western Union Telegraph Company for ten years, May 24, 1856. The terms of the lease were, for the first year, \$10,800; second year, \$12,150; next three years, each \$13,500; each year thereafter, \$13,840, and the right to exchange stocks for a new issue of Western Union, the capital of which, at that time, was \$500,000.

The immediate cause of the leasing of the P. C. & L. line to the Western Union Company was an impression cleverly conveyed to its officers at Pittsburgh, that the southern business had been secured by the latter company at Louisville, Ky. This was made probable by a notification from the southern company, that the business was open to competition, as to the amount of rebate allowed to the southern lines. This at once aroused such a sense of danger, that a lease was quickly arranged and executed by Chief-Justice Chase, then President, and signed by him, Joshua Hanna, Treasurer, Jackson Duncan, Superintendent, and promptly executed by the other parties. It need scarcely be added, that competition for rebate closed with the execution of the lease. The whole capital of P. C. & L. Co. was converted into Western Union stock within a year. Thus, another independent company went down and out.

## STATEMENT OF DIVIDENDS.

6 months, April	1, 1848,	5 per cent.	3 months, July	1, 1850,	3 per cent.
3 " July	1, 1848,	3 "	3 " October	1, 1850,	3 "
3 " October	1, 1848,	3 "	3 " January	1, 1851,	3 "
3 " January	1, 1849,	3 "	3 " April	1, 1851,	3 "
3 " April	1, 1849,	3 "	3 " July	1, 1851,	3 "
3 " July	1, 1849,	3 "	3 " October	1, 1851,	2 "
3 " October	1, 1849,	4 "	3 " January	1, 1852,	2 "
3 " January	1, 1850,	4 "	3 " April	1, 1852.	3 "
3 " April	1, 1850,	4 "			

## CHAPTER XVII.

## THE SOUTH-WESTERN TELEGRAPH COMPANY.

LOUISVILLE, Ky., has always been, to a vast region north, the gateway of the south. Located at what is practically the head-waters of the lower Ohio, she has long held an important hold on the immense trade of New Orleans, and the cities of the Mississippi. It is even more marked now, since, in addition to her river traffic, Louisville has become the entrepot of the great railway routes to the southern seaboard. For the telegraph, especially, it is one of the natural radiating points of southern commercial intercourse with the north and west. While, therefore, Mr. O'Reilly was welcomed heartily to Louisville, and the connection established with the east gave much satisfaction, it was natural that the merchants who grasped his hand with true southern warmth, should regard the work, so quickly and happily accomplished, as only an earnest of the extension of the wires to Memphis and New Orleans.

The terms of the O'Reilly contract, however, expressly forbade any movement under it in that direction. Mr. Kendall had already made arrangements for the occupation of the southern territory by other parties, two of whom, at least, Mr. William Tanner and Col. Tal. P. Shaffner, were citizens of Louisville. O'Reilly had, however, by his dash and impetuosity, and by a skillful handling of the press, to the editorial offices of which he had an easy and welcome entrance, so taken the public ear and interest, and his relations with the Morse patentees were now so hostile and defiant, that, partly by the feeling of revenge and partly by public persuasion, he determined to build southward to New Orleans, via Nashville, with a branch from Tusculumbia, Ala., to Mem-

phis, Tenn. In this determination he was encouraged by Ed. F. Barnes and Samuel K. Zook, who undertook to provide machinery for transmission, which would substitute and yet not traverse the patents of Professor Morse. Charles B. Moss, of Philadelphia, and Francis S. Pease, of Buffalo, had, by this time, also given similar assurances.

Thus encouraged, and drawing from the profits of his eastern construction, the "People's Telegraph Company" was quickly organized, and men sent out to build the line to the Crescent city. Other parties started on a similar mission to St. Louis.

While the lines were thus being pushed forward, on every side, Mr. O'Reilly was covering the west and south with his circulars. These announced his progress and designs, in language peculiarly his own, and which were a singular mixture of bold and sprightly energy and vituperative denunciation. Yet they suited the mind of the period. Pluck and vim and accomplishment, and the shout of an earnest man rolling up his sleeves to show his wounds and defying obstacles, were sure introductions to the western and south-western heart. It was thoroughly fired, so far as cheering went, although, at Louisville, there was a shrewd withholding of subscriptions. One of Mr. O'Reilly's expressions in his multitudinous circulars became a kind of by-word. He headed these ardent missives by announcing, "Four thousand miles already up and thousands more under contract." This expression came to be used as a kind of familiar telegraphic semi-military salutation. And so it happened that when the line builders asked me to write them a song, I wrote as follows, and which the line men, who were all young, light-hearted fellows, put to music and sung as they rushed the lightning line through Ohio and Tennessee. I remember two verses only :

The mystic wire is in the air,  
It winds from shore to shore,  
By dark Missouri's turbid tide,  
By deep Niagara's roar.  
Boys! bear along the lightning thong  
Down the O-hi-O.  
"Four thousand miles already up,  
And thousands more to go."

Sink the poles, boys, firm and strong,  
 Deep and close together,  
 Solder the joints of the mystic thong  
 And let it stand forever !  
 Shouting still, by rock and rill,  
 In morning's crimson glow :  
 " Four thousand miles already up,  
 And thousands more to go ! "

The building of the People's Telegraph line was committed to the care of Dr. A. Sidney Doane, one of the early directors of the Magnetic Telegraph Company, Charles G. Oslere of Pennsylvania, and Captain John O'Reilly, who pushed their work with so much zeal that on March 7th, 1848, the line was opened to Nashville, Tenn. Some idea of the condition of that first section may be gathered from the fact that scarcely had the shoutings ceased which welcomed the opening of the Nashville office, before a gap of fourteen days loss of connection with the North was reported. From thence it was built southward through Tusculumbia, Ala., Columbus and Jackson, Miss., and thence through Clinton and Baton Rouge, La., to New Orleans. In his address to the editors and merchants of New Orleans, Mr. O'Reilly said that he would ask for no subscription until the line was built. This, of course, roused interest in his work and gave him great popularity, but it was the grave of his fortunes. The men of New Orleans were in no haste to take stock until they saw the fruit of the venture, and that fruit was not tempting. The whole line was finished early in 1849. In its construction, it was, as usual, built of indigenious easily obtained timber, with little regard to permanence, and over long sections in Mississippi the wire was borne by brackets, nailed to trees. An exception to this general character of the line was in that part of it built along the levees below Baton Rouge, the poles for which were of cypress sawn square, with the square block insulator on the top. By one of the fatalities incident to a hurried work in the hands of unskilled men, the insulators, instead of being made of glass, were of glazed earthenware, imperfectly vitrified, through the thin crust of which the wire soon sawed its way, and left the soft pottery exposed to the rain, which soon soaked into the mass,



and having no chance for radiation, remained a steady receptacle of moisture, even in the heat of summer.

Meanwhile Mr. Kendall, roused by O'Reilly's southern movement, applied to the Kentucky courts for an injunction on the instrument which Barnes and Zook had provided for the working of the line. It is due to Mr. O'Reilly to say that he knew nothing of mechanism, and was unable to determine any question of infringement by personal inspection. Had it been otherwise, with all his rashness, it seems impossible he could have exposed himself to a cheat so bald. The "Columbian" instrument, so called, which, by courtesy, may be stated as the joint invention of Barnes and Zook, was the veriest plagiarism which two sane or insane men could possibly pass over to the uses of an honest or dishonest service. It recorded the same as Morse's, and by a similar action. The sole difference consisted in the use of permanent magnets alternately polarized, the one making the record and the other acting as the spring as in Morse's first experiment. When these magnets for any cause failed in action, the record was made by a retractile spring and the demagnetization of one of the permanent magnets by the current of a local battery. It was Morse working backwards, and irresistibly recalled the deception of the English showman, as he invited the crowds to his tent with the poetic invitation —

Walk in, walk in, and you shall see,  
A horse's 'ead where 'is tail should be.

How any sane man could have regarded it as an improvement on Morse, passes comprehension. And yet the two inventors were splendid men, and have been both long since translated. Zook fell nobly at the head of his regiment at Gettysburgh. His only vice was a kind of very original profanity, and his ready apology for it was, "kuss or bust."

Mr. Kendall's application for an injunction on the Columbian was welcomed by O'Reilly, and Salmon P. Chase was engaged as his counsel. The Morse patent was attacked and thoroughly sifted, and contrary to O'Reilly's ill-judged prophecy was as thoroughly and triumphantly sustained. The injunction was granted. This led to universal discouragement and disaster. Moss and Pease, though promising much in the way of new inventions, produced nothing. Luckily for O'Reilly,

Alexander Bain, a Scotch inventor, had arrived and had offered his chemical recorder to the public, and to him O'Reilly now had recourse. The Bain system of chemical decomposition by the electric current passing through a stationary needle and a rolling paper ribbon saturated with prussiate of potash, was at once adopted. In these degenerate days it is quite possible that some Morse magnets were also retained to help the voiceless Bain along.

Meanwhile, however, the poorly-mounted and rapidly-built line began to give frequent proof of its weakness. Debts also had been created to a large amount at almost every point. From this and other causes an intense hostility to the line prevailed among the "poor whites," and the numerous creditors all along the line. To add to the general unhappiness, the Mississippi burst through the frail levees on the Louisiana coast, washed away the line, and inundated New Orleans. In May, 1850, the office in that city was only accessible by boats. Business of course was suspended. The indebtedness enlarged daily and had reached the amount of \$90,000. At the same time an enormous crevasse burst through the levees at Bonnet Carre above New Orleans, and the mad waters of the Mississippi roared through to Lake Pontchartrain. Creditors also, by a kind of instinctive sympathy with nature, were already revenging themselves by cutting down the line. The negro teamsters made their camp fires of the poles and carried off the wire. At some offices the sheriff held the key. Ruin seemed everywhere.

Meanwhile Mr. Kendall had, as a set-off to O'Reilly, early in 1847, organized the New Orleans and Ohio Telegraph Company which was designed to embrace the territory from Pittsburgh to New Orleans. At first, following a kind of fatalism, this whole region had been placed in the hands of F. O. J. Smith, who had assigned to Eliphalet Case, Jr., the construction of the 401 miles between Wheeling and Lexington, including a branch from Maysville to Cincinnati. The conduct of the construction, however, passed into Mr. Kendall's hands as practical contractor. The 59 miles from Pittsburgh to Wheeling was sublet to E. D. Townsend. From Lexington to Nashville, 273 miles, William Tanner and Tal. P. Shaffner obtained the contract, Mr. Ken-

dall becoming a party thereto December 23, 1847. Ten per cent were allowed Tanner and Shaffner for obtaining subscriptions. The construction of the 92 miles from Nashville to Waynsboro was given to H. M. Watterson, and the 658 miles south of Waynsboro was built by T. C. H. Smith and J. E. Kendall. These subcontracts averaged to the subcontractors about \$75 per mile, Mr. Kendall reserving for himself and F. O. J. Smith the profits of construction on a general schedule of \$150 per mile for a line of one wire. The total length of the line was 1,483 miles. The route from Nashville was via Waynesboro, Pontotoc, Grenada, Natchez, Vicksburg and Baton Rouge. The subscriptions to stock were inadequate, and Mr. Kendall had to advance money to secure the completion of the work. Excepting the portion built by Messrs Tanner and Shaffner, the structure was ephemeral and unsatisfactory. When completed a large debt had been created along the line. The section along the Ohio could never be relied upon. The working of the New Orleans and Ohio line south of Louisville was irregular and disappointing. Yet it provided the basis of an opposition which prevented further subscriptions to the O'Reilly lines, and was capable, in vigorous hands, of waging effective opposition.

In the fall of 1848 also, Col. Shaffner, in association with Thomas C. and William L. McAfee, commenced the St. Louis and New Orleans line from Nashville to St. Louis, which was completed in 1850, and of which he became President. During the same period he was actively connected with Isaac M. Veitch, in the construction of the St. Louis and Missouri river line to St. Joseph. These lines threatened to absorb a very valuable business. In 1852 Col. Shaffner became Secretary of the N. O. and Ohio Company, and in the following year was elected Secretary of the American Telegraph Convention at Washington. Mr. Shaffner was a lively character, tall, black haired, keen visaged, good natured, irrepressible. His Telegraph Manual, considering the period in which it was compiled, is proof of his ability and industry. In 1854 he projected an inter-continental telegraph, via Labrador and the Faroe Islands to Scotland and Norway. For this project Mr. Shaffner received royal concessions of a valuable character from the Kings of Denmark, Norway and Sweden. He also received distinguished attention from the

Emperors Nicholas and Napoleon. Col. Shaffner is still in magnificent health, and casts the broadest and longest shadow on Broadway, New York. He is now engaged in an exhaustive history of electric science.

Here, then, was a long and valuable route occupied by the Morse patent, and which only needed strong hands and an energetic will, with hard sense and a little convenient gold, notwithstanding its hasty and imperfect structure, to render the condition of the People's line very uncomfortable. The corporators of the New Orleans and Ohio Telegraph Company were John M. Bass, James Woods, C. M. Fogg, C. Connor, James Porter, James A. McAllister, James Johnson, J. J. Gill and John Kirkman.

On a certain day in May, 1850, the builders, and inventors, and managers, of the People's line, congregated at Louisville. The deep hard winter of their discontent had come. They had scarcely money enough to get home and had too little to allow them to stay. Never was an enterprise so apparently broken up and demoralized. A little irregular business with Nashville and Memphis alone kept it from almost inevitable extinction. On that day my duties led me to Louisville. I was full of life and an enthusiast at my work. On meeting these broken men, and without reflection upon its hazards, I, at first playfully and then formally, offered to lease the line, for a term of years, at \$13,500 per annum, if placed in my hands without reserve. It was a rash offer, yet the value of the New Orleans connection to the lines under my supervision, was great and unmistakable. I was anxious to secure it for that purpose. I knew something of the immense commerce of the Mississippi, and that the distance from New York to New Orleans, via Louisville (1,856 miles), was 95 miles shorter than by Washington.

After consultation with Gen. Moorhead, President of the Eastern Companies, I closed a lease and took possession July 1, 1850, as a personal venture. Gen. Moorhead gave me permission to draw upon him, personally, as I needed funds. His faith in me gave me courage with which to enter upon my new work. The eastern companies refused to accept my resignation.

Taking with me my tried friend, Jacob Campbell, as repairer, and

several horses for repair stations along the line, I started for the crevasse early in July, landing under a scorching sun, on the levee at Bonnet Carre. We immediately commenced the work of restoration. There were no boats and no rafts. The Mississippi was roaring over the plantations to Lake Ponchartrain. Dead cattle on every side made the air horrible. The exposure was fearful. But there was nothing for it but to jump in and, by climbing and wading, stretch a small bell wire, with which I had provided myself, from tree to tree across the crevasse. It was full of danger. The air was heavy with poison. It was intensely hot. But by sunset the connection was made, and I found myself, as darkness began to gather, far from any house, my feet so swollen by standing in the water that my boots had to be cut off, and motion difficult and painful. I had to walk two miles in soaked stockings and finally found a resting place and a southern welcome from a planter named Delomar, where I was received, notwithstanding my condition, with the most unbounded kindness and hospitality. The best room was assigned to my use. Fresh clothing was provided me. I have never sat down to a table more nobly luxurious and delightful. The hospitality was royal. When I left them, after a stay of two days, I was cheered from the bank of the river, to which the whole of the large household accompanied me, and thus received my first lesson of southern nobility and cheer.

The lower section of the line was now repaired and put to work. At this time, also, I provided Campbell with a tent, and material, and directed him to go steadily over the whole line, putting it in the best working order.

Nearly three months after this, after having labored intensely, the line not yet working through, money getting scarce, I began to feel the danger of the task I had undertaken. I had traversed the line for over 600 miles, partly on foot, partly on horseback. I was now in northern Mississippi, passing through the dense woods, below Columbus, on a dark night, waiting, every now and then, on the almost trackless road, for flashes of lightning to show me my way onward. My horse was thoroughly jaded. I had still twelve miles to travel. Overcome by a momentary dread of failure, I stopped my horse, and, in the stress of

the hour, kneeling by a stump, asked divine help. Immediately, with that act, a sense of courage came, which was never afterward lost. By midnight I reached Columbus. It was now bright moonlight.

Just as I arrived in Columbus, with \$15 in my pocket, an utter stranger in the place, I was accosted by a stage driver, who had seen me on the road, who informed me that he had overheard two men, at the boundary of the county below, threaten, that if their bills were not at once paid the line would be cut down and kept so. A steamer was just then about to start down the Black Warrior river for Mobile. I had to go to New Orleans to raise money, so telling the driver, who seemed a kind man, to intercede for me, and to give them my horse in pledge, I started for New Orleans. I arrived there with fifteen cents in my purse, and, with the impudence of my new courage, took quarters at the St. Charles hotel. The line was still silent to Louisville. I was received at the office with grave and compassionate courtesy. I at once, however, sought out the Agent of the Associated Press, the noble C. C. Fuller, of Baltimore, and laid my case before him. In two days Fuller collected, from New Orleans merchants, for my benefit, \$4,000 in gold, to be repaid in dispatches. In two days more the line opened through, and in a week more I was able to draw from the receipts of the New Orleans office \$1,000, \$5,000 in all. The skies were clearing splendidly. The eagerness with which business men thronged the office, showed me that I had not overestimated the value of the line. After providing for necessities, I took steamer for New York. I was exhausted. As we reached the bay, the European steamer Franklin sailed up before us. She bore most important commercial news. Before I reached New York, that news had been telegraphed to New Orleans, the effect of its reception bulletined on the New York Merchants' Exchange, and accompanied by a handsome notice of my work. I now found myself very suddenly transformed into a kind of electric lion, and received the heartiest congratulations on every side. The men to whom I owed much of my success in an undertaking the peculiar perils of which it is impossible to enlarge upon, were Gen. J. K. Moorhead, of Pittsburgh, and H. D. Newcombe, W. B. Belknap, W. C. Hite and Dr. Bell, of Louisville.

But with all these encouragements it was uphill work. Debtors were peremptory. The line broke at every storm. The negro drivers kept burning the poles. Yet when the line worked through, the receipts showed how valuable was the traffic. No line was more needed. It will scarcely be credited that a single year after the execution of the lease to me, and after spending \$30,000 in the payment of debts and in the work of restoration, that the lessors, by most arbitrary measures, seized the line and left me utterly without resource. Happily the annual meeting of the company was nigh. At that meeting Dr. T. S. Bell nobly took up the matter of the violated lease without gloves, and had the line placed wholly in my control with a liberal salary and a percentage of the profits. This was in 1851. Thus encouraged and fortified, although I felt conscious of having parted with a lease of great value, such vigor was infused into the operations of the line, and such success attended it, that during the following year the New Orleans and Ohio Company, through Mr. Kendall and Mr. Tanner, proposed terms of consolidation. These terms were just and honorable to both parties, and were consummated May 13th, 1853, and went into effect June 1st, following, thus providing two routes to New Orleans, one via Grenada, Natchez and Yazoo, and the other via Columbus and Jackson, Miss. William Tanner was made President, George L. Douglass Secretary and Treasurer, James D. Reid, Superintendent. The stock of the People's line, which was very large, was made exchangeable for stock of the New Orleans and Ohio Company in the relation of nine and one-half shares of the former for one of the latter, all debts were assumed, and Morse machinery provided for the united lines.

All now bid fair for a fine future. Every thing indicated prosperity. The debts of the united lines were scheduled at \$40,000 for the People's line, and \$25,000 for the New Orleans and Ohio Company. The debts of the People's line had been largely reduced since the date of the lease. The parties to this union were, on the part of the People's line, George L. Douglass, President, W. C. Hite, Henry H. Forsyth and James Pullin. On the part of the N. O. & O. Telegraph Company, William Tanner, President, Thomas Y. Brent, D. S. Crockett, James Pullin. The directors elected were W. D. Reed, James B. Walker,

Samuel Cassiday, H. H. Forsyth, George L. Douglass and William Tanner.

The next year, however, was one of terror. The yellow fever swept the south. Men died like sheep. Almost every northern operator fell. The line was kept up with great difficulty. I was unacclimated and had sometimes to sleep where the smell of the dead had not yet departed, sometimes out of doors. Business was almost stopped. Ninety dead bodies lay one day in New Orleans unburied. Four young men who landed with me at Baton Rouge were buried before I left, six days after. After this had passed away and the winter set in, a storm came and masses of sleet formed on the wires as far south as Jackson, Miss. The most widespread desolation followed. Miles of the line lay in absolute ruin. Hundreds of poles broke and business was long suspended. Creditors meantime became again abusive and urgent. Finally some drafts of the treasurer were dishonored. It became essential to obtain money to get rid of creditors, and to place the line in condition for steady work. The result of all these disasters was, that, as a matter of imperious necessity, it was determined to lease the united lines, and Amos Kendall, James D. Reid and William Tanner were made commissioners for that purpose. A lease was finally effected to George L. Douglass, Norvin Green, W. D. Reed, Thomas L. Carter, George H. Montsarat, George M. Bright, D. S. Crockett and S. F. B. Morse, for \$90,000, \$31,500 of which was to be cash. The lessees were incorporated under the name and style of the "New Orleans and Ohio Telegraph Lessees," by act of the legislature of Kentucky, approved March 6th, 1856. I became afterward one of the lessees by purchase. By the pressure of a claim not known at the time of the lease, and after the payments contemplated had been all made, the line was permitted to be sold at sheriff's sale, was bought by Richard Woolfalk of Louisville, and was finally organized under an act of the Legislature of Kentucky, passed December 22, 1859, and by vote of the stockholders January 6, 1860, into the "South-western Telegraph Company," of which Dr. Norvin Green became the President, George L. Douglass, Treasurer, Thomas L. Carter, Secretary, and A. E. Trabue, General Superintendent.

Dr. Norvin Green having been made President of the new organization, began immediately a careful examination of the line, to determine his course. At the time of his becoming one of the original lessees he was Government Disbursing Agent of the new National Public Buildings, then being erected in Louisville, Ky., a man of much practical talent and sagacity, fond of fun, but well balanced, solid, careful and enterprising. He had practiced as a physician, could play the babiton at a barbecue, was at home on the stump, and had a faculty of "putting things." In short, he carried a good deal of "contraband" humor beneath a very level head. His judgment always restrained his fun. He was practical, precise, cautious, given to detail, and firm. There was also a good degree of available kindness within his waistcoat, which, at times, revealed itself without weakening a will of much tenacity and rigor. He was born in New Albany, Indiana, April 17, 1818, but having spent almost his whole life in Kentucky, was thoroughly southern in his habits and tastes.

With much shrewdness and judgment, Dr. Green quickly saw that to make money by the new enterprise, the first condition of success was a steady working line. "We have made up our minds," said the Doctor, in his oracular way, "that if we are to make any money out of this thing, we must spend money on it." This was the axiomatic basis upon which future success was predicated. Appointing A. E. Trabue as his Superintendent, he set about a thorough strengthening of the line throughout. I had something to do in inspiring faith in its capacity to earn money. The receipts for the last year of the Union, with all its embarrassing circumstances, were \$90,590.80. Under Dr. Green's management, and with a free and judicious outlay, the receipts rapidly increased. Receipts for 1855, were \$124,312.76; for 1856, \$152,593.74; for 1857, \$181,210.17; for 1858, \$251,233.81.

Meanwhile, Dr. Green found John Van Horne, at Tuscumbia, and seeing his points, made him Superintendent. There shone his discernment. At the same time, also, with wise forecast, in which he was greatly aided by his alter ego, George L. Douglass, the Treasurer, a man of much personal dignity and refinement of character, intelligent, scrutinizing, somewhat severe in his judgments, yet thoroughly prudent and honorable, the

seeds of all inimical enterprises were purchased. The line of the "Nashville and Memphis Telegraph Company," the "Montgomery lines," the lines of the "Miss., Tenn. and Kentucky Telegraph Company" were gradually united with the lines of the lessees. The outlying bonds, stocks, and reversionary interests of the companies united under the lease were bought. Every thing was done, which prudence could suggest, to give the lease and line certain and permanent value.

Immediately on the organization of the N. O. & O. Tel. Lessees, in 1854, and in following years, a general and thorough rebuilding of the whole structure was commenced along the new railroad routes, now happily for the S. W. Telegraph Company, pushing their way from Louisville to New Orleans, and out to Memphis. The railroads gave the property protection, and all the forest routes were abandoned. Every dollar of earnings was thus devoted until the whole structure was thoroughly rebuilt. It then at once took a position of first-class rank among the telegraphic forces of the country. Dr. Green was President, as before, and John Van Horn, Superintendent. It maintained its corporate identity for some years when, after the American Telegraph Company had absorbed the "Magnetic," and "Washington and New Orleans," and "Western" Telegraph Companies, and after a splendidly successful career, the South-western Telegraph Company became extinct by union with the American Telegraph Company, the stockholders accepting for their property an issue of \$1,000,000 American Company stock. This was not long after exchanged for \$3,000,000 of stock of the Western Union Telegraph Company, with which the American Telegraph Company finally became fused.

One of the sharp things connected with the aggressive movements of northern companies, as the lines south began to show their strength, was the plan taken to wheel the South-western Telegraph Company into line with the arrangements of the Western Union Telegraph Company. Dr. Green, President of the South-western Company, was shrewd, sharp and wide awake. John Van Horne was his watchful and able Superintendent. Nothing escaped the notice of these men. The lines of the company were being put into first-class order. All its resources were being used to make the outside structure strong and

permanent. Van Horne was "pushing things." Dr. Green's Counselor, Associate and Treasurer, George L. Douglass, one of the class of men, with a caution more than Scotch, who give honor to citizenship, a positive, straightforward character, yet whose caution almost amounted to timidity, watched every movement with the utmost care. These men did not want opposition just then. Their business for the east was sent under an open contract, terminable on thirty days' notice, by the O'Reilly lines, via Pittsburgh, which granted the southern line a rebate of 10 per cent. Hiram Sibley, of Rochester, now on a general forage for the Western Union Company, of course saw the value of and wanted the southern business. He adopted two plans to get it. First, he sent Edward Creighton south, with directions to show himself at certain places and to telegraph fully the price of poles, the best routes for lines, and so forth. Occasionally, a cypher message, which meant nothing, was sent through. Of course these dispatches were not designed to be "strictly confidential." They soon became known at headquarters. Mr. Douglass, as he read these messages, looked solemn. The Doctor's smile was not gay. Meantime, Sibley reached Louisville, and complained of the exclusive connection with the Pittsburgh lines, and insisted on a chance to compete and offer better terms. By this means he secured, from the South-western Company, a notice to terminate the exclusive contract with the O'Reilly lines. At the same time, he took measures to convince the Managers of the Pittsburgh, Cincinnati and Louisville line that their southern connection was gone. This was the lemon squeezer which led to the immediate lease of the latter line to the Western Union Telegraph Company, Salmon P. Chase, Joshua Hanna and Jackson Duncan signing the contract. This done, Sibley again called at Louisville, but, having now the trump card in his hand, he had nothing to say about rebate. He had bagged both birds and chuckled over his success. He was a royal egotist, and enjoyed his triumph grandly.

On one of these business excursions Mr. Sibley started for Louisville, Ky., by boat from Cincinnati, to see his now southern partners Green and Douglass. It was Sunday. Every thing was quiet and orderly. Cards were all locked up. An Episcopal clergyman of the

High Church order deemed the occasion favorable to honor his calling. He sat by Mr. Sibley, and very naturally mistook him for a brother in orders, or at least a vestryman. So, turning to him graciously, and with much afflatus, he magnified "The Church." It was the world's enlightener. It was the genius of civilization. It was to bind the broken bonds of the world's great brotherhood. And he waxed warm and eloquent. Sibley sat patiently till he was through, when, looking up into the ministerial face with great earnestness, he greatly astonished his clerical friend by saying: "My dear sir, did you ever hear of the Western Union Telegraph Company?" And taking this for a text, and using a forcible adjective occasionally which was never heard of in the rubric, and which made the clergyman wince, he as eloquently contended that the telegraph was the missionary of peace and good will to the world.

To connect with the lines from Louisville to New Orleans, four distinct companies were organized in 1852 and 1853 to build lines in Texas. The first of these was the NEW ORLEANS, RED RIVER AND TEXAS TELEGRAPH COMPANY. The contractors were Ben. P. Crane & Co. It was to begin at New Orleans and was to be connected by a massive English cable, laid between New Orleans and Algiers. Thence the route of the line was to be through Thibodeaux, Franklin, New Iberia, Opelousas, to Alexandria. A cable was to be laid in Berwick Bay, at the mouth of the Atchafalaya river. A favorable charter was secured. A branch was also arranged to extend from Thibodeaux through Donaldsonville and Plaquemine to Baton Rouge, at which latter place a cable was to cross the Mississippi. C. C. Clute, an erratic, sprightly, combative character, was the agent of the contractors, and one of them. The scheme was beautifully laid out and executed—on paper.

A second company was the TEXAS AND RED RIVER TELEGRAPH COMPANY, T. C. H. Smith, George Ward and L. K. Preston, contractors. This line was actually built, and extended from Alexandria through Natchitoches to Shreveport. Two companies were at first organized to carry out this project, and the line was to extend to Houston. The section south of Shreveport was, however, not built as designed. The

built section soon disappeared. The men who built these lines were after the subscriptions.

Another line was projected, from Montgomery through Austin, to San Antonio, but it ended in projection. Still another company was organized, to build a line from Natchez, via Vidalia and Harrisonburg, to Alexandria, called the "Planter's Telegraph Company." All of these lines passed out of existence like smoke. One line alone was found worthy of purchase. This was a line built by Clute, from Galveston to the Louisiana State line at Beaumont, which the South-western Company purchased and extended to New Orleans. The South-western Company also built from Vicksburg, Miss., to Marshall. During the war some enterprising electrician built a line from Shreveport to Natchitoches, and insulated it with cow's horns! The horns were the most permanent and by no means the worst part of it. The builder, no doubt, had a partiality that way. A good many men have just such tendencies, but not always in so useful a direction. All these routes, including a line built by Lara Baker, from Little Rock to Hot Springs, Ark., and a line from Houston, via Austin, to San Antonio, were finally bought or built and occupied by the South-western Company, substantial structures erected thereon, and formed part of the property turned over to the American Company when Union was at last effected.

During the first of my southern campaign, when I had to travel much through a poor and sparsely settled country, sometimes on foot, and by all sorts of conveyances, my greatest foes were the bed bugs, all of whom welcomed me with open mouth. I tried sleeping on chairs, but they followed me. I sat, sometimes, dangling my terminals out on the window-sill, but the mosquitoes drove me in. Finally, in despair, I bought some book muslin, a needle, thread and tape, made a bag of the muslin one night, greatly to the astonishment of some Mississippi girls who watched me through the door, and, by the aid of John Van Horne, got into it at bed time, tied the strings tight round my neck, and defied the bugs. After examining my defenses, they gave it up, and let me alone.

I earned quite a reputation, by a circumstance now happily impossible,

since the introduction of galvanized wire, and which is given as characteristic of the period when it occurred.

I had gone home, for a brief rest, to Philadelphia. It was in the midst of the winter, 1853-4. The cold was excessive. One morning a message came to me from Louisville, saying, that the circuit between Louisville and Nashville was lost, "but no ground," and men had gone out to repair. Three days passed, and the south was still silent. After giving some general directions, I started immediately west. At Cincinnati, the river being closed and the cold still most intense, A. B. Coleman, the noble proprietor of the Burnett House, procured for me a fine team, put on a pair of fur boots on my feet, supplied me with some magnificent Buffalo robes, and, in his handsome way, wished me God speed. Charlie Temple, of the Lawrenceburg office, a fine, spirited fellow, offered to drive me through to Madison. Off we went, reaching Madison at midnight, our horses white with ice, and we so cold we had to be carried into the hotel. By daybreak, we were again on the road, reaching Jeffersonville at dark. I crossed the river alone. It was a mass of piled ice, but I was bound to get across. I reached Louisville by midnight, having crawled over on all fours. The Nashville stage left at 4 A. M., and I started with it south. At Bardstown, up to which place I knew the line was all right, there was a plucky fellow, named Charlie Lathrop, who could climb poles like a squirrel. We hired a sleigh and started together south. After traveling four or five miles, we stopped, and I sent him up a pole to bring down the wire. I had told him I suspected a bad joint to be the cause. When he reached the top, he sung out, "By gracious, here it is!" and down he slid with a ferocious looking hook joint in his hand. The thought of sending him up that particular pole seemed an inspiration. After cutting the wire south of the joint, we tested, and found no current. On the north side the current was all right. Here was all the trouble. The joint was speedily remade, and, after communicating with Nashville and Louisville, we returned. It was a splendid lesson. Joints were closely watched after that. Hook joints were absolutely forbidden. The incident, narrated above, had much to do in calling attention to a very widespread evil.

Another journey of several hundred miles was curiously caused.

Current was lost, one morning, between Clinton and Baton Rouge, La. New Orleans business was at that time heavy. Managers and repairers went over the line, but could find no break or sign of trouble. I immediately started, taking Zook, of New Orleans, with me. Cutting and testing every mile, we finally found the cause in a slight exudation of gum from a pine tree, which formed a connection between the wire and the tree. That trickle of gum cost the delay of three days' business, and the loss of as much more. Still another long and provoking journey was caused by the use of glazed cloth on an operating table, at Pontotoc, which, becoming a conductor, so connected the key points that the key was useless. The removal of the cloth, of course, restored the circuit to the control of the key.

One of the most perplexing experiences, of a telegraphic character, occurred in 1854, in Alabama, near lower Tennessee. I had to live down a good deal of ill-feeling there, on account of an idea current that the wire was used by runaway negroes to find Tennessee, and had conquered the friendship of the degraded white race there, by making the homes of the most active of the negro-catchers my stopping places, and putting myself on good terms with the old women and the children. I found that, even among these demi-savages, politeness was better than a pistol. After I left, however, a new trouble came.

Near the town of Russellville, a Baptist preacher, of Campbellite proclivities, and not without talent, held forth semi-occasionally to the denizens of the region between Russellville and Pikeville. The country was wretchedly poor. In 1854 there had been an unusually long drought. In one of his sermons, while depicting with fervid oratory the general cussedness of the race, he exclaimed: "See there, my friends, out along the road thar a set of men have dared to interfere with the Almighty's lightning, and what, my friends, is the consequence? They have robbed the atmosphere of its electricity, the rains are checked, and there has not been a good crop since the wires were put up, and what's more, I believe we never will have any until they are gone." Curiously enough, a great many intelligent people encouraged and not a few believed the preacher's philosophy. Immediately, a wild excitement spread. It was difficult, to be sure, to connect a thread of

iron running through the air with the parched soil and the famished land. But the very mystery made the belief take root. The wire was the devil's turnpike, sure. And so down went the poles by the dozen, and away went the wire by the mile, dragged by an angry and excited mob through Russellville, in triumphant avengement of their wrongs. It was difficult to know what to do in such a case. Dr. Green once thought to try my powers over the people, but, as I had by this time settled at Philadelphia, he decided to go himself. His Superintendent, in 1854, was A. E. Trabue, a lively character and a genius. He is known to the craft as the author of "Short Cirkut." Picking him up at Nashville, on his way south, the first movement made was an aggressive one, and, although the telegraph protection law had been abrogated, about a dozen of the ringleaders were arrested and put in jail at Pikeville. But it did not do much good. The jail at Pikeville was a kind of chicken coup, which the imprisoned men easily lifted by the corner, upset, and escaped. Trabue now suggested a barbecue, hired a big room, bought a good-sized pig for a roast, a few turkeys and other jim-jams, which need not be mentioned, hired a couple of expert fiddlers and invited everybody to a dance. The whole population turned out, and it looked like a grand success. The mirth and fun "grew fast and furious." Trabue, to be sure, was knocked through the back door, down the hill, by a buxom widow who had danced him blind, but the dance, even with this deduction, was a success.

So long, however, as the rain delayed to fall, the influence of the Baptist preacher's theology kept the hostility to the wires alive. The repairer of the region recommended war. His name was Nipe. He and Trabue concocted a scheme by which Nipe was suddenly to disappear, and his clothes were to be found, torn and bloody. On this evidence of murder, a number of arrests were to be made, and the prospect of a general hanging held out. So thoroughly in earnest was Trabue, that the project was referred to the executive at Louisville. But Nipe's murder was forbidden. It was on this trip that Dr. Green first met his future Superintendent, Van Horne, detecting, beneath his quiet exterior, the qualities which have since distinguished him as a man and officer, and led to his present elevated and responsible trust.

The year following, Van Horne was Superintendent. He and Bart. Brady, my old and faithful foreman of repairs, changed the programme for the treatment of the mountaineers. George V. Rutherford, an ingenious, humorous and politic man, well-known in telegraphic circles, and who died August 28, 1876, at St. Helena, Cal., was stationed at Russellville. As soon as the circuit was found to be broken, it was quietly and quickly restored, when possible, at night, and utter silence maintained. Finally, by aid of one of those ubiquitous men, who are everywhere and know every thing, Van Horne ascertained that a man of ability, and not unknown in the State Senate, had organized a kind of Ku-Klux band to keep the line down. His speech at the meeting, and the time of the proposed first raid were fully reported. Van Horne and Brady put up, near the proposed spot of the attack, provided with a quantity of small wire. At the appointed time, true to the information received, the circuit was gone, and some miles of the wire quickly removed. The leader of the movement cunningly remained at home. Allowing time for the departure of the raiders, the new wire was speedily and quietly strung. Shortly afterward, at a great sale, where a crowd of men had gathered, all, as was customary, carrying guns, Van Horne saw the leader there and had him publicly arrested. A State law, by this time, had been passed, making interference with the wires a criminal offense. At his examination, the leader was astonished at the evidence against him, and which Van Horne skillfully confirmed by his own men. This prompt and vigorous action, a politic treatment of other offenders, the coming of abundant rain and good crops, at last brought peace, the wires had rest, and were soon after removed to the railroad.

Of the men on the southern line, I have the kindest remembrance. At Columbus, Miss., there resided Judge Goodwin, to whom every man who handled a wire was a friend. His house was a home to me. I drew for him the sketch of a bank edifice, which the officers honored me in building from my plans. "Old Brown" was operator. At Kosciusko, the operator was James H. Pressley, now at Rome, Ga., one of the truest of men. James Compton, at Jackson, was my beau ideal of a gallant, generous, noble fellow, and whom I greatly loved. His predecessor was C. C. Butler, who was starved out, went north, and is now

a wealthy real estate owner in San Francisco. John Van Horne, quiet, quaint, reliable, presided at Tuscumbia, a grand man to tie to. Flanery, Hull, Galvin, Titcombe, Davis, of Natchez, David Zook, Downey, Martin Barth, Bart. Brady, the Trabues, H. H. Peck, Charlie Taylor, George Harbin, Yancey, Johnston, were all gallant men. At New Orleans Benj. P. Crane was manager. He had for assistants Achille Herbert, H. K. Peck, H. C. Beachbard, H. S. Johnston, J. V. Peckham, C. Westbrook. At Nashville were Charles Carville, A. E. Trabue, Thomas Johnston, Joseph W. Fisher, H. H. Peck. At Columbia were Marshall Jewell, late Postmaster-General, and H. B. Titcombe. J. R. Hull and Arthur Daniel were at Jackson; R. H. Meilsom and J. D. Weller, Vicksburg; John F. Overton, Clinton, La.; J. H. Beaumont, Waynesboro; W. B. Taylor, Florence; A. M. Phelps, Jacinto; Lollar, Tollgate; James Galvin, Lawrenceburg. All these, and many not named, were all good men and true. Some exceptional characters were addicted to "blue grass," but even they were good, after a fashion. I came out of the southern service rich in friendships, but broken in health. For four years I traveled perpetually. A dangerous wound, caused by a brick thrown at a runaway, in Louisville, but hitting me on the temple, long disabled me. It made memory sluggish and articulation difficult.

Almost every line has some member of its staff which may be called a "character." There were not a few such on the southern line. The operator at Pontotoc somewhat startled me with his gifts. As I drove up to the door of his office, one hot afternoon in August, I found him sitting smoking a meerschaum, on an old rustic chair outside, in front of the open office window. He was full of "blue grass," yet perfectly himself, and, without rising, waved me the usual compliments of such a meeting. Presently I heard his office call, when, stretching his arm through the window, he told N to G A. He did not offer to move, but sat until two messages had been received, and which he acknowledged by another passage of his fat arm through the window to the key. But he had taken no copy, and I sat watching the result. After taking a few whiffs at his pipe, however, he now said, in a sublimely, leisurely way, "I guess I'll go in and copy these messages," and did so. I

remonstrated, but he told me grandly, "no danger, I never forget." But the style was new and peculiar. I think he was reconstructed soon after.

Mr. Van Horne, now General Superintendent of the Southern Division of the lines of the Western Union Telegraph Company, with his headquarters in New



JOHN VAN HORNE.

York, was born in Centreville, Hunterdon Co., N. J., April 12, 1827. He entered the service at Buffalo, N. Y., in 1850, learning his dots and dashes under the great basso, Jules G. Lumbard, then a telegraph operator at Buffalo. His first appointment was as Manager at Ashtabula, O., from whence he graduated to Milan, Masillon, Akron and Sandusky. Early in 1853 he built for Ed. Gibbs the Watkins and Canandaigua section of the Elmira

and Canandaigua line, and then went south to join his friend Lumbard at Tuscumbia, Ala., as operator, and, afterward, Manager of that office. Here he was met, in 1854, by Dr. Green, who, perceiving beneath his quiet surface a man fitted for more responsible service, appointed him Superintendent, and, in a few years thereafter, General Superintendent, of the South-western Telegraph Company, with his headquarters at Nashville, Tenn. In the discreet performance of the duties of this new and responsible post, he amply justified the trust reposed in him. He was soon after entrusted with a more extensive and delicate responsibility. The conflict between the Northern and Southern States, in

1861, by dividing the property of the company, caused his election as President within the Confederate lines. While thus serving, which he did with much prudence, he rescued, as an act of honor, the stock of Professor Morse, which had been sequestered and exposed for sale by the Confederate government, by purchase, for Mr. Morse's interest. Had the rebellion been a success, this purchase would have saved Professor Morse's property, which, subsequently, in the general union of the telegraph companies of the country, was represented by an issue of \$450,000 Western Union Telegraph Company stock.

It is proof of the confidence which Mr. Van Horne's administration had inspired, that, on the consolidation of the South-western Company's lines with the American Telegraph Company, Mr. Van Horne was appointed a Director of the Board then organized. On the consolidation of the American with the Western Union Telegraph Company, he entered upon the absorbing duties of his present responsible position. With manners unusually quiet and unassertive, beneath which smiles a humor as genial as it is pure, Mr. Van Horne has developed administrative talents of a high order, and a prudence and sagacity which have inspired the utmost confidence and respect. His most prominent characteristics are seen to best advantage in his correspondence. Some of his letters exhibit the highest type of effective epistolary art. With much felicity in presenting the points of a case, so as to render their meaning unmistakable, there is usually intertwined with it a humor as delicate as it is charming. His correspondence is full of this sunny quality. The comic features of a case spring instinctively before him. In the broad, quiet smile which thus plays upon his language, without either reducing its vigor or lowering its dignity, and in a certain drollery of conversation, he forcibly recalls the memory of President Abraham Lincoln, to whom, in the habitude of his mind, manners and conversation, he bears a not unmarked resemblance.

## CHAPTER XVIII.

## THE OHIO AND MISSISSIPPI TELEGRAPH COMPANY.

HAVING dispatched Doane and Oslere on their southern mission, and without waiting for subscriptions, agents were hurried westward from Louisville, Ky., to engage poles for a line to St. Louis. By this time Mr. O'Reilly had come to regard his field as boundless. Before him lay the wide, wide world. His thoughts were Alexandrian. Had the railroad to Denver been then completed he would undoubtedly have dashed on to the Pacific. The Kentucky suit had not yet shown the visionary character of the inventions of Zook and Barnes and Moss and Pease, which were to extinguish the simple and sublime invention of Morse, which they imitated, but could not improve. On the route to St. Louis, however, Mr. O'Reilly wisely acted under the contract with the Morse patentees. The line was built under its general provisions, and at the same rate per mile as the line east. The route chosen was the ordinary stage road from New Albany, Ind., to St. Louis via Vincennes. The distance was 260 miles. The poles purchased for this purpose were of the indigenous growth of the country, chiefly of black and water oaks, than which nothing could have been more ephemeral. They were purchased, to a considerable extent, at mere nominal prices; were erected, generally, with the bark on, and planted 225 feet apart, or about 25 poles to the mile. The square glass insulator was inserted in the top of the pole, covered with a wooden roof, and mounted with a single ungalvanized wire. The whole line was completed to St. Louis, December 10, 1847. Its completion was, of course,

hailed with great satisfaction by all classes. One of the great points of profit had again been touched. St. Louis, at that time, stood on the verge of western civilization. In the light of the experience of later years, what a magnificent investment would it have proved had a single company, so controlling the structure as to have secured its proper erection, held the route from the Atlantic seaboard to the Mississippi! Especially would this have been so had the same control extended to New Orleans, with the business of which St. Louis, Louisville, Cincinnati, Pittsburgh and the seaboard cities were so closely and largely allied.

Immediately on Mr. O'Reilly's arrival, and the opening of the St. Louis office, a public dinner was given to him, which was attended by the representative men of the city, and passed off with great eclat. The table was generously spread and abundant. Eloquent words were spoken by men whose fervid oratory rarely ever had had so fitting a subject or so grand a stimulus. In these later days the wonder has passed into earnest use. Then all was new and inspiring. The ocean and the father of waters were married. The little thread of iron which sketched itself against the blue of the sky had, in public comprehension, made the Mississippi and the Delaware the floods of a single river. Thoughtful men everywhere felt the grandeur of the accomplishment. Even Mr. O'Reilly's bitter invective against Professor Morse, so untimely, so unjust, so unmerited, could neither hide nor tarnish the glory of his great invention in the public mind. At the dinner to Mr. O'Reilly, the following resolution was passed with great heartiness:

*"Resolved, That Henry O'Reilly is entitled to the thanks of the stockholders of the Ohio and Mississippi Telegraph Company, and also of the citizens of the Mississippi valley for his indomitable energy and perseverance in extending so rapidly the advantages of the electromagnetic telegraph to the commercial and social interests of the United States in bringing, in a few months, the extremes of the Union into one social circle."*

In what has been said of the character of the construction there is no implication of design, on Mr. O'Reilly's part, by deliberate parsimony.

mony, to squeeze money out of the contract. That was no part of Mr. O'Reilly's nature. Money to be made for himself never entered his thoughts. The evil lay in the fact that his impetuosity, now intensified by vindictiveness, which perhaps in his mind, and with his temperament, was the mere ebullition of supposed wrongs, and an intense sense of injustice, pushed the work ahead of subscriptions, and the desire for speed prevented due provision for careful construction. How true this proved, the sequel shows.

The line having been reported complete, was turned over to the possession of the stockholders, March 21, 1848, at which time they organized themselves into the "OHIO AND MISSISSIPPI TELEGRAPH CO.," with a capital of \$90,000, one-fourth of which was reserved for the patentees. Private subscriptions reached about \$23,000. The cost of masts at Louisville and St. Louis entered into the charge of construction, which amounted to, including the quarter of the capital which was O'Reilly's perquisite, about \$65,000. The officers of the company chosen were: Hon. Abner T. Ellis, of Vincennes, President; John Ross, of St. Louis, Secretary; and Sanford J. Smith, Treasurer. At the same time James D. Reid was elected as "Traveling Manager" in connection with the eastern companies. The first board of directors were:

Henry O'Reilly.	Abner T. Ellis.	William Renick.
Sanford J. Smith.	W. R. McCord.	Thomas Bishop.
George T. M. Davis.	John Ross.	Samuel Wise.

It is a singular commentary on these early constructions, the rapidity of the erection of which made the builders so famous, that on July 27, 1850, two years and four months after the presentation of this important line to the company, J. N. Alvord, then its superintendent, a man in nowise inclined to exaggerate the necessity of outlay for any purpose, reported the line in such a state of decay that it required *immediate reconstruction!*

On May 30, 1848, Mr. Ellis having resigned, James E. Yeatman was elected President, and on the same day Joshua N. Alvord, who had formerly had charge at Wellsville, O., was made Chief Operator and Manager of the St. Louis office, with D. C. Haight as assistant. Mr.

Alvord was, on June 20, 1849, elected Superintendent, and gave his company great confidence in his administration. Mr. Alvord was a man of fine natural ability, cautious, diplomatic, somewhat phlegmatic, but of excellent discernment. He retained the Superintendency of the company until January 1, 1856. On Mr. Alvord's election to the Superintendency, James B. Smith, well known in telegraph circles as "Bobbie," a young man of fine education and manners, from Rochester, N.Y., was appointed Chief Operator, and April 15, 1850, on Smith's going abroad, Charles C. Hine, from New Albany, Ind., who had been manager at Peru, Ill., had assisted D. V. Benedict at Detroit, Mich., and had been manager at New Lisbon, O., took his place. Mr. Hine is now Editor of the *Insurance Monitor*, New York city. He had, for assistants, George McGunnele and Charles Darrow. F. M. Colbourne, a courteous, gentlemanly man, was made Cashier in 1848. Sanford J. Smith resigned the Treasuryship, January 18, 1850, and, in concert with Isaac Butts, of Rochester, N. Y., soon after became contractor for the western extension of the lines of the New York and Mississippi Valley Printing Telegraph Company, a telegraphic association then recently organized at Rochester, N. Y.

The connection across the Mississippi river gave much trouble. It was accomplished by a wire strung from the top of a shot tower to a mast on the Illinois shore. It was constantly breaking. In the summer of 1848 Mr. Alvord laid a gutta percha covered wire, inclosed in lead, across the Mississippi by the use of a fleet of anchored scows, from which the wire, well weighted, was simultaneously dropt. In this he was quite successful, and for a brief period the current through it was undisturbed. Gradually, however, it oozed away, and he had to resort, as before, to a wire from the shot tower. The following year Mr. Alvord constructed, on the bank of the Mississippi, and largely by his own hands, another cable, thoroughly armored on the exterior with number nine wire, which he succeeded in submerging, and again established communication thereby. This was regarded as a very meritorious and successful piece of enterprise at that period. It was not long, however, before the escape of current from the cable became so great that "Charlie Hine," as he was familiarly known, had

to go to the opposite bank and, from a classic spot called "Venice," in the bottom lands of the Illinois shore, repeat all messages. Mr. Hine, however, got very tired of his very tiresome work, and, being ingenious withal, by the use of a couple of window-catches and the lever of his register, established a repeater which worked so glibly as to greatly astonish his superintendent. "It was of very primitive construction, but



C. C. HINE.

worked perfectly. The back end of the pen lever of a Morse register was made to strike on an insulated standard. The register was placed on a dry, pine plank, through which long nails were driven, from the lower ends of which wires were run connecting with the main line, and two sets of common window-snaps or catches were arranged to alternately strike the nail heads and thus change the circuits." This was regarded as a new idea and important. But

the same plan was well known in the east, where even the window-catches were in almost universal use for key buttons until the new key with insulated closer was introduced. Yet, for all that, it was an original invention, with all the merit which that expression implies. And so Mr. Hine, with sublime philosophy and intelligent delightedness, resigned to two window-catches the work of his hand and brain. It was accomplishments like these which, in the early years of the telegraph, made the service so attractive.

In 1850, the message of President Taylor was transmitted by "Billie Barr," of Louisville, and received by Charles C. Hine without the repetition of a single word. This was also regarded as a great feat. Mr. Hine was a rapid penman and an accomplished musician. He and Alvord were great friends and roomed together. Alvord was asthmatic, and Hine, while the air was made thick with the fumes of saltpetre, which were designed to relieve Alvord's breathing, used to rub his back until the blood came, while Alvord, meanwhile, leaned his face on the wall and struggled for breath. This union of service and suffering created between them a bond of love which has never been broken. Mr. Hine was one of four "Charlies" in the St. Louis office. They had to be numbered. Mr. Hine is still in the prime of life, a man of great purity of character, of cultivated intellect and attractive presence, and one of the successful members of the editorial staff of New York. A fine photograph of Alvord and assistants, to which he attaches great value, adorns the walls of his office.

Referring to the recent organization of a company under a patent, granted to W. E. Sawyer, for a fac simile Telegraph apparatus, with a capital of \$2,000,000, of which John R. Cecil, of New York, is president, Mr. Hine, in a recent issue of his paper, writes:

"About twenty-seven years ago, when all the telegraph business between St. Louis and the east was done over one wire, it was done by the one who writes this article, and the idea of a 'Fac Simile Telegraph' was then in his mind, and the drawings of a plan to consummate it were then and there made. But a young fellow without money, or friends, or influence, or acquaintance, or knowledge of the world or 'how to do it,' would be likely to do just what that young fellow did—the plan was thought over, and dreamed over, and sketched over, and then laid quietly away. But the drawings, crude and imperfect it is true, are still extant. The message was to be written with a stylus in tin foil laid on a yielding surface so as to give a raised reverse; the tin foil was then to be spread bottom upwards on a flat metal table, over which a nicely adjusted point carried by a long pendulum was to pass, forming connections as it struck the raised places made by the written letters, the instrument at the other end, with a point moving by a like mechanical arrangement synchronously, to receive the message on paper, prepared after what in those days was called the Bain process. Mr. Cecil, the

president of the new company, was a young man in business in Massillon, Ohio, nearly forty years ago, while the writer was a boy living in the same town."

Between the river and the Belleville Bluffs, on the Illinois shore, lay what were known as the American Bottoms. The landlady of the house where the operators boarded was Mrs. Stites, a great defender of the healthiness of the region. Ague was common and shakes plenty, and many complaints made thereat, much to her indignation. Turning on the grumblers one day, she exclaimed, with sharpened emphasis, "Don't talk; I have lived here twenty years, and haven't had the shakes in the bottoms yet." That quieted them.

The Manager at Vincennes was S. K. Greenhow; at New Albany, Ind., Alvin Lewis; at Louisville reigned a delightful man, thoroughly southern and blue blooded, known everywhere as Billie Barr. One of Mr. Alvord's most distinguished graduates was James Gamble, now of San Francisco.

On this, as on many of the early lines, a strong and affectionate esprit du corps existed, which still binds its members to each other, although far parted and faring differing fortunes. The memory of the days of long-unbroken labor, the generousness of mutual help, the self-negation, the halo which encircled even the hardships of the service, come back now, as comes the memory of the battle-field to the veteran soldier in the twilight hours of life and peace. And so these associated men preserve mementoes of each other, by which the years gone by come back again freighted with the kindnesses which make life coronal, and memory vernal and blessed.

I think it was Tal. P. Shaffner who dignified an office he opened in St. Louis, for his Nashville and Missouri lines, by erecting a statue of Franklin in front of the office entrance. It was a very happy tribute to the grand old patriot who brought so much of genuine honor to his native land. But it was only in these isolated ways that any attempt was ever made to make the telegraph outwardly attractive. Sometimes it was a small eagle with gilded wings adorning a pole top; sometimes a golden ball; sometimes a pine-apple ornament; sometimes the simple use of the national colors, the red, white and blue, to give



NATURE'S SUGGESTION.

a touch of beauty or of art, in barber-pole style, to the lightning-bearers of the public streets. There is a curious American shrub which seems to suggest something of what a telegraph pole might be. It is the Agave, or American Aloe. After it has spent a century of preparation for its last sublime work and attained maturity, it sends forth a stem forty feet in height, with numerous graceful branches which curve upward, forming a cylindrical pyramid of perfect symmetry, and which seems to suggest in how beautiful a form a city wire-bearer may be cast, instead of the white, stark poles, which stand like ghostly sentinels along the public and private streets, and up to which the gentle citizens look and shudder.

As early as 1849, the Directors of the Company, who were gentlemen of much shrewdness and ability, began to discuss the question of union with the lines in the east. They felt, as was natural, their insular position and dependence. Opposing interests were creeping westward. They had secured no settlement with the patentees, although they had honorably offered and urged it, and had, therefore, no power to resist encroachments. Hon. F. O. J. Smith, who held the settlement of the patent claims for that region, asked half the capital stock and all back dividends. The eastern connections of the company were held by simple amity. In one of his lucid annual reports, Mr. Alvord had shown how much they depended on other lines, far removed from them, for the transaction of their business. Up to 1851, the O'Reilly lines had no outlet to the seaboard except at Philadelphia. The large telegraphic intercourse of St. Louis, and all the cities of the Ohio, with New York, Boston, Baltimore, Washington, etc., had to be given over to the Magnetic Telegraph Company, at Philadelphia, for transmission. The value of the act of the Atlantic and Ohio Company in leasing, in 1851, a wire to New York, was at once felt at St. Louis and rejoiced in.

So in reference to the lease, by the same Company, from the American Telegraph Company, under George C. Penniman, of a wire from Harrisburg to Baltimore, which opened to St. Louis an avenue to Baltimore and Washington, and led to an astounding exposure of the destruction of western dispatches at Baltimore. The value of this also was at once seen and appreciated. Every movement of this kind was gratefully felt throughout, and increased the promptness and the volume of business. No reflecting man could fail to see how necessary these trunk lines were more and more becoming, by all these proofs of an identity of interest to each other. Yet there was a shrinking from any decisive steps, and the weakening dread of the loss of local control prevented action. One Director, Mr. James E. Woodruff, seeing the necessity of securing direct connection with the points where the St. Louis traffic was largest, while aware of its importance, opposed any consolidation which did not include New Orleans. It was wise to comprehend what was needed, but scarcely so to refuse what was within his easy grasp. With the line to the seaboard a unit, the New Orleans line could have been readily secured. It only needed a few men of nerve and gold. A very little money vigorously and discriminately used would have then made one of the most effective telegraphic combinations of modern times, quicker even than that afterward effected by the Western Union Company. But no man's interest was large enough to urge him to the attempt. The conflict with the Morse patentees was also in the way. It led, however, to a loan by the Ohio and Mississippi Telegraph Company to me, as lessee of the People's Line to New Orleans, to enable me to push forward the restoration of that important line of communication, and for this I was indebted to the intelligent perception of Mr. Woodward and Alfred Vinton, and the approval and influence of Mr. Alvord. A proposal by the Pittsburgh, Cincinnati and Louisville Telegraph Company to amalgamate the stocks of the two companies was unwisely allowed to fail.

Mr. George K. McGunnele was elected President, and Robert N. Penick Treasurer, June 9, 1851. Their salaries were \$200 each. Mr. McGunnele, who entered the Board in 1848, remained President until June 28, 1871. Mr. McGunnele was a gentleman greatly respected.

The zeal with which I attempted to maintain the co-operation of the three O'Reilly lines, between Philadelphia and St. Louis, cost me endless annoyance, jealousy and labor. Even Alvord fretted at what appeared to him to be eastern dictation, and when Sanford J. Smith began building westward for the Mississippi Valley Printing Telegraph Company, and, by various offers of connection, sought to take the business of the Ohio and Mississippi Company from its eastern allies, Alvord listened to them, and, in the name of his company, conditionally accepted them. These conditions were, in addition to the business of the new lines east, a nominal tariff, or even free transmission between Cincinnati and Louisville, and the control of a new line, then being built, between Dayton, O., and St. Louis, via Terre Haute. The line last named was being built by William J. Delano for Smith and Butts, for the Mississippi Valley Printing Telegraph Company. He had not been paid, and proposed to me to sell it to the Pittsburgh and Louisville Company. Finding it impossible to get the Board together in season to take any action in the matter, and acting, as I often did, on a large discretionary power given me, I purchased, with my own means, the line from Delano for \$18,000, after giving him a certain number of days to settle, if he could, with his principals at Rochester, which he was honorably anxious to do. By this purchase I stopped, as was my design, the proposed connection with the new lines. This done, I secured a contract of union between the three companies between Philadelphia and St. Louis, based on just divisions of the common revenue. This was a measure of such clear self-defense and strength as would have given, in the event of a common surrender to other parties, had that been decided on, the dictation of their own terms.

Now that, however, by the purchase of the Delano line, the union of the lines from Philadelphia to St. Louis, which was so essential to their common value, seemed to be accomplished, I found myself with an elephant on my hands. The purchase was a purely personal one. The Terre Haute line I had no use for. I asked the companies to take it from me; but, like me, they had no use for it. This was finally done, however, by an agreement to pay me \$12,000 in pro rata amounts, cor-

responding with the capitals of each company,—I losing the difference of \$6,000. That was the price of my zeal and temporary success.

Thus defeated, however, the parties interested in securing the St. Louis line as an important element in their plans for telegraphic conquest, accomplished their purposes in another way. Mr. Alvord, now in thorough personal sympathy with the Rochester movement, and no doubt consulting the interests of his company, personally leased the line for a term of ten years for five per cent yearly on the capital stock, and then sold it to Hiram Sibley, President of the New York and Mississippi Valley Printing Telegraph Company, for an added \$2,500 per annum. After the consummation of this lease to Sibley & Co., of course the Ohio and Mississippi stock was soon absorbed at low prices by the lessees. I did not know at that time the power behind the Rochester movement, or of the scope of the designs of the men who were in the field for dominion, and who, eventually, by carefully-planned processes, broke up all my arrangements, and finally drove me from a field where no one else seemed willing to fight. It is a somewhat significant circumstance that when the Ohio and Mississippi Railroad Company built their valuable road from Cincinnati via Vincennes to St. Louis, and, on liberal terms, granted to the Ohio and Mississippi Telegraph Company right of way for their line, at a time when its reconstruction was essential to its existence, the poles erected thereon were mounted *on the plan of the House lines*. Thus the Ohio and Mississippi Telegraph Company built their line anew for the benefit of a third party. It was in this way that, with marvelous assiduity and sagacity, the foundations of the O'Reilly lines were broken up.

In August, 1854, F. O. J. Smith again approached the St. Louis stockholders with offers of settlement of the patent claims. He offered, as a new inducement, control of the patent claims east of Louisville, as a part of the settlement with him. These were understood to have been rejected. A record made in this same month by Mr. Kendall shows that a settlement was actually made, by which Smith had issued to him \$22,500 of stock and \$4,200 in cash for dividends due. The Ohio and Mississippi Company also paid \$900 for commissions on a contract supposed to cover the Morse patents on the St. Louis and

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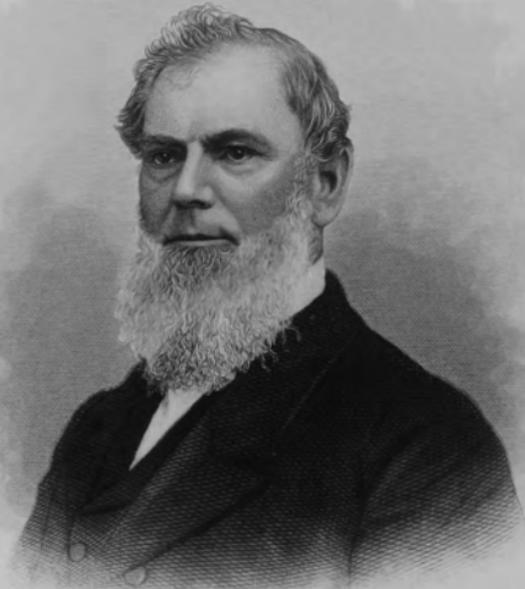
New Orleans line, via Paducah to Nashville, which secured to them certain rights which do not clearly appear. These settlements were no doubt stimulated by the Rochester lessees, who saw great strength in the possession of the Morse patent. After the lapse of many years, during which the existence of the company was merely nominal, on June 28, 1871, William Orton was elected President, and the remaining interests of the company were merged with the Western Union Telegraph Company. Sunset had come. The Ohio and Mississippi Telegraph Company soon faded away.

St. Louis is now the center of a vast district of telegraphic territory, of which Col. R. C. Clowry, the Superintendent of the Western Union Telegraph Company, is the active spirit and Manager. It embraces the lines in Arkansas, Kansas, Texas, Colorado and portions of Nebraska and Missouri. St. Louis commands direct wires to almost every important point. Practically, Denver, Galveston, New Orleans, New York, Buffalo, Chicago, are as near to her as her own suburbs. Every route leading from St. Louis proves the vigor and care with which the efficiency of her lines of communication is maintained.

Mr. Alvord, by economy and industry, as well as by sagacious investments in the lands of Central Illinois, has amassed a generous competence, and in one of the quiet towns which adorn the State enjoys merited retirement and repose.

St. Louis is a kind of centre to a policy in reference to the message delivery which differs from that sustained in many other large cities. It seems at first sight a small matter, but nothing is properly so which affects this most important arm of the telegraph service. It refers to the mode of payment to messengers, to which St. Louis gives the preference of regular salaries instead of the eastern mode of a rate per message. Mr. E. H. Brown, Manager of the St. Louis office, asserts warmly and on evidence, that regular salaries secure the most complete, and satisfactory, and vigorous service, and are, at the same time, more influential in improving the personal morale of the messenger force. While admitting its truth for St. Louis and many inland cities, the payment per message seems best adapted for great seaboard cities and communities like that of New York. The former, however, has the

advantage of placing a boy on the pay-roll of his office, and thus, to that degree, identifying him with it, and affording him hope of advancement, while the other separates and reduces the system to an outside and contingent service. In this there is ground for intelligent discrimination. The messenger department has been the cradle of some of the most honored and useful of the long list of the able and skillful men who have lifted and ennobled a great public means of domestic comfort, commercial success and general civilization, and every point affecting its adaptation to public wants, or the influence of special modes of management on the boys employed, is worthy the best and most patient thoughts of a Telegraphic Executive.



By Geo. F. Hill & Son N. York N.Y. 1857

Yours truly  
J. D. Bacon

## CHAPTER XIX.

### THE ILLINOIS AND MISSISSIPPI TELEGRAPH COMPANY.

THE champagne which lubricated the welcome given by St. Louis to the telegraph soon disappeared behind the waistcoats of its delighted citizens. The lights of the banquet hall were out. The echoes of the eloquent speeches had died away. And now, in obedience to the direction of the contract, O'Reilly started for "the chief cities and towns on the lakes." The choice of the road thither having been left to himself, he determined to make the interpretation thereof broad. As Professor Morse read the O'Reilly contract, and noting its indefiniteness, he might well inquire of Mr. Kendall, as he did, "What Lakes?" Mr. O'Reilly did not take long to decide. The limits of the contract had already become, to his vision, dim.

The route determined upon was speedily mapped out, and the boundaries of a very important organization defined. It was arranged to proceed from St. Louis a few miles north, and then cross the Mississippi. From thence the route was to be via Alton, Jackson, Springfield, Peoria, Peru, and Ottawa to Chicago. From Peru it was to branch off to Dubuque, Iowa, through Dixon and Galena. Another branch was projected to Bloomington, via Beardstown, Quincy, Keokuk and Burlington. A last branch was to extend from Quincy to Hannibal. These routes comprehended in all about 750 miles of actual line.

The work of construction was commenced early in the spring, and for a time was pushed with even greater dash and seeming impatience than the lines east of St. Louis. The idea of speed was still uppermost, although Charles G. Oslere, one of the builders, was a cautious and conscientious man. As before, the poles were of the indigenous

wood of the country, the general quality of which was much better than in Indiana. The wire was plain No. ten iron. The exception to this was one section, over which the three-ply cord was used, and on another, which was mounted with a fine specimen of No. nine English galvanized iron, polished by having been made to pass through a die, and furnished by Marshall Lefferts & Co., of New York. The poles were sunk, on an average, two and a half feet in the ground, and were described as "small and perishable." The entire route was along the public wagon road. Mr. O'Reilly no doubt desired that the construction should have been thorough. The desire for speedy accomplishment, however, overrode all other considerations. So the one defeated the other.

The terms of construction were, as before, \$300 per mile of a single wire. A subscription of \$89,950 was quickly and readily secured. Of this amount, \$75,660 was almost immediately collected by Mr. O'Reilly. An allowance of double the cost of erecting masts at St. Louis, Peoria, Hannibal, Keokuk, Beardstown, Rock Island, and Dubuque was allowed. Early in the spring of 1849, the lines were declared to be ready for delivery to the stockholders. Twenty-one offices had been opened, and at Quincy there first appeared, as its manager, the now efficient and estimable Superintendent of the Pacific Division of the lines of the Western Union Telegraph Company, Mr. James Gamble. Charles C. Hine, afterward Manager at St. Louis, and now a prosperous Editor in New York, was in charge at Peru. Mr. Gamble soon after became Manager at Chicago, going thence to Jacksonville and afterward to Alton, Ill., where he united to his telegraphic duties, the Editorship of the Alton *Daily Courier*. Charles Johnson and Harry Graham managed St. Louis. At the office at Dixon was George H. Bliss, so well known as the successor of the Chicago branch of Tillotson & Co., of New York, and now of the Western Electric Manufacturing Company of Chicago. Mr. Bliss was a pupil of Mr. E.-D. L. Sweet, and served at Muscatine, Aurora and Chicago. In 1860 he entered the office of the Chicago and North-western Railroad Company, and, in 1864, had so commended himself by fidelity and skill that he became Superintendent of all the telegraph lines of that immense corporation.

In March, 1849, Mr. O'Reilly called a meeting of stockholders, to assemble at Peoria, Ill., April 10, for permanent organization. A few days before, Judge J. D. Caton, of the Supreme Court of Illinois, happened into the Circuit Court room, in Ottawa, where several of the subscribers to the stock were in consultation. They requested him to attend the meeting and represent their interests. This he consented to do. Being accustomed to rule assemblies, he was naturally chosen as the presiding officer of the meeting. The proceedings were lively and enthusiastic, and Judge Caton entered heartily into its spirit. It resulted in his purchasing several shares of the stock, and being elected as a Director. The following day, April 11, the company was formally organized as the "Illinois and Mississippi Telegraph Company," with a capital of \$500,000.

According to the by-laws adopted, every paying office was entitled to a Director, to be elected by the local stockholders, and meetings of the Board could be held by telegraph. Mr. O'Reilly was elected a Director-at-large. Richard F. Carman and Marshall Lefferts, of New York, and Ransom H. Gillett, of Washington, were, at Mr. O'Reilly's request, elected Directors. The first had accepted stock in part payment of a beautiful home, bought of him by Mr. O'Reilly, at Carmanville, N. Y., but which was not long afterward sold under foreclosure of mortgage. The stock held by the others was received for wire and professional services. William H. Hemstead, an excellent citizen and enterprising merchant of Galena, was elected President; Sanford J. Smith, of St. Louis, Treasurer; W. Mitchell, of Peoria, Secretary; and John B. Perkins, of St. Louis, Superintendent. The Superintendent could decipher a message slowly and with difficulty from the paper of the register. He is described as a good and faithful man, but innocent of executive ability. This soon showed itself in general disorder. The line worked or not, according to the caprice of the operators in the matter of repairs. Every office was allowed to purchase its own supplies. No distinct system of book-keeping was adopted, each office simply reporting to the Superintendent the amount of its monthly business. Perhaps that was all which the then primitive state of affairs required.

On October 1, 1849, Secretary Mitchell died, and Lewis Howell, of Peoria, took his place. President Hemstead, about the same time, grew weary of his office and resigned. His successor was Francis Voris, of Peoria. The honor of the position was not tempting, and there was no salary.

The year following these changes the Directors became impatient under the loose management and the utterly discreditable manner in which the public business was transacted. It was determined to adopt vigorous measures to improve the condition of things. At a meeting held in Peoria, April 3, 1850, the President was authorized to be the purchaser of all supplies. An Executive Committee was also appointed, of which Judge Caton became a member. The Superintendent was dropped — the salary due to that officer to be paid "when funds came in!" Secretary Howell was made Inspector, with a salary of \$800. The Managers of the offices of Jacksonville and Peru were made Operating Superintendents. At the same time, the mast crossings having caused great trouble, orders were given to procure gutta percha covered wire to attempt the crossing of the rivers by cables. In all these movements there was, at least, life and an effort to make the lines efficient and serviceable. When the annual meeting, however, arrived, after a good deal of difficulty in getting together financial data, the somewhat discouraging result appeared :

Total receipts.....	\$8,263 30
Total expenses.....	<u>8,160 05</u>

The expenses did not include a large bill due for acids at St. Louis. The result was not inspiring. The prospect of dividends was dim and distant. The line was now left to work out its own future, and for two years it drifted along from bad to worse, until the outside structure everywhere gave tokens of advanced decay.

By the 7th of April, 1852, matters had become desperate. The company was now in debt about \$17,000. The wire, from frequent breaks, was full of badly made joints. The poles were falling from rot. The line was mounted with magnets of great resistance, which, added to that of the imperfectly formed joints, made transmission difficult. It

was now the time of the annual meeting, and which was held at Alton. Ten Directors were present. They were not at all jubilant. Nothing seemed now left to be done but to sell the wire and machinery and wind up the concern. Against this seemingly necessary result, however, Judge Caton interposed. He had, by his study of general electrical science, become deeply interested in the working of the telegraph, and had qualified himself so that he could operate the machinery, sending and receiving messages over the wires with measurable skill. For the Chief Justice of the great State of Illinois, this was, certainly, an unusual accomplishment, only equaled by Governor John Brough, of Ohio, who similarly qualified himself as President of the Madison and Indianapolis Railroad. He now proposed some vigorous measures to rescue the company from its threatened extinction and render it fit for the public use.

It is easy to see now in what the great danger and weakness of the early telegraphic organizations consisted. Of course an ephemeral structure was a great evil; so also was the condition of things growing therefrom, by which transmission of the public business became intermittent and uncertain. Yet these were physical obstacles which a strong will could have readily overcome. The chief difficulty lay in the absence of men whose interests were large enough, or whose time gave them the opportunity, or whose force of will and personal character were such as to induce them to take up the infant telegraph and make it live. Somewhat unconsciously to himself, Judge Caton, although then the Chief Justice of Illinois, came to supply this very want just as ruin seemed inevitable. After protesting vigorously against the abandonment of the line, Judge Caton proposed:

1. That the whole line be placed under the absolute control of a single competent officer with the largest discretionary powers.
2. That assessments be levied on all stock from time to time, sufficient to produce a fund with which to put the line in proper working condition and to maintain the same.
3. That all stock on which assessments remained unpaid, after a certain suitable interval had elapsed, should be condemned and sold by public auction, after due notice.

4. That the company be authorized to bid in, at such a sale of condemned stock, to the amount of said assessment, which stock should be cancelled.

All these propositions were, without much discussion, agreed to, and Judge Caton was, at once and unanimously, elected President, with all the ample powers which had been the subject of his first proposition. This appointment to duties so foreign to the dignified office he already held as the highest judicial officer of a great State was reluctantly accepted as an engagement, the success of which was, at least, doubtful.

Judge Caton knew that to carry out a scheme so radical as the assessment of fully-paid stock required special legislation. It so happened that just at this juncture a special meeting of the State Legislature was about to be convened. The object of this meeting was special, and in the proclamation of it by the Governor, the subject on which action was to be taken, in order to its legality, had to be stated. The proclamation had not yet been issued. Judge Caton, with ready wit, hastened to Springfield, had an interview with the Governor, and induced him to insert a clause relating to a telegraph law, such as would cover the case. At the same time Judge Caton devoted himself to drawing up the bill which he deemed essential to his plans. It was an amended charter, and was drawn up with remarkable care and particularity. Every point was clearly stated. It gave the Court of Chancery full jurisdiction to condemn and sell the stock for unpaid assessments. This bill Judge Caton had introduced on the first day of the session. When it was referred to the Judiciary Committee, he promptly met the committee and argued the case with great adroitness and zeal. In doing this, he argued its inherent justice as an act to save valuable property from ruin, and which gave to the parties chiefly interested the prior right to the opportunities it afforded. On the third day of the session the Judiciary Committee had reported the bill favorably to the House. It had passed both branches of the Legislature, had been signed by the Governor, and Judge Caton was on his way home with an attested copy in his pocket! He at once proposed an order, levying an assessment of \$2.50 per share on the

stock which was voted upon, by telegraph, and unanimously adopted the same day.

While awaiting the result of the assessment, and while on his way to attend the Supreme Court at Mount Vernon, Judge Caton first tried his skill as a cable maker, and personally directed the preparation and the planting of a cable at Bloody Island for the crossing of the line at St. Louis. In all these movements there was displayed much personal energy and unusual and well-directed devotion.

As might have been expected, although a very considerable sum was realized from the assessment, there were many delinquents. A large amount of stock held, practically unissued by the company, passed into its possession. A decree of sale, in strict accordance with the terms of the law, had been obtained, and a public sale of condemned stock advertised and held. The sales made were at \$2.51 per share. When that amount was not bid, the stock was struck off to the company and cancelled. Messrs. J. H. Wade and Ezra Cornell were large purchasers. Mr. Wade's purchase was, after a year or two, repurchased by Judge Caton at an advance. In all these proceedings Judge Caton prepared the legal papers without cost to the company. The salary allowed him as President was \$500 per annum.

Judge Caton, though still wearing the judicial ermine, which he did not resign until 1864, devoted himself with great energy to his new work. With money obtained from assessments and sales, and with funds realized by mortgaging his own personal property, he started for the cedar groves of Green Bay, paddled from place to place in a bark canoe, and ordered large quantities of cedar poles with which to rebuild the ruinous lines. The poles thus purchased were small, but straight and sound and durable. To make his money go as far as possible, also, he erected only half the usual number of poles per mile, reserving to a future day the filling in of the alternate gaps.

Judge Caton now applied personally to the railroad companies for right of way along the margin of their roads. He proposed to the railroad managers to enter into such engagements as would be for great mutual advantage. By this time the railroads in the east had been awakened to the great advantage to railroad management of the employ-

ment of the telegraph. It was a movement of vast significance and importance. Judge Caton was able, by his personal knowledge of practical telegraphy, to thoroughly imbue the railroad officials with the value of the arrangements he proposed, which were promptly accepted and confirmed. In the meantime, also, the opportunity to enlarge the sphere of these railroad contracts became apparent, and Caton eagerly acquired valuable Morse patent rights beyond the limits of the company's lines. With these secured, he erected, on his own behalf, in Illinois and Iowa, very important extensions of the telegraph on new and valuable railroad routes. The patent rights were acquired through the Mississippi Valley Printing Telegraph Company, which that company had acquired from John J. Speed, as the agent of F. O. J. Smith. By these extensions the value of the original line was greatly enhanced, and Judge Caton, at the same time, became a large personal owner.

When the company met in April, 1855, the condition of affairs had wholly changed. In the report presented to the company, the receipts for the year were reported as \$22,507.96; expenses, \$17,703.39. Of which latter item, \$3,477.59 was extraordinary, and not a proper part of the current expenses. Here was evident success. Thus Caton, after a three years' struggle, vigorously conducted, in which he had risked all his means, exhausted his personal credit, and had drawn largely on others, at last saw the sure evidence of coming and merited victory and success. In June of 1856, the receipts for six months were \$26,983.49; expenses, \$22,247.72. The ratio of annual receipts had been increased from \$22,507.96 to \$53,966.98. The balance on hand was \$5,495.02. A dividend of three per cent was declared in October of the same year. The line was now 1,086 miles in length.

In carrying out his plans with the railroads under rights personally acquired, two companies, respectively styled the "Illinois Central Telegraph Company" and the "Chicago and Mississippi Telegraph Company," had been organized. The contracts with railroad companies had been made chiefly under these organizations. These, all having new and thoroughly constructed lines of cedar, were now, in 1856, incorporated on equal terms into the general property of "The Illinois and Mississippi Telegraph Company," which became at once one of

the family of notable and dominating telegraphic organizations, and one of the parties to a great continental compact by which they mutually recognized and defended each other.

In November, 1858, a dividend of two per cent was declared. In February, 1859, the legislature passed a law by which stockholders at large could elect Directors as they chose and do any thing consistent with general law. Under this law a new Board of Directors was elected and the number reduced to five. The company was now also so strong, financially, that to settle all questions of patent rights affecting the companies associated for mutual protection, the Illinois and Mississippi Company, after entering heartily into the terms of the national compact, by which the territories of each were defined and protected, subscribed \$12,500 as its share of a fund for their settlement.

In 1857, during the great financial panic and the prostration which followed it, the salaries of employees were cut down twenty-five per cent. It was accepted with little complaint and with no resistance. This was the result of a just management, and it had the effect of giving an opportunity for discrimination in the increase which followed the restoration of public confidence. Judge Caton was indebted to William H. Beebe, the Vice-President of the company, to Col. J. J. S. Wilson, now the esteemed Superintendent of the Western Union Telegraph Company, at Chicago, and to Mr. E. D. L. Sweet, late Vice-President of the Atlantic and Pacific Telegraph Company, now of the Board of Trade Telegraph Company, for the skillful and discreet and prosperous management of his lines.

Mr. Sweet first entered the service and became manager at Rushville, Ill., November 1, 1849. One of his first duties was, to perform a valuable service for the government. By the energetic personal delivery of a dispatch from the Secretary of War, to accomplish which he had to row four miles up stream, against a stiff current, he prevented the sale, which the government had ordered, of the site of Fort Armstrong. In the fall of 1851 Mr. Sweet was transferred to Rock Island, where he remained until 1852, when the branch from Jacksonville to Rock Island, which, because of its river crossings and their frequent interruptions by floods and passing steamers, had been one of the chief

causes of the impoverishment of the Company, was abandoned. This branch was afterward restored under Mr. Sweet's supervision, when the new railroads gave it a secure route, and gutta percha enabled its wires to be buried safely beneath the rivers. In January, 1853, Col. J. J. S.



E. D. I. SWEET.

Wilson resigned the management at Galena to Mr. Sweet, to assume the charge of the office at Springfield and the superintendence of the eastern division of the "Illinois and Mississippi" lines. Mr. Sweet, at the same time, without resigning the management at Galena, built a new and valuable line for his company from Rock Island to Peru, along the Chicago and Rock Island Railroad, and, soon afterward, was appointed Superintendent of the Western Division of

the company's property, with headquarters at Chicago. Here he took active charge of the extension of the lines of his company into Northern Illinois, Southern Wisconsin, and Iowa. To all these labors he devoted himself with energy, prudence and fidelity, until July 1, 1868, when he resigned to become Secretary of the Board of Trustees of the Chicago Young Men's Christian Association.

During Judge Caton's telegraphic administration, various claims for damages, caused by errors, came up for adjudication. The first case presented was referred by the Board to the President with power. In his controversy with the parties aggrieved, he contended that they were, on general principles, more benefited in their average employment of the telegraph, than harmed, otherwise the telegraph would not be used at all. The demand was finally dropped.

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Judge Caton was determined to set no precedents which would encourage claims of this character. In this respect, he took the extreme opposite ground of Mr. Swain, of the Magnetic Telegraph Company, who ranked telegraph companies as common carriers, and subject to all their responsibilities. Judge Caton settled a few minor claims by restoring the tariff which had been collected, and in one or two cases by allowing the use of the lines for messages to the extent of the claim. In more serious claims, he held, as in the first case presented, that although a special damage might have been done, yet that the average use of the telegraph was so profitable to general trade and so compensating to public convenience, that it constituted a solid offset to special claims. He is believed to have regretted that some of these claims, then made, had not been pressed to a judicial decision before the courts in the then struggling condition of the business, which would, he believed, have resulted in establishing precedents favorable to the companies. In the books of the company, one settlement of \$375 is recorded. One suit only was brought against the company during Judge Caton's administration.

The reference made to the transfer of the lines of telegraph from the ordinary roads to the margins of the railroads, and the arrangements made for their common employment by the telegraph and railroad companies, is connected with one of the most significant and successful movements of telegraphic history and development. It is difficult to say exactly to whom is due the credit of earliest proving to railroad companies the adaptation of the telegraph to important railroad uses. Railroad men are a very clear-headed, though a very conservative race. It is not unlikely that to some of their own number may that credit be largely due. Charles Minot, of the Erie railroad, so determined on acquiring its use for running his trains as to induce him to build, in advance of any patent right, a line of his own, is a noted example. And yet it is certainly true, that even to the alert western mind, it was a work of some difficulty to prove the value of the telegraph in moving and directing trains. It seemed like devolving on mechanism the gravest responsibilities connected with the safety of human lives. The hitherto unreliable character of that mechanism had not inspired confidence in

such a service. But this was the very point of the appeal now made. The telegraph, practically, now said to the railroad: "My character is in danger because I am unprotected; if you will protect me, I will run your trains." The permanence of the one was to be life and vigor to the other.

To Judge Caton is certainly due very early and intelligent action in accomplishing the alliance between the railroad and the telegraph, and in establishing the peculiar features of that alliance, by which they became to each other so mutually useful. He made the first of his railroad contracts in 1855. In its detail and comprehensiveness it is a remarkable example of exhaustive provision for every necessity with a just appreciation of mutual rights and duties. There is no undervaluing of the advantages of either to the other. Nothing more perfect and, on the whole, more just, has ever since been executed. Among its salient features were:

1. The recognition of the structure as the property of the telegraph company.
2. The recognition of the railroad to the right of priority and free transmission.
3. The manning of the offices by the railroad company, under the absolute control of the telegraph company, and the division, on a certain just basis, of the receipts for commercial messages.
4. The payment, by the railroad company, of \$30 per mile for removal of existing lines to the railroad, and \$100 per mile for the construction of new line.
5. It provided for the free transportation of material needed for construction and repairs.

One of these earliest contracts, for running trains by telegraph, was made in 1856, with Governor Matteson, President of the Chicago, Alton and St. Louis railroad. In connection therewith, Judge Caton arranged for President Matteson a night service, appointed a night and day superintendence of the service at Bloomington, to whom all trains reported, and who had authority to move them. The night watchmen at the stations where continuous night telegraph service was not demanded, were ordered to call operators at any hour of the night when

a train was fifteen minutes late. He also appointed in charge of the railroad wire, that service soon having required a wire of its own, Marvin Hughett, formerly operator in the New York office of the New York, Albany and Buffalo Telegraph Company. In this service Hughett, although known as a skillful operator, so developed very rare executive talent as to lead to his rapid advancement. During his management of the railroad wire, which included the running and control of trains, not a car was scratched by collision, the position of every train was exactly known, and the greatest confidence inspired. It led to the assertion by Col. R. B. Mason, of the Illinois Central Railroad, similar to that uttered by McCallum of the Erie, that he "infinitely preferred a single track with a telegraph to a double track without it." Marvin Hughett is now General Superintendent of the North Western Railroad Company, and one of the brightest and most efficient of western executive railroad officers. Of like distinguished advancement from telegraphic service, Marshall M. Kirkman, Treasurer of the same road; Jno. G. Gault, Assistant General Manager of the Milwaukee and St. Paul Railway; William B. Strong, General Superintendent of the Chicago, Burlington and Quincy Railroad; W. D. Woodford, Superintendent of the Canada Southern Railway; George W. Smith, General Superintendent of the Lake Superior and Mississippi Railroad Company, and a score of others who could be mentioned, are bright examples.

This Company also developed another of the men who have given character to the telegraphic administration of the country, and who sprang, with characteristic energy, from its lowest ranks. Col. Robert C. Clowry, now Assistant General Superintendent at St. Louis, for the Western Union Telegraph Company, entered the service under the Illinois and Mississippi Telegraph Company, April 4, 1852. He gave six months' free service as messenger to D. C. Jeneson, Manager at Joliet, Ill., on condition of being instructed how to telegraph. On October 18, 1852, having thoroughly mastered the art, he became manager at Lockport; and December 13, 1853, was placed in charge of the important office at Springfield, Ill. Having, on account of his recognized capacity, been transferred to the office at

St. Louis, he accepted, March 4, 1859, the appointment, under President C. M. Stebbins, of Superintendent of the St. Louis and Missouri River and Kansas Telegraph Companies; and on October 1st, of the same year, united to his duties as superintendent the chief operatorship of the St. Louis office of the consolidated Western Union, Illinois and



COL. R. C. CLOWRY.

Mississippi and Missouri River lines. On April 17, 1860, he was made Superintendent and Secretary of the Missouri and Western Telegraph Company, with head-quarters first at St. Louis, and later at Omaha, Neb., making his energetic character felt in all he did. He was, two years later, appointed Assistant Superintendent of Military Telegraphs in Missouri and Kansas, under Capt. Geo. H. Smith; and October 27, 1863, was appointed by

President Lincoln assistant quarter-master, U. S. A., with rank of Captain, under Genl. Stager, then Chief of Military Telegraphs, and to whose friendly offices Col. Clowry was indebted for his selection. He was assigned to duty at Little Rock, Ark., in charge of military telegraph lines in that vicinity. On October 1, 1864, Genl. Stager appointed him Superintendent of Military Telegraphs in the Departments of Missouri, Kansas and Arkansas, with head-quarters at St. Louis.

After a highly honorable, successful and vigorous administration of the stirring duties of that excited period, two brevet commissions from President Johnson were issued to Col. Clowry, one as Major and the other as Lieutenant-Colonel, for "meritorious services and devoted application to duty." No one, familiar with the active, thorough and gallant character of the beneficiary, doubts the merit of these honors. At the

close of the war he was mustered out of the military service, at his own request; became, May 31, 1866, District Superintendent of the Western Union Telegraph Company, with head-quarters at St. Louis; and, January 19, 1875, was promoted to be Assistant General Superintendent, with the charge of an immense territory west of the Mississippi. Col. Clowry stands at the very front of the active telegraph forces of the country.

Aside from the recognition of its great value to railroad management the protection of the railroad and the economies of the contracts with them was of vast advantage to the telegraph. It made the telegraph property at once reliable and profitable. To it and his persevering industry and skill, Judge Caton is indebted for whatever of wealth he has, and which his patience, foresight and vigor has so justly secured to him.

On July 1, 1866, Judge Caton, after a successful management of fourteen years, and having become owner of a large maximum of the stock of the consolidated companies, succeeded in executing a lease of the entire property to the Western Union Telegraph Company. With an ample income, a large proportion of which is derived from his telegraph interests; in the possession of an elegant estate, beautifully located, and laid out with great taste and skill, near Ottawa, Illinois; with a residence also in Chicago, Judge Caton now enjoys an elegant and delightful leisure, which he devotes to the care of his property and to studies in which natural history, especially connected with Western America, occupies the pre-eminent place. He has devoted much of his time, also, to domestic and foreign travel. The fruit of the latter resulted, a few years ago, in the publication of a handsome and interesting volume, entitled "A Summer in Norway." His travels in America have been chiefly connected with investigations connected with the American antelope and deer, and their domestication. Judge Caton has, upon his fine estate, four distinct species of American and one of foreign deer, and also of the American antelope, domesticated. He has been engaged for some years in the preparation of an exhaustive work on these and kindred subjects, which will soon be given to the public, and which will, no doubt, prove an interesting addition to the Natural History of the country.

The history of the Illinois and Mississippi Telegraph Company would be incomplete without a notice of one whose labors greatly contributed to its success. Col. J. J. S. Wilson commenced his telegraphic career as manager at Little Fort, now Waukegan, Ill. In 1850, while quite a lad, he superintended the Hotchkiss lines between Chicago and Madison, Wis., and in 1851 took charge of the office at Springfield, Ill. In



J. J. S. WILSON.

a few months after assuming the management at Springfield, Col. Wilson had exhibited such executive capacity that he was appointed Superintendent of the Western Division of the Illinois and Mississippi Company's lines, the duties of which he performed with marked success and ability for eighteen years. When government took military possession of the telegraph lines of the country, Mr. Wilson

spent much of his time in the field, where he gave well-directed and efficient aid to the army officers. This led to his being commissioned by Governor Yates, September 10, 1861, Colonel of Volunteers, and to his reception of a warm and emphatic letter of thanks from Gen. Grant. Col. Wilson entered the service of the Western Union Telegraph Company in 1866, and was assigned by Gen. Stager to the superintendency of the First District of the Central Division of the lines of that company, with his headquarters at Chicago, Ill. This district embraces 10,000 miles of telegraph route and about 1,000 offices. Col. Wilson directs the business of this important area with great ability, and holds the highest testimony from the company's officers of their confidence and respect.

## CHAPTER XX.

## OHIO, INDIANA AND ILLINOIS TELEGRAPH COMPANY.

THE Telegraphic spider having hung the periphery of his web along the outposts of the then West, now proposed, with true aracknidan instincts, to fill up the intermediate spaces. An energetic and rapidly enlarging population gave token of the future greatness of the towns springing up into life between the Ohio and the Lakes. The path of empire was inward as well as westward. Attention was, therefore, directed to the great intervening territory, now surrounded by the iron thread. A line was projected by Mr. O'Reilly, in the fall of 1847, from Dayton, O., to Toledo and Chicago, via Indianapolis. The work of construction was immediately commenced. An office was opened in Indianapolis, Ind., by Mr. Isaac H. Kiersted, May 12, 1848, who became its operator and manager. The line was built along the public pike road from Dayton to Eaton and Richmond, and from thence along the National road via Cambridge City to Indianapolis. From Indianapolis the line was extended during the same season to Crawfordsville, where, on the opening of the office in the fall of 1849, the management was given to Robert E. Bryant, afterward the excellent superintendent of the completed lines, and still a resident of Crawfordsville, but now engaged in the delightful business of making rosewood homes for the shells of "the departed." No further progress in construction was made during that year.

The builders of the line from Dayton to Crawfordsville were, as far as can be learned, an unworthy class of men, who lived luxuriously, and scattered Mr. O'Reilly's funds right and left, enjoying a kind of royal reception because of the glamour which adhered to their mission.

Telegraph constructors in those days were kings, and were the subjects of a somewhat hilarious and abundant hospitality. As a letter from one who was a "looker on in Venice," says respecting them: "The great 'modern wonder' invested them with an importance in the eyes of the people that made them strut through Hoosier land with high looks and proud stomachs." Even an operator was regarded "as no small cheese." From a party intimate with the building of this line, it appears that many of the poles were purchased of farmers along the road for ten cents a piece, and who were not only pledged to distribute them where wanted, but had to aid in erecting them. The poles were, in almost every case, fresh from the woods adjacent, of any and every character, and were erected with all their native bark still hugging their sappy sides.

Early in 1849, William J. Delano, manager at Dayton, O., resigned his post to become the agent of Mr. O'Reilly in carrying forward the work of construction, and with much perseverance extended it from Crawfordsville to Lafayette, Logansport and Toledo, there tapping the Lake line. From Logansport it was extended to the city of Chicago, thus making one of the most important of all western connections. The value of this extension was strengthened by the construction, soon afterward, of a line from Cincinnati through Piqua, O. Thus St. Louis, Cincinnati, Pittsburgh, Philadelphia and New York were placed by friendly connections in direct contact with the Queen city of the Western Lakes. The line was further strengthened by the building of a branch, for which there was, however, no right under the contract, from Crawfordsville, via Terre Haute, to Vincennes and Evansville, Ind.; and, also, by the line I had constructed for Governor John Brough, from Madison to Indianapolis, along the route of the Madison and Indianapolis Railroad.

The building of this latter line made my name unpleasantly conspicuous. In its construction, which was the result of a very brief interview and a short contract with Mr. Brough, the matter of the patent was, without reflection, and perhaps from piratical tendencies, unmentioned. The work was done without reference to it, under some indistinct supposition that through O'Reilly, with whom I was then on terms

of the most intimate intercourse, it could, in some way or other, be provided for.

A year or more after its construction, however, Mr. O'Reilly's interests having changed, he joined Mr. Wade and Mr. Cornell in attempting to sever the Indiana line from its original connections. This I prevented, at a late hour the evening before the annual meeting at which the change was to have been effected, by having a lease executed to the lines I represented, confirming the existing connection for two or more years. This prompt proceeding made Mr. O'Reilly, who had become accustomed to command, very indignant, and I was condemned both by him and Mr. Wade, and indeed by the whole assaulting squadron to certain slaughter. Don Mann, Mr. O'Reilly's son-in-law, thereupon advertised me in a glowing proclamation as a pirate upon the O'Reilly contract, cautioning all good and honorable people to beware of me and my machinations, and asserted that Mr. O'Reilly, and not I, was the original Jacobs. This was all quite true. I had built a line without a patent, and was, to that extent, a robber of Prof. Morse. I could not see, however, now that the matter had assumed a question of legal rights and settlement, how Mr. O'Reilly had acquired any privilege under the Morse Patent to side lines which were expressly reserved by the O'Reilly contract to the patentees. I, therefore, declined to treat with him in relation thereto. His indignation was unmeasured and unique. Meanwhile, learning through Mr. Kendall, that a good title to the patent could be got through Col. Tal. P. Shaffner, to whom it had been assigned, I purchased it of that gentleman, had it properly assigned, and made Mr. Brough, the President of the Madison and Indianapolis Railroad, contented and happy.

A year or two later, Mr. O'Reilly fell into deep financial difficulty. This affected the Ohio, Indiana and Illinois Company very seriously, and notwithstanding all its apparent advantages of territory, and the value of its connections, the directors of the Company, of which Lucien Barbour was president, determined to lease it to any responsible party for a term of years. Accordingly, contiguous Companies were invited to make proposals for its possession. The Pittsburgh, Cincinnati and Louisville Company, with which it was on terms of close connection, thereupon delegated

Mr. Kiersted, at that time manager at Dayton, O., who was highly and justly esteemed as a prudent and honorable man, to go to Indianapolis on the day appointed for receiving bids, and make a sealed offer of \$1,200 per annum for the lease of the lines for a term of years. Perhaps nothing can convey a sadder or clearer, or, on the whole, a more curious idea of the valueless character of the line, than such an offer. The capital of the Company, including the issue to the patentees, was \$240,050. The offer, therefore, was one of one-half per cent on the capital. Scarcely ever did an enterprise which promised so fair yield so unresultant fruit. With the utmost economy the business of the line barely cleared expenses. Many and serious debts had been created. The line was cheaply and feebly constructed, and was more or less incomplete. The bid made by Mr. Kiersted was placed in the hands of the president of the company, at a morning session of the board, on the day appointed. After an adjournment for dinner, however, Mr. Cornell, who was a good strategist, on the re-assembling of the board, made a bid of \$1,300 per annum on behalf of the Erie and Michigan Telegraph Company, one hundred dollars more than Kiersted had offered, and the lines went into his possession. Mr. Kiersted indignantly but vainly protested that his bid had been made known in order to frame the one which had succeeded. He was what Pew would have called a phenomenon, a square, honest souled man, who flared up fiercely at a supposed wrong. But it was a part of destiny and, as events proved, it was well he failed.

A meeting of the stockholders was held in Indianapolis March 2, 1853, for the election of directors. Among the parties present were S. C. Willson, J. W. Wright, Charles Cox, T. F. Purnell, W. W. Wright, Col. S. Stone, P. P. L. Smith, Ezra Cornell, W. J. Delano, James W. Ray, I. H. Kiersted, Don Mann. The number of directors was reduced from nine to three, and John W. Wright, S. C. Willson, and Lucien Barbour were elected. Mr. Mann thereupon offered the following curious resolution :

“WHEREAS, There are other telegraph lines running along the same routes, competing for the same business; and, whereas, it is probable that arrangements can be made with the said lines to occupy the same

offices, thus saving one-fourth or one-third of present working expenses, besides securing vastly increased facilities for prompt transmission of business; therefore,

*“Resolved,* That the stockholders request their directors to make such arrangements with other lines running along the same routes, as shall tend to reduce expenses, increase the receipts, and facilitate the prompt transmission of business.”

That is to say, the wires of the Ohio, Indiana and Illinois Company were to be led into the offices of Mr. Cornell and Mr. Wade's opposing lines, in order that rent might be saved and more business be acquired! The proposal sounds like a forecast of the millennium. Yet Mr. Mann knew what he was about. He knew he had come to a funeral and was the agent of the undertaker. He was voting the extinction of the company, and the resolution was a mortuary oration over the remains.

The lines projected by Mr. Cornell and John J. Speed, Jr., in the interest of F. O. J. Smith, which by this time had been erected from Indianapolis to Terre Haute, St. Louis, and other places along the route to Chicago, by Lee, Wade and others, were not paying expenses. By this resolution the monopoly of the business was secured by the obliteration of the identity of the O'Reilly line. It was a new case of "won't you walk into my parlor, said the spider to the fly." But it was a curious fact that a large and important territory occupied by O'Reilly under his contract, and heralded as one of a great net work of lines, "independent in control, but united in mutual councils," should be obliterated on the motion of his son! Yet that was what was done, and all the parties said Amen.

At the same meeting, on motion of Mr. Kiersted, a large amount of stock issued to S. C. Willson, for the patentees in trust for S. F. B. Morse and his assigns, was ordered to be cancelled if found illegal.

Mr. Cornell held the Morse Patent and removed the lines, soon afterward, to the railroad routes, under advantageous arrangements with the railroad companies, and all title to the property, as a part of the leased line, soon disappeared. The stock which had little or no value was, at the same time, rapidly gathered up at nominal prices. Mr. Hiram Sibley purchased of Mr. O'Reilly \$100,000 worth of it for \$2,000. This

was a sample of its value. The lease was soon after transferred, with the whole property of the Erie and Michigan Company, to the Western Union Telegraph Company, and the valueless stock became, in after years, the basis of large fortunes to the purchasers.

William J. Delano, who built the lines from Crawfordsville, was very unlike the builders of the section east. He was gentle, kind, honorable, and went to his work as agent for Mr. O'Reilly with care and prudence. Yet he was no man for such a work, so far as obtaining subscriptions was concerned. He had no grand ways with him; none of that vigor of gab which overpowers and convinces men against their will. Yet he did well, obtained a fair amount of subscriptions, and Mr. O'Reilly, for a time, also, gave him valuable material aid. Finally, however, when Mr. O'Reilly's affairs became involved, and drafts to a large amount on him came back protested, Delano was for a time greatly embarrassed. Gathering himself up, however, like a true man, he commenced an effort to relieve the endorsers on his protested paper, and which he continued with unabated courage until every dollar was paid. In 1852, Mr. Delano went south to obtain a contract for clearing a portion of the Jackson and New Orleans Railroad. He finally settled down in New Orleans; became a local editor; married a Cuban lady, reputed to be wealthy, and finally died in a hospital in Mobile, Ala.

The building of the lines of the Ohio, Indiana and Illinois Telegraph Company was regarded by some as stretching the O'Reilly contract beyond its limits. Yet the right to go to the "chief cities on the lakes" was a delusion if these were to be reached only via St Louis. A line more or less direct to Toledo and Chicago from the river lines was a necessity so clear as to be incontestible. Especially was this made so under Mr. Kendall's idea of a unity of interest in the territory assigned to O'Reilly. Had the parties been on friendly terms, it would probably never have been questioned. The line became a ruin from several conspicuous causes:

1. The public had not yet been educated to the use of the telegraph so as to provide, even in the populous cities it connected, a sustaining revenue.
2. The temporary character of the construction of the lines and their

location along the common roads made their maintenance difficult, repairs slow and expensive, and transmission uncertain.

3. Left alone as an "independent" line, it was not only incomplete and weak, but derived no proper support from its associate lines, and was abandoned by its parents.

Two years after the funeral services had been performed over the "Delano Line," as these lines were sometimes called, a man, good, faithful and capable, named David Doren, whom Mr. Wade picked up in Columbus, O., in 1851, and who is now chief of construction for the Atlantic and Pacific Telegraph Company, might have been seen between Crawfordsville and St. Louis gathering up the debris of the abandoned line, which even Mr. Mann's resolution of hospitality could not save from penury and death.

The finest telegraphic structures in the country now occupy the route of this long extinct company, and a large number of wires are necessary to perform the immense business now daily passing over them. Instead of the one man at Indianapolis in 1849, who united in himself manager and operator, there are now (1877) 32 operators, 12 clerks, and 27 messengers, making a staff of 71 persons connected with the office of the Western Union Telegraph Company in that city, and of which Mr. B. H. Butler is its efficient manager. Time and the railroads have fulfilled the prophecy of earlier years. The superintendence of the immense traffic passing over the splendid lines of the Western Union Company, which web the State of Indiana, and which everywhere bear witness to the vigorous administration of the agent in charge, is in the hands of Mr. John F. Wallick, whose quiet but intelligent vigilance has rendered him one of the company's most valued officers. Isaac H. Kiersted, the pioneer manager at Indianapolis, has retired from the Key, and, in pursuits congenial to him, has made his name a synonym for purity of character and good citizenship.

## CHAPTER XXI.

## THE LAKE ERIE TELEGRAPH COMPANY.

SHORTLY after the execution of the O'Reilly contract, the gentlemen at Rochester, N. Y., who started Mr. O'Reilly in his telegraphic career, saw that the stipulation by which Erie, Pa., was made the eastern limit of the Lake route, necessarily cut off a vast intercourse which would naturally spring out of a connection between Buffalo on the one hand with its eastern connections and the Western Lake cities on the other. They therefore early importuned Mr. O'Reilly to get his contract enlarged so as to cover this reserved ground between Erie and Buffalo. Mr. Kendall acknowledged the reasonableness of the request, and by letter to Mr. O'Reilly, dated November 24, 1845, granted it on condition "if your friends are ready to build." It was, however, nearly a year later before active steps were taken for its construction. By that time the quarrel with the patentees had been inaugurated. The Morse Patent for the whole Lake route was soon afterward in the hands of F. O. J. Smith, Ezra Cornell and John J. Speed, Jr. Livingston and Wells, the well-known pioneer express men of New York, were already contracting for the construction of a line from Buffalo to Detroit.

The first portion of the line built was from Pittsburgh to Cleveland, 150 miles. It was constructed under the supervision of Heman B. Ely, one of the Rochester stockholders, and the funds for doing so were, at the outset, largely provided by Joshua Hanna, of the banking house of Hussey, Hanna & Co., Pittsburgh, who was agent for Mr. O'Reilly at

Pittsburgh, and for some time held charge of his personal interests. A good subscription list was obtained in Cleveland and other places, and on January 19, 1848, the line was working from Buffalo to Detroit, and from Cleveland to Pittsburgh. The office at Cleveland was opened by C. E. Wheeler and H. C. Hepburn August 30, 1847. Massillon was opened October 26, by James Bellows. N. Lisbon, October 25, by D. V. Benedict. Akron, November 12, by Hepburn and Benedict. Sandusky, December 3, and Buffalo, January 19, 1848, by Hepburn. Erie was opened January 24th by Don Mann. When the line was reported completed, James D. Reid was elected Superintendent in connection with his supervision of other O'Reilly lines.

The completion of the construction of the Lake Erie Telegraph practically closed the field of the O'Reilly contract and Mr. O'Reilly's Western work. He contemplated a line to the Pacific, it is true, in after years, and effected the organization of a company in 1857 for that purpose, of which Tal. P. Shaffner was secretary. But it was not carried out. That was Sibley's mission in which Mr. O'Reilly was allowed no share.

The Lake Erie Telegraph Company was informally organized early in 1847. Its capital was \$177,600. Of this \$44,400 was reserved for the patentees, \$22,200 was issued to Mr. O'Reilly and \$22,200 to the original members of the "Atlantic Lake and Mississippi Telegraph Company," organized under the O'Reilly contract at Rochester, in 1845. To actual subscribers was issued \$53,690. The residue was reserved to pay debts, which had accumulated to some extent, and to restore advances by Mr. O'Reilly and Mr. Ely. The company was formally organized July 6, 1848, at which time Hon. Jonathan Childs, formerly Mayor of Rochester, N. Y., was elected President, Heman B. Ely, Secretary, and Elisha D. Ely, Treasurer. The other members of the Board were Mathew Johnson, J. D. Reynolds, Samuel L. Selden and Joseph Weatherby.

Although the route was apparently an important one, and the line had been opened under somewhat popular auspices, for some time business was very light. It may be interesting to compare the following statement of a month's work with the present business :

## JANUARY, 1849.

	Receipts.	Expenses.
Buffalo .....	\$212 30	\$122 51
Erie.....	59 86	53 86
Ashtabula .....	19 98	35 99
Cleveland .....	317 88	283 90
Hudson.....	9 85	28 64
Akron .....	41 72	49 60
Masillon ....	42 29	80 61
New Lisbon.....	33 18	29 05
Wellsville .....	30 22	30 22
Pittsburgh .....	283 94	123 04
Elyria .....	39 64	37 45
Sandusky .....	171 80	89 95
Toledo .....	90 45	54 86
Munroe .....	32 85	56 10
Detroit .....	<u>178 91</u>	<u>126 36</u>

But the receipts gradually enlarged and more than doubled as the summer opened the channels of business. Before I resigned, which I did September 1, 1849, on account of claims upon my time elsewhere, and having neither clerk nor assistant in connection with my duties as superintendent of these various lines, the company declared a dividend of six per cent on a portion of the capital. The receipts were reported as \$13,561 and expenses \$9,136. On my resignation, Montgomery Gibbs, manager at Buffalo, was appointed superintendent. He was somewhat lordly in his methods and traveled with a secretary, claiming that it gave respectability to his company. He was very bland, gentlemanly and attentive, and dressed with much taste and care. One of his first movements was to seek connections for business outside of the O'Reilly lines, and to inaugurate the work of disintegration, which not long afterward began to show itself, and ended in the obliteration of the company.

At the organization of the company the directors elected represented the different sections of the line as nearly as was then possible. Mr. H. B. Ely, of Rochester, to whom was intrusted much of the early management of the affairs of the company, a good, practical man,

although, being very tall, inclined to a lofty view of things, made his home at Cleveland, which was the natural centre of control. In 1853, Mr. G. C. Allen was chosen Superintendent. A letter from Alvah Strong, Esq., of Rochester, N. Y., who with his partner, George Dawson, now of Albany, were the first to join the pioneer organization under the O'Reilly contract, and to both of whom I am indebted for much of the encouragement of those early and struggling years, says: "We have just elected Mr. G. C. Allen our Superintendent. He is true, upright, capable and industrious. He has also fine business talent, and we feel satisfied that he will be efficient and successful in the discharge of his new duties." Mr. Allen, however, came to his trust at that period in the history of a line when, by its condition of decay and the necessity of much persistent labor and outlay, it required the utmost prudence and patience to meet alike the necessities of the work to be done and the condition of the treasury. It is to be recorded of Mr. Allen that, during his brief superintendency, he entirely honored the selection. After a time, however, it was deemed necessary to concentrate the management in Rochester for purposes which soon became evident. This gave great offense to local stockholders. Energetic opposition from the Erie and Michigan line, which soon extended itself from New York to the far west, was active, and seemed to demand the cultivation of all local influences which might secure for the company public favor. An organization at Rochester, however, in which some of the leading Lake Erie stockholders were interested, and which proposed to introduce the House Printing Instrument into the west, made a local board at Rochester a necessity. It culminated, in a few years, in a lease of the lines of the Lake Erie Company, to the New York and Mississippi Valley Printing Telegraph Company, March 30, 1854, at a rental equal to the pro rata profits of the line of the lessors with \$50,000 added capital, which was to represent the Lake Erie line interest. This seemed a beggarly result of lofty expectations; yet, with a doubtful connection at Buffalo;—with no important feeders west except a single wild-cat line from Munroe, Mich., to South Bend, built by Josiah Snow, an amateur line-builder, and which, like the snow, soon vanished away;—with a new and strong company in the field, bent on conquest;

and with a somewhat slender hold on public business ;— the lease was one of those imperative acts which follow defeat or prevent extermination. On the execution of the lease, the stock of the Lake line soon found its way, at low prices, into the hands of the lessors, where it became, finally, of great value, as a part of the basis of the future capital of the Western Union Telegraph Company. The property of the company ultimately fell into the hands of the sheriff, under whom it was sold for its debts, and was, of course, purchased by the lessees. Thus its brief life ended, and every vestige of the evidence of its existence was swept away.

The last heard of the "Lake line" was a curious quarrel over a sign held by Sidney Gibbs, Manager at Buffalo, which he had either attached or held on to as a memento of the past, but which Henry S. Bishop, of Cleveland, the superintendent, demanded to be delivered. In reply to Bishop's message Sidney facetiously replied: "A wicked and adulterous generation seeketh after a sign, but no sign shall be given thereunto, except the sign of the prophet Ely whom Hiram swallowed." There was nothing more to be said. Bishop gave it up. Thus the O'Reilly lines, one by one, passed away, and left no sign.

Mr. O'Reilly was one of the brightest specimens of the pioneer character, a man who carried victory in his eye, a splendid friend, a bitter enemy. No opposition disturbed him. His hopefulness was always on wing. He dashed at danger like a war-horse, and "conquered success." He was capable of a royal kindness which many felt, of a generosity sometimes more warm than just, and of a bitterness intense, measureless, and almost grotesque. All these were splendid even in their defects. They should have secured the possessor a royal result. They bore him forward as on a tidal wave. He gloried in the fame they wrought him. And yet his very energy, because of a little lack of careful financiering, cheated him of his fortunes, and sometimes placed him in positions which more or less shaded his memory. His hatred of men who opposed him was unique and bitter. Thus to every strong soul some weakness clings. Yet Henry O'Reilly had not an enemy who did not regret that, admitting all his faults, he ended a splendid work which he had conducted with dash and sprightliness, with his

affairs in the hands of a receiver, and himself practically bankrupt and poor.

No more magnificent field was ever opened for the consolidation of the basis of a vast and dominating company than that occupied by the various lines built under the O'Reilly contract, all of which it only needed a few men of resolute will and competent capital to compact and render of immense value. I urged it pertinaciously. But the pear was not ripe.

The condition of the patent controversy marred and checked every effort.

The staff of the Lake Erie Line, because of the destruction of its records, cannot be given with much certainty. The following are some of the originals :

Buffalo, Mont. Gibbs.	Mōnroe, R. H. Daly.	Sandusky, J. P. Williams.
Buffalo, Sidney Gibbs.	Detroit, D.V. Benedict.	Sandusky, J. G. Lombard.
Cleveland, H. S. Bishop.	Detroit, — Collins.	Ashtabula, Anson Gorton.
Cleveland, W. Herrick.	Toledo, U. C. Cleveland.	Ashtabula, R. T. Greene.
Cleveland, S. G. Lynch.	Erie, J. E. Dunn.	Hudson, E. W. Moore.
Cleveland, — Jones.	Massillon, J. H. Painter.	Wellsville, J. N. Alvord.
Pittsburgh, James Bellows.	Akron, L. H. Nicols.	Wellsville, P. S. McIntosh.

In the working of these various western lines, up to 1854, no change of machinery, or of methods, other than as first introduced on the Morse lines, was adopted. The Grove battery, both for main and local purposes, was preferred because no other was known. A Company was formed, in Rochester, of which Hiram Sibley was president, based upon a discovery by L. B. Swan, a druggist of Rochester, of the economy of the use of salts in dilute sulphuric acid, which increased the permanency of the battery by limiting and regulating the action upon the zinc. But the advantage was not so apparent as to dispose companies to pay a royalty for its use. Economy in the employment of the Grove was attempted only by a reduced use of the sulphuric element, and by coating the zinc cells with muriate of mercury. The necessity for large batteries was avoided by greater attention to the wires, clearing them of obstacles and soldering joints. An instrument called a joint-maker, which, whenever used, secured a close and perfect connection, I had supplied to the line repairers, and regarded

as valuable, but they preferred their hands. What was known as the button repeater, which seemed every body's invention, and was, in fact, simply the utilization of the principle of the local circuit, one of the very earliest devices to accomplish distant writing, as seen in Prof. Morse's models in 1838, was in common use when general press reports were being sent over the associated lines. Progress had been made chiefly in increased experience and skill on the part of the operator, and minuter and more vigorous attention to the outside structure. The machinery remained the same except that in all the large offices the sounder was rapidly taking the place of the register. The process of reception thereby was found easier, and, for that reason, more generally accurate. The ear was found more reliable than the eye. Thus, except in comparatively small offices, the Morse register rapidly disappeared.

It is not, perhaps, of much interest, to return to these formative years and discuss the wisdom of the parties concerned in the controversies which arose out of this important pioneer work. As some, however, will ask wherein the wrongs and the rights connected with this somewhat celebrated contract lay, a few words respecting it may be proper.

1. The contract was dated June 15, 1845, and stipulated "that the line to Harrisburgh, Pa., from Philadelphia, or from such other convenient point on said line as may approach nearer Harrisburgh, should be completed within six months." The line from Lancaster (the only other point which seemed capable of selection) to Harrisburgh was finished twenty-one days before the time required by the contract. That should have been regarded as good and sufficient service. Mr. O'Reilly notified Mr. Kendall of the fact of his fulfillment of his contract thus far, and without the least demur from him. The fact that up to September, 1846, Mr. Kendall was on terms of pleasant correspondence with Mr. O'Reilly, and that in the interim Mr. O'Reilly built for Mr. Kendall the line from Baltimore to Philadelphia, and secured therefor a large portion of the stock, suggests that in his mind no cause of complaint against O'Reilly up to that time existed. It was just then, however, that Mr. Smith, probably awakened to the conception of the value of

the O'Reilly contract, and anxious to secure better terms, claimed that the base was Philadelphia, and connection therewith not having been made within six months from the date of the contract, it was therefore void. For this claim of Philadelphia as the base there is utterly no proof.

Inasmuch as Smith's concurrence was necessary to any transfer of the patent, it was essential that he should be satisfied, and Mr. Kendall, therefore, wrote Mr. O'Reilly October 12, 1846, as follows:

"I said to you as I felt, that I was unwilling to take any advantage of a forfeiture of your contract, if any existed, as long as you were endeavoring to comply with it in good faith. But how can I excuse myself to my principals if I tolerate such assumptions (referring to the recent issue of shares of stock without the action of trustees as contemplated by the contract) as this. Mr. Smith writes that he considered your entire contract forfeited and will not renew it beyond the Ohio river. I hoped he would think better of it, but what is to be expected when he hears that you have organized and issued certificates of stock without his knowledge. It is important that we have a meeting, you, Mr. Smith and myself, with a view to a better understanding, and a more regular mode of procedure. Will you propose it to him? I will be on hand at any time.

"With high regard,

"AMOS KENDALL."

To this proposal Mr. Reilly returned a fiery refusal. He had heard of Smith's treatment of Morse and had conceived for him a sudden and passionate contempt. He replied: "As for the whole matter of my contract it has been sedulously guarded by men who have character and property to sustain their advocacy and who look upon it as sacred as the patent itself. I will emulate the patience of Professor Morse under 'wrongs which no tongue can tell.' We are prepared to meet any issue that *one* gentleman may think proper to raise."

Here feeling, intense and proud, which never abated, but grew in intensity, had come in to make conciliation and co-operation impossible. Mr. Kendall wrote again:

"Mr. O'Reilly, neither you nor I can get along with *our* enterprise without consulting, to some extent, the views of Mr. Smith. Never intending to take advantage of a failure to meet the *time* limited in your contract, I had not examined it minutely, but now let me ask you

whether your line was in fact constructed from the connecting point to Harrisburgh within six months from its date or from the time that point was finally fixed at Philadelphia?"

This letter was evidently conceived in kindness to Mr. O'Reilly, but in strange and utter forgetfulness of his letters written five months after the signing of the O'Reilly contract, claiming that very route as the possible direction of the Magnetic Telegraph Company's line to Baltimore. Mr. O'Reilly, on receiving this letter, insisted that Mr. Kendall had committed himself to Lancaster as the connecting point with the seaboard lines contemplated by the contract. This contemplated a line of 40 miles only, and which he had built. The line to Philadelphia added 70 miles over a government railroad crowded with trains, to secure rights of way upon which grants and legislation were necessary, besides the time needed for securing subscriptions, contracting for, distributing, erecting poles, and stringing the wires. The building of this line was regarded by Mr. O'Reilly as essentially an extension of the contract, and no part of the line which was required to be completed within the first six months. The right to build to Philadelphia was only given when the six months had almost expired, and then only conditionally, as appears by the following extracts from Mr. Kendall's letters:

"WASHINGTON, *November 15, 1845.*

"You are at liberty to extend your line down to Philadelphia, with the understanding that the Magnetic Telegraph Company may embrace the line from Lancaster to Philadelphia in their line from Philadelphia to Baltimore, at the rate of \$100 per mile, upon the basis of two copper wires of 65 lbs. to the mile each. If your structure shall not be included in our line, then it will remain the property of your company.

"A. KENDALL."

Two weeks before writing the above, he had written Mr. O'Reilly as follows:

"WASHINGTON, *November 2, 1845.*

\* \* "We have not as yet made arrangements to extend our line to Baltimore. Should we fail in that matter, which I can scarcely anticipate, you will be at liberty to run your line down to Philadelphia.

"AMOS KENDALL."

Now, such a grant as this, given on territory claimed as, by right, that of another company, after the lapse of five months, and on conditions foreign to the O'Reilly contract, could, with no show of reason, be included in the forfeiting clauses of that instrument. Indeed, we find Mr. Kendall—November 22d—just as the line from Lancaster to Harrisburgh was about being opened to the public, telling Mr. O'Reilly, "you can now go ahead and build from Lancaster to Philadelphia or Baltimore, as you like." There is not a word of limitation in all this, and the courts rejected such an interpretation when an injunction was asked.

While Mr. Kendall was willing, and must have been compelled by his own letters, to waive the question of time, his Washington training made him exacting in another direction. The contract placed the work under trustees, whose duties were defined at length in the articles of the Magnetic Telegraph Company, which formed a part of the contract. These were, to disburse the funds collected; to hold the patent; to decide upon the fulfillment of the contract alike in the interest of patentees and subscribers; to supervise organization and issue stock. Almost the first thing done, however, when, in 1846, the line was being built to Philadelphia, was the issuance, by Mr. O'Reilly, of numerous certificates of stock, as gifts to editors and others, whose aid Mr. O'Reilly instinctively invoked in prosecution of his work, as well as to actual subscribers. This was, perhaps, irregular, but was readily capable of correction. It was not worthy the name of fraud. It was an irregularity, however, which deprived Mr. Kendall, in the event of the action of trustees being set aside, of all voice in the conduct of the contract, and left him without control, in what he claimed as the vital feature of its value, the absolute unity of the whole field of the lines built under it in a single consolidated interest.

The complaint of Mr. Kendall that subscriptions for the whole line to Pittsburgh had not been obtained within the time specified by the contract was probably correct, although Mr. O'Reilly, with perfect justice, claimed the substantial character of his backers, and the actual building of the line as his best and sufficient answer.

In the complaint entered against F. O. J. Smith by Mr. Kendall in

behalf of Messrs. Morse and Vail, the extent of the O'Reilly lines is thus summarized. The enumeration omits the first line from Philadelphia to Harrisburgh, and from Louisville to New Orleans :

"He has suffered and permitted O'Reilly and his associates to construct or procure to be constructed, the following lines of telegraph, to wit: one line commencing at Harrisburgh, in the state of Pennsylvania, and running along the Juniatta Valley to Greensburg, to Pittsburg, and a connecting line from Hollidaysburg to Bedford, a *distance* of about 220 miles. Also one other line commencing at Pittsburg, and running thence via Beaver, New Lisbon, Canton, Akron, Cuyahoga Falls, Cleveland, Sandusky, Toledo, Monroe to Detroit in Michigan, with an eastern branch along the south shore of Lake Erie to Buffalo, a distance of about 420 miles. Also one other line commencing at Pittsburg, and running via Steubenville, Wheeling, Zanesville, Columbus, Springfield, Dayton, Hamilton, to Cincinnati, Ohio, with a branch running northward from Dayton to Piqua, and also another branch from Dayton via Richmond, Cambridge, Greenfield to Indianapolis in Indiana, a distance of about 425 miles. Also another line commencing at Toledo, and running thence, via Maumee, Napoleon, Defiance, Fort Wayne, Logansport, Lafayette, Covington, Newport, Terrehaute, Vincennes, to Evansville, a distance of over 400 miles. Also one other line commencing at Indianapolis, and running via Augusta, Eagle Village, Kirk's Cross-Roads, Logansport, Rochester, Plymouth, Laporte to Chicago, and thence to Milwaukee, a distance of about 295 miles. Also, one other line commencing at Cincinnati, and running thence by the way of Lawrenceburg and Madison to Louisville in Kentucky, a distance of about 150 miles. And also one other line commencing at Louisville and running thence, via Peoria, Vincennes, Lawrenceville, Maysville and Carlisle to St. Louis, a distance of about 220 miles. Also one other line commencing at St. Louis, and running thence, via Alton, Springfield, Jacksonville, Peoria, Peru to Chicago, with a branch line from Jacksonville via Quincey, Keokuk to Burlington, Iowa city in Iowa, to Rock Island in Illinois, with another branch from Peru via Dixon, Galena, Lancaster, to Mineral Point in Wisconsin, Dubuque in Iowa, a distance of about 440 miles. Also one other line commencing at Indianapolis, Indiana, running thence via Crawfordsville to Lafayette, a distance of about 74 miles, making in the aggregate, upwards of 2,586 miles of telegraph."

It is sad to record that when Mr. O'Reilly came before the courts and was put on the stand and asked the amount of fortune all this had

brought to him, the melancholy answer was "nothing." It is but just to record that under these circumstances, Professor Morse came to me, and offered to aid him. Professor Morse's position, in this unhappy conflict, is indicated in his letter to Mr. Smith, of which the following is an extract :

"With regard to the original difficulty with O'Reilly I always understood that the desire on your part to have the same proportion of stock on the lines built by O'Reilly, as the proprietors receive on all other lines in which they receive stock in pay for patent right, to wit, *one-half*, led you to insist that his violation of contract should annul it, while Mr. Kendall, I think, at my instigation, and with my approbation, certainly, was disposed to be lenient, and not to press that violation to a rupture, and this leniency I should assuredly have insisted on had I not learned, through you, that O'Reilly and Downing had been guilty of frauds upon us in issuing stock and otherwise organizing companies irregularly and illegally. If I am under a wrong impression here, I should be glad to know the true state of the matter.

"With respect,

"SAM. F. B. MORSE."

Mr. Kendall went into the opposition to O'Reilly with great reluctance, and solely because of the attitude taken by Smith, whose co-operation was necessary to an issuance of the patent. Mr. Kendall based his opposition chiefly on neglect of the functions of the trustees, in whose appointment he claimed a right of nomination, and who were to be the judges of the fulfillment of the conditions under which the patent was pledged. He also claimed that, although sections were to be recognized as completed, yet these were to be regarded only as parts of an organic whole. When the companies were organized there is no evidence that the patentees were ever invited to aid therein. Mr. O'Reilly carried through his work on the power of a strong and enthusiastic public sentiment, and, aside from disputed legal lapses, and his utterly unjust and unmeasured abuse of Professor Morse, it must be admitted that he had, in the main, faithfully endeavored to carry out, in his own way, his idea of the contract made by him.

## CHAPTER XXII.

## THE ERIE AND MICHIGAN TELEGRAPH COMPANY.

SOON after Mr. O'Reilly started out from Pittsburgh, Hon. F. O. J. Smith, although without much natural warmth of temperament, became thoroughly alarmed at his progress and success. He saw the West charmed by the "Irish Aztec" as he had facetiously called O'Reilly, whose swift movements and heroic pen were securing him a conqueror's reception wherever he went. One night, in the deep gloom of a March tempest, the thermometer below zero, the snow sifting wickedly through the sashes of his "Forest Home," in Maine, he sat studying out a spring campaign against his busy adversary. Perceiving its difficulties and the hold which O'Reilly had secured on public sentiment, he wrote feelingly to Mr. Kendall, "I wish the Devil had kept Henry O'Reilly under his special keeping and out of our way." There seems a touch of grim piety in that somewhat sadly expressed desire. Mr. Smith was no doubt sincere in its expression, pronounced it with vigor, and imagined that under such royal keeping O'Reilly and he would be, necessarily, far apart. Some, indeed, have doubted the clearness of Mr. Smith's judgment in such an expectation. Leaving, however, as is necessary, the solution of this social problem to the more intimate friends of the distinguished character named, it is certainly true that O'Reilly stirred Smith to his depths and quickened his naturally alert faculties. Something, obviously, had to be done. In this, at least, he and Mr. Kendall were thoroughly agreed, and under the mutual instinct and pressure of danger, they met to consult over the problem before them.

The first decision arrived at was, to so far ignore the O'Reilly contract and abandon the early formed design of leading Western and South-western business via Pittsburgh, as to commence the construction of lines from Buffalo west to Chicago and Milwaukee along the Lake shore to Detroit and thence west through central Michigan. It was agreed, also, to make an immediate contract for the construction of the line from Buffalo to Detroit with Livingston and Wells, a well-known energetic express firm of New York and Buffalo, whose experience in constructing the lines of the New York, Albany and Buffalo Company gave assurance of rapid and faithful accomplishment of the work. Mr. Kendall had great confidence in these gentlemen, and had had them in reserve in 1845 to take O'Reilly's place in Pennsylvania in case of failure. To John J. Speed, Jr., was assigned the construction of the lines west of Detroit to Milwaukee.

It was not long after this before Mr. Smith had obtained, through Mr. Kendall, the trusteeship of all the Morse patent interests in the States of Ohio, Indiana, Illinois, Michigan and Wisconsin, and had them under his exclusive control. This was brought about by the unavoidable friction between two men so differently constituted. As a partner, Mr. Kendall had already found Smith utterly intractable, balkey, uncertain, irritating. They could not work together. Their natures, except in a strong individuality and assertiveness common to both, were utterly unlike. Mr. Kendall, also, as a southerner, saw in the south so great a field for the Telegraph that he was willing to give to Smith the care of the Northern interests of the patent if he could be left free to prosecute his southern work. The result was that not only did Mr. Kendall agree to assign to Smith the exclusive control of all Patent interests connected with lines to be constructed in the west, but finding Smith peremptory in demanding new terms from O'Reilly or breaking his contract, abandoned to him the settlement of the entire O'Reilly claims. This just suited him. He was eager for fight. He fretted at Kendall's caution and methods, and wanted to open the war in his own way. So promising Kendall a speedy solution and extrication from the O'Reilly snarl, and pledging fidelity to his trust, he blew his horn and started for the west.

Having thus succeeded in freeing himself from his partners, Mr. Smith matured a scheme eminently characteristic. When he left Congress to become Morse's partner, and by a simple pledge of services as counselor, and the payment of the cost of a journey to Europe, including Morse's personal expenses while there, had obtained the ownership of a quarter of the patent, there was not only a revelation of Mr. Morse's poverty but, on Smith's part, a shrewd recognition of the value of the invention, creditable to his discernment. Now a vast door had opened to him into a field, almost boundless, wherein to exercise his energy and genius. One of his first movements was to attempt a settlement of the O'Reilly controversy, meanwhile appointing Mr. Ezra Cornell and John J. Speed, Jr., his agents to secure subscriptions and generally superintend the construction of the Lake line to Milwaukee, which was, when completed, to be organized as the **ERIE AND MICHIGAN TELEGRAPH COMPANY**.

Mr. Smith's interest in the patent being only one quarter of the whole, of course the settlement of the O'Reilly controversy had its chief value to Professor Morse, to whom Smith had taken, because of Morse's evident distrust of him, a bitter, personal enmity. He saw, also, that a general settlement of the patent claims for the O'Reilly lines was so far closing the door of the west against himself. He, therefore, offered a settlement of these claims only on condition that his own share should be paid in cash with a bonus of \$10,000 for wires which might be thereafter added, and limiting the settlement to the lines between Philadelphia and St. Louis. He was willing that Morse's interest should be paid in stock, but he wanted none of it. Against this Mr. Kendall vehemently protested. The companies refused it. Mr. Smith himself abandoned it almost as soon as offered. He was forming other plans. He was now projecting a series of branch lines from the Erie and Michigan trunk lines to suck the O'Reilly orange at its chief points of profit, proposing thus to destroy O'Reilly and his lines by opposition rather than to establish him by settlement or compromise. It did not seriously trouble him that by such a course Morse and Vail and Kendall would become large losers. So far as it affected him at all, it was not in that direction.

And now his scheme revealed itself. His small patent interest fretted him. To elevate the value of the patent was to enrich his partners, his own attaining a slow magnitude. It was possible, however, to reduce the patent price and enlarge the margin for construction! In the matter of construction he could be alone. Subordinating, therefore, the consideration for the patent, and reducing it to a minimum, he enlarged the basis of construction. Thus while the same charge per mile might form the basis of capital, Smith, by reducing the patent consideration to a mere nominal amount, and proclaiming to western populations that he offered them the Morse patent almost "without money and without price," absorbed in the margin for construction, which inured to himself, almost the whole revenue properly due for the Morse patent, and left his associate patentees practically nothing. Here is one of his pronouncementoes: Writing to Mr. Cornell, he thus delivers himself:

"I don't want to be humbugged any more; out with the plan of our campaign. Show that our lake lines are to be the great receptacles of the western intercourse with the Atlantic, and that the connecting lines are open to the people of the West almost without money and without price, to accomplish this end.

"This will head off O'R.'s operations more effectually than any thing else. Besides, don't you see what is his game? If I block him off by a reference and award, he will turn round and say 'I am building, also, under other patents, and this you can't ask me to consider as referred, or settled or prohibited.'

"No, our course is simple, plain, straightforward, and only requires energy.

"You, Speed, Livingston & Wells, and associates, have enough of this if set at work. Let the law in the meantime commence its slow work between the parties.

"Whenever you can get money enough raised to get a line up, start it, and patentees will not hurry for their part, and your share of profits shall be made satisfactory. I want no pusillanimous or doubting movements made, but dash on with all the battery and thunder and lightning you all can command.

"Time saved is every thing now. The west are as yet possessed of the proposals and policy and views of the O'R. interest only. Give them ours in good earnest and do as well as say. We will determine

whether we or the other party make the best lightning. Again, I urge you, don't hesitate, go ahead and open your fire everywhere; set all the West in a light blaze with your proposals, and keep boldly in view the cheapness of the lines offered and the magnificence of the main arteries."

There is much fire in all this, and Smith was more than a match for O'Reilly with his pen. O'Reilly multiplied words and fatigued by iteration. O'Reilly won men by his earnestness and, barring a defectiveness common to men of very sanguine natures in the matter of personal obligations, by the warmth of his nature and the essential purity of his character. Smith had a facile pen, sharp, pungent, implacable; and, although occasionally misled by a kind of classic facetiousness, always awkward and often amusing, which dulled its point, yet the weapon was keen, cold, able, savage. There is scarcely a product of it which does not reveal the litigant. He had no moral obstacles to contend with. He could sacrifice any thing to accomplish his purpose. And so he entered the western campaign, and the "Erie and Michigan" line was rapidly built from Buffalo through Fredonia, Erie, Painsville, Cleveland, Milan, Sandusky, Toledo, Monroe, Detroit, Ypsilanti, Ann Arbor, Jackson, Albion, Marshall, Battle Creek, Kalamazoo, Niles, South Bend, Michigan City, Chicago, Southport, Racine to Milwaukee.

It was in the building of this line that the first record of a man afterward conspicuous and successful as a telegraphic organizer appears. Mr. J. H. Wade was a peripatetic portrait painter who, like Morse, earned his living, for many years, by his brush, and, curiously enough, like Morse also, who took the first daguerreotype in New York, took the first likeness by that mode west of Buffalo. In connection with Mr. Speed, Wade built the line from Detroit to Jackson, and opened and for a time managed the office at Jackson. The whole line, when completed, was placed in charge of John J. Speed, Jr., as President, with D. T. Tillotson as Secretary and Superintendent. C. C. Sholes, since conspicuous in connection with the "North-Western" company, and who died in 1868, was manager at Southport, Michigan, with a salary of \$300, and A. B. Cornell, at Cleveland, with a salary of \$400 per annum. Some of the other offices were manned as follows: At Jackson, Mich., J. B. Packard, salary, \$240; Marshall, Jabez Fox,

salary, \$200; Battle Creek, M. H. Joy, salary, \$250; South Bend, C. M. Heaton, salary, office receipts; Ypsilanti, M. Sampson, \$150, to include rent and fuel; Niles, John S. Young, salary and rent, \$300; Michigan City, Capt. A. Barber, salary and rent, \$200; Ann Arbor, J. D. Mosely, salary and rent, \$250; Fredonia, Emory Cobb, salary, \$300; Monroe, S. G. Clark, salary, \$200; Kalamazoo, Mich., D. F. How, \$275 and a third of market reports; Toledo, — Rowley, salary, \$400, "but the price of bed and bedding should be paid by him" is Mr. Tillotson's very reasonable note. A. G. Luckey was Rowley's assistant. Sandusky, C. M. Stebbins, \$350; Maumee, H. C. Hutchinson, \$250; Littleport, manager, J. J. S. Wilson, salary, \$175, a very modest beginning for the worthy superintendent of the Western Union Lines at Chicago. Milwaukee, E. Edwards, salary for self and all assistants, \$650 per annum; Racine, C. M. Mann, \$300; J. H. Wade was sent to Milan, Mich., June 27th, 1848, where he was allowed a salary for himself and boy of \$400 per annum, but where, like a genuine Yankee, he hung out his shingle as operator and portrait painter; Painesville, — Buell, June 1, 1848, salary, \$300; Erie, — Palmer, \$300, September 22, 1848; Lower Sandusky, G. H. Vantine, \$250; Buffalo, W. D. Allen, January 15, 1848, \$500, and E. G. Morgan, \$400; Detroit, B. B. Hoyt, \$300.

The official correspondence of that period, 1848, gives a tolerable idea of the state of the business, and of the very limited use then made of the wires. Sandusky, for example, was refused a messenger because the number of messages sent did not exceed four, and the number received five to six per day. In a letter from Superintendent Tillotson to D. S. F. How, of Kalamazoo, he says:

"I see that our company furnish a bed and washing, bedding, etc., at your station. That is a saving to you, probably, of \$30 per annum, which should be considered, otherwise we had better sell it as it is a poor kind of assets to pay dividends with to stockholders who have advanced \$110,000 to build the line with. Your salary should not exceed \$200. Many offices with as much or more business, at the east, are kept up for \$100."

This was surely very sensible and very careful advice. On February

10, 1849, L. G. Tillotson commenced his life's work by copying his father's official letters. These letters show evidence of a discreet, careful, and honorable man. Like many others his righteous soul was sometimes stirred by the treatment of the press. In one of his letters directing editors to be treated the same as all others, he says:

"We are clever fellows if we do business for nothing, but if we want pay for our labor we are the worst of all. Let us attend to our business as we ought, and all will be right. An editor's paper and types will not hurt any one who does his duty."

That was the language of an honest man and had to be uttered more than once to stiffen the nerves of others less courageous.

Reporting for the press, at that early period, was, however, a very important source of revenue to the new line. Here is the record of a week's receipts of the Erie and Michigan Company in November, 1848. This company does not appear to have provided press reports in the large cities in which probably O'Reilly had stolen a march and secured its powerful aid:

	Communica- tions.	Press reports.	Totals.
Detroit .....	\$138 55	\$30 00	\$168 55
Chicago.....	199 62	50 00	249 62
Milwaukee .....	77 79	50 00	127 79
Southport.....	26 57	25 00	51 57
Racine .....	24 05	25 00	49 05
Michigan City .....	15 63	25 00	40 63
South Bend .....	8 55	25 00	33 55
Niles .....	13 05	25 00	38 05
Kalamazoo .....	11 92	25 00	36 92
Battle Creek .....	7 53	25 00	32 53
Marshall .....	6 30	25 00	31 30
Jackson .....	12 12	25 00	37 12
Albion .....	11 42	25 00	36 42
Ann Arbor .....	6 54	25 00	31 54
Ypsilanti.....	7 58	25 00	32 58
Toledo .....	32 19	30 00	62 19
Maumee .....	7 14	25 00	32 14
Lower Sandusky .....	5 98	25 00	30 98
Sandusky .....	18 71	28 00	46 71
Milan.....	27 20	28 00	55 20
Cleveland .....	55 30	.....	55 30
Erie .....	19 86	9 25	29 11
Fredonia.....	13 46	14 00	27 46
Buffalo .....	114 49	2 25	116 74

The receipts from the press seem to have been over one-third of the whole revenue of the line.

On looking over this statement nothing strikes the attention so much as the meagre revenues it exhibits as compared with the present large and growing productiveness of that whole region. Especially is this true of Chicago. The thirty years which have elapsed since the opening of the first offices there, in 1847 and 1848, have seen a marvelous accession to its population and business. To no city in the Union is the telegraph so essential to its commerce and growth. Nowhere is it more freely and fully used. The average receipts of the offices of the Western Union Company in the city of Chicago alone exceed half a million of dollars per annum. The working staff is about 175 persons, besides a large messenger force. The heads of departments forming its present executive force are as follows :

Gen. Anson Stager, General Superintendent and Vice-President.  
 Col. S. G. Lynch, Secretary to General Superintendent.  
 Col. J. J. S. Wilson, District Superintendent, First Central District.  
 George W. Felton, Manager Central Office.  
 H. C. Maynard, Manager Operating Department and Electrician.  
 F. W. Jones, Assistant Manager and Electrician.  
 H. W. Plum, Chief Operator.      C. H. Kelly, Night Chief Operator.  
 J. E. Pettit, Chief Operator.      W. A. Leary, Assistant N. C. Operator.  
 L. C. Springer, Night Manager.      S. L. Robinson, Manager, Board of Trade.  
 Receivers—Chas. Catlin, Chief;      Head Clerk, W. M. Willis.  
 Assistants, J. P. Crowley, J.      Head Book-keeper, G. B. Simpson.  
 A. Ellis, D. H. Louberback,      Superintendent of Supplies, Thomas  
 J. B. Lyndall.      Orton.

Immediately on the organization of the Erie and Michigan Telegraph Company, Ezra Cornell and John J. Speed, Jr., were made agents for the sale of the patent under Smith's Trusteeship, who immediately offered it for sale upon low terms, but coupled with conditions to secure the business developed by lines constructed under it to the Erie and Michigan Company.

The following is a part of Smith's published plan. It was dated August 14, 1847 :

"To make the stock of the artery lines of the highest value, I propose to reduce the cost of all lines *connecting therewith as feeders*, to

about fifty per cent of the cost of those and other lines that have hitherto been constructed, or are being constructed, including therewith the patent right. \* \* \* Thus, a line from St. Louis to connect with the Lake line at Chicago, will be constructed by Messrs. Cornell and Speed, complete for use, including patent right and all requisite instruments, and equal in structure to any line in the country, at \$150 per mile; ditto, from Vincennes on the South, to connect with a line to New Orleans, and on the North for a line from Vincennes to Indianapolis, and thence, by any route, to any point that may be selected to connect with the Lake line. The same for any other line connecting any other points within the States or territories named, with the Lake lines beyond Detroit; and Messrs. L. & W. will construct in like manner and upon like terms, for any such line to connect on the East side of Detroit with the Lake or Erie Railroad, or Buffalo lines. \* \* \* A line has been constructed from Philadelphia to Reading, and early in the spring will be extended to intersect the Erie Railroad line, and thus secure a cheap connection with the whole West, with Philadelphia also."

In pursuance of this general plan a line was erected from Fredonia to the boundary line of Pennsylvania, in the direction of Newcastle. This was constructed by William P. Pew, a pushing, honest, energetic character, but who was sometimes used, as the monkey used the cat, to pull the chestnuts from the fire. He had the most indomitable perseverance, and built lines where other men would have starved. He was requested to endeavor to get a personal grant, from Mr. Kendall, of the patent, so as to build a line through "some small villages," between Warren and Pittsburgh, Mr. Kendall having the trusteeship of that territory. This, after a time, was granted, when immediately a line was constructed from Cleveland to Warren, and the two lines became the Cleveland, Warren and Pittsburgh Telegraph Company. Mr. Kendall received out of this enterprise about \$300. It became one of the straws designed to suck the O'Reilly orange. Pew's correspondence with Mr. Kendall, in carrying out his mission, is curious. One of these reveals a consciousness of the awkwardness of his position. He writes:

"Although I have been wronged, yet I want to do what is honest and right. You will, no doubt, laugh at the idea of a man's being honest, as if such an occurrence were possible. I believe it would be a

phenomenon. I know not what more to say. Here I am, you will do with me as seemeth good in your sight."

To which Mr. Kendall replied :

"I suspected you were used by parties who intended a fraud, and it seems my suspicions were right. I know there are some honest men, and believe there are many ; but when men talk of honesty as impossible, and an honest man as a "phenomenon," they give reason to distrust their own honesty. You should never repeat such a sentiment. It is not true. It is likely to be taken as a confession that you are not honest yourself."

Pew was, however, a good, honest, hard-working man.

In addition to the Pew line from Fredonia to the State line of Pennsylvania, a contract was assigned to Tower Jackson for a line from Cleveland to Newcastle, 100 miles, the charge for the right being \$20 per mile. It was built, but did not pay expenses, and soon disappeared. A contract for a line from Terre Haute, Ind., to St. Louis was given to J. J. S. Lee, at \$10 per mile for patent, which he partly built. It soon fell into the hands of Mr. Wade who completed it ; but it did not pay expenses and died, his foreman, Doren, now chief builder for the Atlantic and Pacific Company, gathering up the debris. Still another contract was made with W. F. Kent & Co., of Zanesville, for a line from Wheeling to Uhricksville. Neither did this earn money enough to live, and it soon gathered up its feet and passed away. To Powers and Hotchkiss was assigned a contract for a line from Chicago to Rockford, Ill., thence to Freeport in the direction of a connecting line to Galena, and from Rockford to Janesville, Wis. Contracts were also issued to build lines from Cleveland to Zanesville, O., and Wheeling, 150 miles ; from Cincinnati to Terre Haute, 200 miles ; and from Zanesville to Mount Vernon, O. From Milwaukee to Green Bay, 160 miles, a contract was sold to Powers and Hotchkiss at \$10 per mile for patent ; and also a line from Milwaukee to Madison, thence to Galena, with a branch from Madison to Baraboo, 200 miles, called the "Milwaukee, Galena and Chicago Telegraph Company." Of this company W. Duane Wilson was President, who, with David J. Powers and E. D. Clinton, formed an executive committee for the management of the

line. A line was also projected and built from Wheeling, via New Philadelphia, Zanesville, Newark, to Columbus, and from Munroe to South Bend, Mich.

A contract was also made with M. B. Wood who assigned his interest to J. H. Wade, who, by this time, had been burned out at Milan and had given up both operating and painting, for a line from Cleveland to Cincinnati, 350 miles in length, which was called the "Wade line," and of which Anson Stager became President. This was one of the few western lines where the patent was paid for in cash. One of the articles of agreement in the granting of the patent for this line, and which was made a fundamental article in all similar lines, was as follows:

"It is also mutually agreed and understood, that any company formed, by said Wood or his assigns, for the construction of said line, shall provide in their articles of agreement and association, or other organization, to connect with the Erie and Michigan Telegraph Company at Cleveland, in Ohio, and give all business which may pass over any part of said line, directed to any point on or beyond the Erie and Michigan Telegraph line to said Erie and Michigan Telegraph Company, and to refuse all connection with every other Telegraph Company that will, in any respect, divert business from the Erie and Michigan Telegraph Company."

The company organized under this grant was called the "Cleveland and Cincinnati Telegraph Company," with a capital of \$100,000.

In these telegraphic extensions Smith did not limit his vision. As early as when he held the control of the New Orleans and Ohio line he had in his mind's eye a line, via the lakes, for southern business. Writing to T. C. H. Smith, President of the New Orleans and Ohio Company, December 15, 1847, he says:

"I may also remark that, by other lines in the progress of early organization and completion, different points of this line will be connected with the main line that is being constructed from Milwaukee to Buffalo, and which will be completed early in the spring, and very soon with another line from Dunkirk along the line of the Erie Railroad to New York, securing over this line the most direct intercommunication between all the lake region and New Orleans, as well as with New York and all cities East, both via the lake lines and the seaboard line from Baltimore."

He was in for no small business.

All of these and others not named, during 1847, 1848 and 1849, were pushed into life, and some of them as speedily expired. They were built in conformity with the plan of opposition Smith had determined on in the following announcement :

"Competition, bold, decided, tempting competition is our policy, and let the law drag its slow length along, in the meantime, as a mere auxiliary. The argument is, that patentees mean to sink all questions of profits of construction and patent on all the cross and connecting lines, and open direct arteries of communication for all the West, without touching, necessarily, the Pittsburgh and Columbus disputed routes. They are to be in law, and let those put their funds there who desire.  
\* \* Livingston and Wells, and McKee, Cornell and Speed are all now energetically pushing matters in the west. There will be no more lagging; I shall go there in person the moment necessity for it ripens."

Col. J. J. Speed, the President of the Erie and Michigan Company, had a fancy for experimenting, one of which led, curiously enough, to a low appreciation of the value of insulation. He caused the following to be published in the Detroit Daily Advertiser, March 19, 1849 :

"The common theory that the earth is so good a conductor of electricity that it is necessary to insulate the wires in an entire metallic circuit, in order to prevent the current from making a cross-circuit through the ground from one wire to the other, appears to be incorrect. Some recent experiments by Col. Speed seem to warrant the opinion that uninsulated copper wires can be laid in the earth, and, if separated a few feet, can be worked for any distance. The experiment was as follows: One mile and three-fourths of copper wire was stretched by the side of the Central railroad, in the ditch, and under water. The ends of the wires were connected with the T rail—the iron rail being in the mud and water—making the entire circuit three and a half miles long. A battery of one cup at one end and a relay magnet at the other, the circuit worked well. The wire was then divided, and the two wires laid side by side in the ditch, under water, and as near together as possible and not touch, making an entire circuit of copper wire of one mile and three-fourths in length. With one cup the circuit worked well, but when the wires, at any point in the line were taken out of the water and laid on a slip of paper saturated with nitric acid, the current made a cross circuit through the acid."

"There are two iron wires on the western line to Dearborn, ten miles

from Detroit. The two iron wires were connected at Detroit with a battery of one cup. Two ground wires at Detroit were also connected with the opposite poles of the same battery. The wires at Dearborn were carried one hundred feet through the water, as near together as possible and not touch, to the relay magnet. The line worked well both ways, the operator at Dearborn, where there was no battery, being able to break the circuit at Detroit. If this theory is correct, telegraph posts will soon disappear; the wires will be laid in the ground."

On the strength of this experiment it is thought, F. O. J. Smith ordered a wire strung from New York to Boston without insulation. But it was, of course, an utter failure. The experiment of Speed had no application where a vigorous current was essential, and was only possible on short distances.

Early in the year 1855 the New York and Mississippi Valley Printing Telegraph Company (an organization started in Rochester, N. Y., to build lines in the Western States under the House patent), through Hon. Samuel L. Selden and Isaac R. Elwood, of Rochester, the latter of whom was Secretary of the Company, offered to the Erie and Michigan Company, through its President, Ezra Cornell, to consolidate the interests of the two companies upon a joint capital of \$500,000, of which the Erie and Michigan Company should receive \$150,000. This was formally accepted by the stockholders of the latter Company, August 8, 1855, and Ezra Cornell, D. S. Walbridge and J. M. Howard were appointed a committee to execute the contract of consolidation. On the part of the New York and Mississippi Valley Printing Telegraph Company, Hiram Sibley, Samuel L. Selden, and Isaac Butts were appointed to the like duty. It was stipulated that the name of the consolidated company should be THE WESTERN UNION TELEGRAPH COMPANY. In due course the contract was executed and went into effect November 1, 1855. The directors who ratified the contract on behalf of the Erie and Michigan Company were

Ezra Cornell,	M. B. Wood,	J. M. Howard,
C. Joslin,	C. C. Sholes,	C. E. Wendell.

The name Western Union Telegraph Company was given at the instance of Mr. Cornell who had already affixed it as part of the title of the New York and Erie Telegraph Company, east of Dunkirk. The

amount of stock issued by the Erie and Michigan Company, at the period of the consolidation, was \$117,250. The surplus of \$32,750, left after an even exchange of stocks, was given up for the common uses of the new organization. The assenting parties on behalf of the New York and Mississippi Valley Printing Telegraph Company to this union, by which the Western Union Telegraph Company, now known throughout the world as one of the most successful and most extensive of modern enterprises, was ushered into existence, were

Francis Morris,	Jonathan Child,	Henry R. Selden,	D. A. Watson,
R. W. Russell,	Isaac Butts,	James Chappell,	W. Alling,
Alvah Strong,	Henry S. Potter,	Hiram Sibley,	J. Medberry,
Samuel L. Selden,	Freeman Clarke,	S. B. Jewett,	J. H. Wade,
Samuel P. Ely,	G. H. Mumford,	Alfred B. Potter,	W. H. Cheney,
	Isaac R. Elwood,	E. P. Willis.	

This consolidation carried with it several important interests which affected the future fortunes of men since more or less prominent :

1. The pledges of connection with the New York, Albany and Buffalo Telegraph Company were agreed to be faithfully maintained.
2. The Morse patents acquired under the act of consolidation were not to be used to the injury, direct or indirect, of the lines of the "Illinois and Mississippi," "Wisconsin State," and "Ohio, Indiana and Illinois" Telegraph Companies.
3. The personal contract made between Ezra Cornell and the Michigan Southern Telegraph Company, executed May, 1855, of the stock of which company Mr. Cornell, by aid received from the New York, Albany and Buffalo Company, had become by purchase at public auction a large owner, was recognized and formed part of the obligations of the consolidated company.

In addition to these interests, schedules of apparently valuable assets were exhibited by the bride and bridegroom in an amiable effort to show how much each was to gain by falling into the other's arms. The diamonds, it is true, had a look of glass, and some of the pearls were paste. This, however, did not hinder the wedding. The bells were duly rung, the marriage celebrated, and the Western Union Telegraph Company soon after registered its name among the record of American enterprises.

## CHAPTER XXIII.

## THE NORTH-WESTERN TELEGRAPH COMPANY.

THE Telegraph lines built west and north from Milwaukee under the stimulating agencies employed by F. O. J. Smith, in the few years succeeding 1847, have enjoyed, especially in more recent times, a somewhat exceptional success. After passing through the hooping cough and measely epochs which seemed to be the birthright of all the early telegraphs, and in which so many an infant company around whose garlanded cradle hope had told a flattering tale, expired, two companies were finally organized which, by a subsequent prudent union and intelligent management, have culminated in a striking success in what is now so well known as "The North-western Telegraph Company" with its headquarters at Kenosha, Wisconsin. The first of these organizations was the Wisconsin State Telegraph Company, comprising all the lines in Wisconsin, which had been built under contracts made with Ezra Cornell, as agent for the Morse Patentees, and of which C. C. Sholes, a graduate of the Erie and Michigan Telegraph Company, was one of the active and successful pioneers. This company was incorporated by the legislature of Wisconsin, March 21, 1855, and chose for its first board of directors, Ezra Cornell, J. S. Draper, J. B. Stone, C. C. Sholes and J. Murray. At the meeting of the board for organization, Mr. Sholes was chosen President and Mr. J. S. Draper, Superintendent. On October 25, 1856, this company formed an exclusive connection by a very carefully worded contract, with the lines of the Erie and Michigan Telegraph Company.

Mr. Zalmon G. Simmons, a native of Marcy, Oneida county, New

York, having been born there September 10, 1828, was at the time of the organization of the W. S. Telegraph Company, a merchant in Kenosha, Wisconsin, and had acquired a very marked reputation for energy and integrity. This soon pointed him out to Mr. Sholes as a man whom it would be desirable to interest in his telegraphic work. Mr. Simmons, on his part, became an easy convert, and, after a brief examination, soon entered heartily into Mr. Sholes's plans. Accordingly Mr. Simmons, after a liberal investment, became a director, and in December, 1858, was chosen secretary and treasurer. Mr. Sholes and Mr. Simmons, now acting together as officers of the company, projected new lines, which were carefully extended to all points of prominence throughout the state, while the utmost caution was taken to render every new structure solid and reliable. Mr. Draper resigned his superintendency in 1857, and Mr. Sholes thereafter personally attended to his duties.

In 1859, Mr. Simmons, without abating his interest in the telegraph, accepted the presidency of the Kenosha and Rockford Railroad Company, and by his energy and the free use of his private means, greatly contributed to its successful completion. When the disasters which followed the commercial panic of 1857 threw the road into the hands of the first mortgage bond holders, Mr. Simmons was chosen general manager, and so continued until, at his own urgent request, he was released. He now gave himself up to telegraphic pursuits, perceiving in the western field a fine opportunity for the development of the system, if prosecuted with care and discretion. By the resignation of Mr. Sholes, occasioned by ill health, which eventuated soon after in his death, and upon the death, also, in 1864, of Mr. A. B. Smith, who was elected as Mr. Sholes's successor, Mr. Simmons was chosen president of the company, and at once gave himself up to its executive duties with characteristic zeal. To aid him in these he appointed Mr. S. Robertson, a man of much prudence and perseverance, superintendent of construction.

In 1865, the Wisconsin State Telegraph Company purchased the lines of the Minnesota State Telegraph Company which was also a combination of lines built under the Morse patent, and in which Mr. O. S.

Wood, of Montreal, had acquired a large ownership. On the purchase of the Minnesota State Telegraph Company's lines, it was resolved to sink both names, and under a general state law to reorganize under the title of the NORTH-WESTERN TELEGRAPH COMPANY. This was accordingly done. Mr. Simmons was elected president of the united company, Mr. Wood became a director, and business assumed new importance and rapidly increased. In 1868, Mr. Wood was appointed general manager and, for a time, made his home in Milwaukee, returning, however, in a year or two thereafter, to Montreal. In 1872, Superintendent Robinson, after a faithful and valuable service, was elevated to the vice-presidency, and Mr. Charles H. Haskins, a man of fine culture and an educated electrician, was made general superintendent, a position he still occupies. Mr. Haskins is one of the few scientific writers on practical telegraphy who have become authors of works on that subject, and has issued the only American work on electrical measurements yet published. Mr. Haskins has also suggested some important practical uses of the induced current in repeating processes, and is the inventor of a galvanometer thus described by a correspondent of the *Telegrapher* :

"Dr. Haskins dispenses with the use of resistance coils by using two galvanometer coils on the differential principle. The coils are placed one *under* and the other *over* the needle, and the coils exert an equal force on the needle when they are equidistant from it.

The upper coil is arranged so that it can be raised perpendicularly, and its upward movement operates a rack and pinion, which turn a vernier on a graduated scale. If, by the introduction of resistance in the lower coil, we lessen its magnetic force and increase that of the upper coil by increasing its proportion of current, it is only necessary to adjust the upper coil the proper distance from the needle to bring it to zero, and the vernier will point to the number of ohms on the graduated scale representing the unknown resistance introduced in circuit with the lower coil."

His gravity battery is well known. Mr. Haskins was honored, in 1876, by being appointed, by the Governor of Wisconsin, a member of the State Board of Charities and Reforms.

Mr. Haskins is also the inventor of a system of duplex transmission,

which, in some important respects, is superior to any other arrangement for that purpose. Its great merit consists in the wide margin of its effective force acting on the armature of the relay, which enables it to work freely over escapes and changes of resistance which would effectually stop other systems. Mr. Haskins patented this system August 24, 1874, and has since used it with much success upon the lines of the North-Western Telegraph Company. In this invention a condenser was at first used, which discharged itself into the line wire so as to destroy the static discharge. A recent improvement dispenses with the condenser, and greatly enhances the meritorious character of the invention, and of Mr. Haskins as an inventor.

The secretary of the company, Mr. H. B. Hinsdale, is a most worthy and eminently faithful officer. The board of directors is constituted as follows: Z. G. Simmons, O. S. Wood, James H. Howe, Daniel Head, R. Simmons, S. Robertson, H. B. Hinsdale. The management of this company has always been popular. It has carefully nursed its business and provided for public wants without intruding itself very prominently upon public attention. No more valuable telegraph property exists on the continent. It covers nearly all of Wisconsin, the northern peninsula of Michigan, the northern portion of Iowa, the whole of Minnesota, Dakota, and a part of the Canadian province of Manitoba. Its extreme north-western offices are Fort Garry, Bismarck and Fort Sully. The number of its offices is about 550. An important contract of mutual active alliance to exist for fifty years, was entered into February 3, 1871, with the Western Union Telegraph Company, by which the position and value of the company's property was greatly strengthened and assured.

The capital of the North-western Telegraph Company is \$1,500,000, and is held by a comparatively limited number of stockholders. In this company, Emory Cobb, first of Fredonia, New York, where he was an operator, and afterwards Superintendent of the Western Union Telegraph Company at Chicago, is a large holder. Its affairs are managed with great privacy and prudence, and seldom if ever obtrudes itself before the public.

As an executive officer Mr. Simmons is methodical, punctilious and

exacting, yet kind and approachable. He is much esteemed as a citizen, has an open hand for genuine works of benevolence and charity, and exhibits a large and intelligent comprehension of the uses and duties of honestly acquired wealth.

In striking contrast to the history of the North-western Telegraph Company, and noticed in this connection only because it sought to traverse a portion of the territory of that company, is that of a pretentious affair, organized under the laws of the State of Illinois, in December, 1867, called "The Great Western Telegraph Company," with a capital of \$3,000,000. This capital was composed of 160,000 shares of \$25 each, bearing a stipulation that only \$10 per share should be called in. The margin of sixty per cent was the bait for subscriptions. David G. Gage, of Chicago, was president, Josiah Snow, who originated the scheme, secretary, and Isaac G. Lombard, treasurer. A number of prominent men, in Chicago and vicinity, were named as directors.

The contract for construction was given to Selah Reeves, at \$300 per mile for a one wire line, and \$100 per mile for each additional wire. The whole capital was thereupon issued to Reeves, who transferred it to Snow as trustee. Snow was to sell the stock and pay Reeves as he proceeded with his contract. As a show of generosity which must have charmed the stockholders, Reeves bore the cost of floating the stock, organizing the company and also all salaries and legal expenses during the progress of construction. Canvassers were at once sent out through Illinois, Michigan, Indiana, Wisconsin, Minnesota, Iowa, Missouri, Nebraska and Kansas, and subscriptions obtained to the amount of over \$2,000,000, on which the canvassers collected five per cent for their commission. In a brief period about \$175,000 was collected by assessments and ostensibly paid over to Reeves on his contract.

The lines built by Reeves for the company, were from Chicago to Milwaukee; Chicago to Omaha, via Davenport, Des Moines and Council Bluffs; Omaha to St. Josephs, Kansas City, Mo., and Topeka, Kansas, and branch lines to Springfield, Galesburg and Peoria, Illinois. Other routes were planned but were not built upon.

While Reeves was thus busy rushing up his mushroom lines, and

Josiah Snow smoked his cigar over the assessments, Jeremiah Terwilliger, of Chicago, who had subscribed \$2,500, payable in safes at market rates, and had delivered them to the value of \$600, became uneasy and dissatisfied. In November, 1869, he filed a bill in the Circuit Court at Chicago, charging collusion on the part of Gage, Snow and Reeves, to defraud the stockholders. He asked the court that his stock might be issued to him for which he tendered full payment, and that an election of a new board be ordered. Terwilliger failed in his suit, except to obtain his stock in exchange for his safes. On appealing, however, in 1871, to the Supreme Court of Illinois, Reeves' contract was declared fraudulent, and an order for a new election granted. The Circuit Court, also, to which the case was remanded, appointed a Master before whom an examination of the accounts of Reeves was heard. A new board of directors was elected and new officers chosen. In this condition of affairs a vigorous but fruitless effort was made to throw the company into bankruptcy. Meanwhile the lines were earning nothing and debts everywhere rapidly increased. Attachments were issued against the property in various states, and all seemed going by the board, when, in 1874, the Circuit Court of Chicago appointed a Receiver, who had the lines overhauled and obstructions to business removed. This required the expenditure of several thousand dollars which, under an order of the court, became a preferred claim on the property. Even, however, after the lines were thus unbound, and every thing cleared for business, they were operated at a loss until, to save them from utter ruin, a temporary lease was effected to the Western Union Telegraph Company. With the competing lines occupying the same routes and without important connections of any kind, its future is not doubtful. Meanwhile the worthy Secretary, now retired from earthly cares, smokes his cigar in Brooklyn, N. Y., and possibly he and Reeves sing together, as they sit side by side on the door-step on summer evenings, as of yore —

“ We share each others joys,  
Our mutual burdens bear,  
And often for each other shed  
The sympathizing tear.”

## CHAPTER XXIV.

## THE NEW YORK AND ERIE TELEGRAPH COMPANY.

IT was essential to Mr. Smith's plans that the arrangements for the construction of the lines from Buffalo to Milwaukee should be well organized before he mooted the idea of their continuation to the seaboard by a wholly independent route. Having accomplished this he entered into a contract with Ezra Cornell and J. J. Speed, Jr., to build the "New York and Erie" line from Dunkirk to New York by way of the southern tier of counties. This was to cut off the New York, Albany and Buffalo Telegraph Company from Western business. In the matter of the patent for this new line Smith became both vendor and vendee. The significant feature of the contract was as follows:

"And on the completion of said line with either one or two wires, and the payment of said sum of fifty dollars per mile, said Smith shall make, or cause to be made, the requisite conveyance of the exclusive right to use and construct for use said line of telegraph, under said Morse's letters patent, with all the rights and privileges conferred by said letters on said line, or that may accrue from or by any extension or renewal of said letters, and so as to invest in said Cornell and Speed one-half ownership thereof, and reserve in said Smith one like half ownership thereof; and thereupon the said Cornell, Speed and Smith shall unite in making the requisite conveyance to such articulated company or association herein contemplated, the like title of, and under said letters patent, to the extent of the number of wires such company shall from time to time put on said line, they paying therefor to said Cornell, Smith and Speed the sum of one hundred dollars per mile, as aforesaid, for each wire so added to the first one put up, and ready for use of (No. 9) number nine iron wire, of best quality, and equally insulated with the first wire so put up, the price so paid to be divided among and by



Engr. by R. O'Brien

Yours Truly  
S. H. Tillotson

said parties in manner aforesaid, to wit, one-half of the excess over the actual cost of the work to said Smith, and the other half to said Cornell and Speed."

The construction of the New York and Erie line was commenced in August, 1847. It was built with forty poles to the mile and was probably the first of that character. The apparent solidity of such a structure indicates what was expected from it. It was undoubtedly designed to carry the bulk of western business, which, in common justice, belonged to the New York, Albany and Buffalo Telegraph Company, one of the first and best lines constructed under the Morse patent, and in which Prof. Morse and Mr. Kendall held a large interest. Moral questions, however, had not much weight with Mr. Smith, in such cases. Against the construction of this line, for the purpose designed, Mr. Kendall vigorously protested. But Mr. Smith had a hook in his nose which Mr. Kendall did not realize until his partner drew the string. Mr. Kendall had quarreled with Theodore S. Faxton, the President of the Buffalo Company, respecting the rights of side lines, which Faxton either would not understand, or, what is more likely, would not concede. Mr. Faxton was not partial to concessions of any kind. Mr. Kendall had a temper of his own which, on occasion, asserted itself. In a somewhat unguarded moment, and under the irritation of Faxton's opposition to what he regarded as essential to the interests of Faxton's company as well as his own, he favored a plan to coerce the old stage-driver, and wrote Smith as follows:

"WASHINGTON, *October 14, 1846.*

"Though Mr. Faxton conceded, at Albany, that a majority of the stock on the Buffalo line was against him, on the subject of connection with side lines, he has lately refused to form the connection we required, except with Livingston and Wells. I have remonstrated; have indicated that the stockholders will decide the question in spite of them; have stated that if we cannot obtain from them the connection we are morally bound to furnish, and which is necessary to give value to the side lines, we shall be compelled to run another line through the State for that purpose, leaving them a branchless trunk.

\* \* \* \* \*

It would be a good business to run ANOTHER LINE THROUGH THE

STATE, just to give these connections, particularly if it were extended to Erie on the one side, branching to Springfield and New York on the other."

This, of course, was uttered as a threat which he had no fixed purpose to carry out. Perhaps a fair interpretation of it might even limit its meaning to an outlet for side lines, although such a line could not but be regarded as a constant menace. Mr. Kendall could not afford to endanger his interests in the New York, Albany and Buffalo line. From it both he and Prof. Morse drew their earliest revenues, and its success had made possible, and had laid the basis of a very important personal contract between himself and Prof. Morse, which resulted in an ample fortune to both. When, therefore, Mr. Cornell, under Mr. Smith's directions, began the construction of the New York and Erie line, he protested against it. But Smith remembered Mr. Kendall's letter, drew it from its envelope and held it up in triumph. It was his vindication. He wrote to Mr. Kendall with a sarcasm quite characteristic, that he proposed to be his friend now and would help him to whip Faxton! He told Mr. Cornell to push on his work, and experienced a positive delight in knowing that his foot was, for once, on Mr. Kendall's corns.

The route of the New York and Erie line was along the public roads from New York through Harlem, White Plains, Sing Sing, Peekskill, Newburgh, Goshen, Middletown, Honesdale, Montrose, Binghamton, Ithaca, Dansville, Nunda and Pike to Fredonia. Its length was 440 miles. A line, previously built from Ithaca to Binghamton, was purchased and became a part of the main line. The terms of construction were \$250 per mile for the first wire and \$100 per mile for each additional wire. About \$27,000 was raised in cash subscriptions. Number nine wire (plain) was used for the conductor. It is easy to see that with such charges for patent and construction, the cash subscribers held, when the capital came to be apportioned, but a small minority of the stock.

The company was organized October 1, 1849, as the "New York and Erie Telegraph Association." The trustees were Douglas Boardman, Nathan T. Williams and Henry W. Sage. Mr. Smith would not

assent to organization as a company. In a manner quite his own, he sent Thomas M. Clark, formerly treasurer of the "Magnetic," to the meeting for organization, with directions to manage so as to be appointed not only director, but, if possible, secretary and treasurer, so as to secure control of its earnings. He imagined the New York and Erie line was to be a great conduit through which western gold would come clinking down to the sea, and he wanted a reliable man at the hopper. At the same time he advised Mr. Cornell not to assume the appearance of supreme control, and yet to direct, if possible, all arrangements. He also advised that the cash subscribers mortgage their stock at short date, to the patentees, for the cost of the patent, so as to secure its issue. All these measures showed how thoroughly he understood the meum of the case. In the meantime, also, he was heaping up a rapidly accumulating claim on Mr. Cornell for both patent money and profits of construction which, in after years, he caused him bitterly to remember.

The motives for building the Erie line are thus stated by Mr. Cornell, and explains the point of dispute about side lines:

"I became interested in a line from Ithaca to Auburn, with certain rights as to connection with the Buffalo line at Auburn, a part of which was, that messages should go from Ithaca to New York at the same charge that an equal distance was charged on the Buffalo line. This I promised the citizens of Ithaca; the line was built, and we were compelled to charge seventy-seven cents from Ithaca to New York, when the charge from Buffalo to New York was but fifty-two cents—the former distance only 350 miles and the latter over 500 miles. The patentees entered into an arrangement to correct the error. An agreement was made with Mr. Faxton to carry out the original agreement by paying him an equivalent, which they agreed to, giving his company the patent for the third wire. Mr. Faxton told me, afterward, that he knew the original agreement all the time, but here he saw a chance to compel the patentees to give up the right of putting up a third wire, and thought best to avail himself of it.

"At about this time I had become interested with Speed in the contract for the Erie and Michigan line, and I questioned Mr. Faxton, President of the New York and Buffalo line, as to his notions about the getting the western business to New York, and if he would have a wire put up to accommodate that business? His reply was that he would not as long as the business could be got over two wires by full working,

or working day and night, as 'he had rather have more business than facilities, than to have more facilities than business.' Faxton, also, in disregard of the vote of his board of directors, connected himself with the O'Reilly lines at Buffalo. I am fully convinced that the policy of Mr. Faxton, which has been sustained by the majority of his stock on that line, justified myself and the patentees (meaning F. O. J. Smith) in the building of the New York and Erie line. If I had not occupied the ground O'Reilly would have done so."

If Mr. Faxton did assume the unwise position thus ascribed to him, it had no sympathy with his board. In the proceedings of Faxton's company an offer is broadly made to the Erie and Michigan Company, of an exclusive wire, of the best quality, to be erected for their special use, and which was afterward accepted.

Mr. Cornell organized a company to construct a line from Ithaca to Auburn, with the design of continuing it through to Clyde and the canal towns of western New York, the proper, though hitherto unoccupied territory of the New York, Albany and Buffalo Company. He had another company organized of which the Hon. John H. Selkreg was President, to run a line from Binghamton via Owego, Ithaca, Trumansburgh and Watkins to Corning. Still another line was given out to O. E. Allen & Co., of Poughkeepsie, for a line connecting that town with the village of Cold Springs, on the Hudson river, the patent of which was sold at \$25 per mile, cash. Still another feeder was projected between Newburgh and Albany via Kingston, Catskill and Athens, the contract for which was assigned to Henry C. Hepburn of New York, and which was organized as the Hudson River Telegraph Company, but pledged to connect with the Erie. This line was built with a fine galvanized wire, but the patent was never paid for. It became a Bain line, and afterward formed a part of the "Merchants State Telegraph Company," constructed by Henry O'Reilly, of which Marshall Lefferts was the President, and was finally purchased, with that line, by the New York, Albany and Buffalo Company. With all these feeders, and with a line of 1,000 miles penetrating the thickest populations of the west, the "New York and Erie Telegraph" was a perpetual failure from the start. It was a great artery, but had no faculty for propelling blood.

While Mr. Cornell was constructing his lines through the southern

counties, taking the wagon roads for his route, a man of keen eye and practical sense was watching him. Charles Minot was the superintendent of the Erie Railway Company. He early saw the value of the telegraph to railroads and how it might be employed to direct the movement of trains at every point along the road. It is not unlikely that his knowledge was largely acquired by conversations with Mr. Cornell, whose home was in Ithaca. Be that as it may, Mr. Minot induced his company to construct a line of telegraph poles and wires along the margin of the railroad property without reference to patents and without determining the machinery to be employed. It was constructed by the railroad workmen. Mr. Cornell supplied insulators and also Morse machinery for the offices to be opened. The insulators, curiously enough, considering Mr. Cornell's practical knowledge of insulation, were of brimstone, inclosed in iron hats, and utterly valueless. By furnishing these articles he thus conveyed the idea that he approved the railroad movement and at which the patentees took great umbrage. On its completion Mr. Minot offered to purchase the Morse patent for railroad purposes, on fair terms. Mr. Smith refused to sell. He invited the Erie Railroad Company to become stockholders of the Telegraph Company, and thus acquire the right to use the Morse instruments. By this time, however, the Erie Telegraph had so shown its unreliable character that Mr. Minot declined the invitation, remarking that "he understood the Telegraph Company to be in a very doubtful state." He wrote, also, very placidly to Mr. Smith that his notion was, that after its completion "our company would make an arrangement with the Erie Telegraph Company to work it for us." It seems very probable that the line was built on some such understanding. It so happened that after a short struggle against circumstances the wire of the Erie Telegraph Company was, in 1852 and 1853, transferred from the poles along the turnpike to those of the railroad company, and by gradual processes the line became merged with and faded into the property of that company. In 1852 the title of the company was changed to "The New York and Western Union Telegraph" Company, and on January 11, 1853, was leased to the New York, Albany and Buffalo Telegraph Company, for two years, with the option of three more, at the rate of

\$2,000 per annum. This closed the line as an opposition, the New York, Albany and Buffalo Company arranging to give the Erie and Michigan Company a special wire by way of Buffalo, for their exclusive use, to New York. The lease was so unproductive that it was abandoned at the close of the first two years. After that the New York and Western Union Telegraph Company gradually vanished away.

In 1851 the Erie Railroad Company, having constructed their telegraph, placed it under two superintendents. L. G. Tillotson was entrusted with the eastern section, Owego to New York, and — Chapin from Owego to Dunkirk. Much fierce controversy between Mr. Cornell, F. O. J. Smith, Mr. Kendall and the Railroad Company grew out of these arrangements in which the patent interest was practically lost. The constant occupation, also, of the wire, by the Railroad Company in the management of the road, rendered it useless for commercial business, and as a route for public telegraph business it long ceased to have any significance. In 1864, however, the right of way was given by the Erie Railroad Company to the Western Union Telegraph Company to construct a line of several wires along the unoccupied side of the road bed under a contract for a certain division of the proceeds of offices which that company might open thereon. Under this right a new and thoroughly appointed line was constructed by Mr. Tillotson for the Western Union Company during the following year. This at once made the route valuable. Ample facilities were afforded for public business without interfering with the railroad service, and some of the most valuable through wires are now borne on the poles planted along the road bed of the Erie Railroad.

In 1866, Mr. Tillotson, who was too active and ambitious to be contented with the mere superintendence of the Railroad Telegraphs, having established a large and growing business in New York as a Telegraph and Railroad supply agent, and in which he has since acquired an ample fortune, resigned his superintendence and was succeeded by the present efficient occupant of that very important trust, Mr. W. J. Holmes. Mr. Holmes entered the service at Mast Hope, New York, in 1856, where he remained until 1859, when from a perception of his ability and fidelity to the company, he was appointed divis-

ion operator of the Delaware Division, having an important jurisdiction over all the offices therein. In 1862 he was transferred to the headquarters of the Erie Railroad Company in New York, and in 1866 succeeded Mr. Tillotson as General Superintendent. Mr. Holmes is



W. J. HOLMES.

also District Superintendent of the Western Union Telegraph Company, and is much esteemed both for his personal qualities and his fidelity and efficiency as an officer of the company.

Although there may have been occasion for complaint at the manner in which the managers of the Erie Railroad Company "acquired" the use of the Morse apparatus, and in which the agent of the patent was chiefly

at fault in the insane refusal to grant its issue even when a fair value was offered therefor, the loss was not complete. The Erie Railroad Company, through Mr. Minot, and especially through his successor D. C. McCallum, attracted the eyes of the whole country to the value of the telegraph as a vital agent in the management of railroads, the running of trains, and the safety of passengers. In an exceedingly lucid report read to the Board of the Erie Railroad Company by Mr. McCallum, he used the following language: "As a matter of actual value, and after much reflection and experience, I should greatly prefer a single track railroad with a telegraph by its side to direct its trains, than a double track without it." This language attracted universal attention. It had much to do in

establishing the intimate connection between the railroad and the telegraph interests of the country which now everywhere exists to so much mutual advantage.

After the completion of the "New York and Erie," and all the numerous lines which Mr. Cornell had set in motion, Mr. Smith began to weary for his pay. He wrote to Speed "Cornell should now direct steps to have all outstanding lines squared up. His death would involve his family, myself, Kendall, Morse and Vail in a doleful melange. Die he must like all the rest of us." Smith wrote truth, which a very few years made solemn. Both are now dead. It will never be known how much of Mr. Cornell's fortune was needed to settle the long-accumulating and carefully noted charges for that which Morse and Vail early refused to accept or share in,— "the profits of construction."

Mr. Cornell never became warmly attached to Mr. Morse, and claimed for himself an early knowledge of some important features of practical telegraphy. He was well posted in the mechanic arts. He invented a plough to make a trench to receive the pipe which enclosed the wires of the government experimental line between Baltimore and Washington and which he exhibited to Professor Morse, in Portland, in 1843. The lead pipe referred to was made in New York and was a curiosity. It was constructed by first casting the lead into ingots of eighteen inches in length with a hole through each lengthwise, and then passing the ingots through rollers over a hollow mandrel through which the four conducting wires passed. The ends of the ingots were then soldered and the condition of the whole tested by an exhaust air-pump. Mr. Cornell objected to this plan and recommended a force-pump, which he claims would have made the pipe a success, by developing the defects which the other plan only aided the atmospheric pressure to conceal. Mr. Cornell also claimed that he suggested important improvements in the construction of the register which Prof. Morse adopted. These were entirely mechanical. The general principle was the same.

Mr. Cornell claimed also what he regarded as an important improvement in the relay magnet. Prof. Morse, he asserted, deemed 3000 convolutions of cotton covered number 16 wire round the core essen-

tial to a competent magnet. This is somewhat curious since Morse's earliest magnet was not more than two and a half inches in diameter. It is true, however, that very large magnets were constructed by Prof. Morse and Mr. Vail, both deeming it of advantage to diminish resistance to the lowest amount. Mr. Cornell says he first suggested small wire such as was in actual use in a galvanometer then before them during the tests connected with the government line. Prof. Morse objected to the galvanometer wire as offering such resistance as to cause heat and incandescence such as appeared in the experiments of Colt and Robinson with the sub-marine battery. As this seemed conclusive, Mr. Cornell began to make what came to be known as "wind mill" magnets, so named from their peculiar form.

Four magnets were arranged to act in concert upon the same number of armatures attached to the extremities of two brass arms fixed at right angles so as to form a cross. The helices of these magnets were four inches in diameter. Each helice contained two-thirds of a mile of wire. The first of these he used January, 1846, at Fort Lee. Mr. Cornell regarded these magnets as a great improvement on the large magnets first made, and in some degree they were. A better magnet was, however, constructed in Washington, as early as 1845, of number 32 silk covered copper wire, in Prof. Morse's rooms, by Charles T. Smith, now of New York, and no large magnets were constructed thereafter.

The following letter, while exhibiting the pleasant relations once existing between Prof. Morse and Mr. O'Reilly, in its allusions to the introduction of iron conductors and the modern fine wire magnets gives a proximate date to their introduction. Mr. O'Reilly had a keen eye for beauty, and seized, eagerly and enthusiastically, a practical suggestion. Mr. O'Reilly undoubtedly erected the first line having iron wire as the main conductor. Mr. Kendall directed him in December, 1845, to enquire into the practicability of its use, and on what terms it could be obtained, and hinting at the probable necessity of abandoning copper conductors. It was erected between Philadelphia and Baltimore, the section of which between the former city and the Susquehanna river was erected under my supervision and "tarred" by my own hands:

PHILADELPHIA EXCHANGE, *March 10, 1846.*

*Professor Morse :*

DEAR SIR — On your return through this city, I hope you will delay over one train to examine the instruments I am having made from drawings by Mr. Reid. I think they will not be unworthy of the name (the Morseograph) which I propose to engrave on them. I have often expressed the opinion that no instruments should be used that were not approved by the patentees on any line.

I am now personally attending to *cording* the line to Baltimore with iron four strand cord which I have had made for the purpose. As to the power of transmitting the fluid, you would not have doubted it (if you did at all doubt) had you been with us when a shock was sent through. I am perfectly satisfied that it is needless to coat with gum to preserve from rust; but as some think it best to do so, the iron cord is coated with coal-tar, the best article I have found after many trials.

Our line between Lancaster and Harrisburgh works elegantly, and the main and local batteries are reduced to so small a force of cups that one may almost begin to imagine that your telegraph will work itself. The new instrument I am making will combine solidity with beauty, and form a fine association with your new miniature magnets.

HENRY O'REILLY.

The harp register, above referred to, was manufactured by Clark & Son, of Philadelphia, and greatly pleased Prof. Morse. Its workmanship was superior, and its appearance gave a touch of romance to its performance which would find no favor in these more practical times. In truth, all effort to carry beauty into telegraphic forms has been to the disadvantage of those who attempted it. It had no such effect on Henry O'Reilly, whose tastes were as fine as his hatreds were bitter.



THE MORSEOGRAPH.

At Ithaca, New York, December 9th, 1874, at the age of 67, after accumulating a large fortune, and after having, for some years, retired from telegraphic pursuits, Ezra Cornell was carried to his grave. Few men's fortunes have borne so abundant fruit in the work of elevating mankind.

Mr. Cornell was born at Westchester Landing, New York, January 11, 1807. At the age of 21 he went to Ithaca, New York, where he ever afterward resided. His earliest occupation there was in the machine

shop belonging to the cotton mill of Otis Eddy, which occupied the site where now stand the stately buildings of Cornell University. Wisely retaining the stock issued to him by the companies he organized, it multiplied and increased in value until he became rich. It was then that, recollecting the years of his boyhood, when he struggled toward manhood with limited education and without the aids to acquire it which he now saw possible to provide for others, he conceived the idea of endowing a grand institution where instruction in any study, to any person, could be given. To this idea of a university he devoted the last ten years of his life, planning, with consummate perseverance, the foundations on which it was to rest. By a gift of \$500,000 he secured for it a State appropriation of 989,000 acres of valuable western lands and a generous charter from the State of New York. He also presented 200 acres of land as the site of the University and a College of Agriculture in connection therewith. He made other gifts amounting to about \$100,000, besides transferring to the institution the Jewett geological collection which had cost him \$10,000. Thus nobly, and broadly, and generously, did Ezra Cornell, without the advantages of early culture, and with the refinement only of an honest purpose and a manly understanding, make his name immortal.

Mr. Cornell was without brilliant qualities. There was little of poetry or joyousness in his nature. He was remarkable chiefly for strong convictions, pertinacity, exactitude, sound, stern judgment. He was a rigid economist, both in his own living and in all he did, and yet in the breadth of plan and in the amplitude and method of the organization of the University, Mr. Cornell developed a comprehensiveness which justly entitles him to greatness. His personal frugality appears now as a sacrifice to a sublime design. In this view of him the public will remember and regard him. Not long before his death Mr. Cornell was sent, by his townsmen, to the State Legislature, as a Member of Assembly and became, soon after, a member of the Senate of the State of New York, positions which he filled honorably to himself and usefully to his constituents.

## CHAPTER XXV.

## THE NEW YORK, ALBANY AND BUFFALO E. M. TELEGRAPH COMPANY.

NEW YORK, the gateway of the nation's commerce, the representative of its wealth, life and vigor, was the natural centre of a system which proposed to extinguish distance and annihilate time. It was to have been expected that the Metropolitan city, thought to be always wide awake to its own interests, would have been the first to realize the value of the telegraph, to have pushed it to universal employment, and centralized its control. But New York looked at the telegraph baby boy through unimaginative eyes, and glancing at it over its clean shirt collar and close-shaven chin, said, with cold emphasis, "it isn't mine." The capitalist wanted an investment. So far the telegraph was only an appeal to enterprise. Its power of gain was unproved. Had some men, at that time, properly estimated its capacity, realized its adaptation to human necessities, and applied to it their great wealth and skill of organization, the telegraph as a great national power would have, at an earlier period, gathered to it the elements of its future triumph. As it was, it found no friends in great Manhattan. It was reserved to the inland cities of Rochester and Utica to take hold of the giant child and rear it to national greatness.

In Utica as in Rochester, there has always been a circle of solid, somewhat rough and practical men, always wide awake to enterprises of this character, a kind of frontier men, quick, impetuous, daring, ready for any new thing which had in it the necessity of pluck, the possibility of success. Prominent among these, in 1845, were Theodore S. Faxton, John Butterfield and Hiram Greenman, the pioneers of the

old stage lines through central and eastern New York. They had all cracked their whips from the stage box, knew how to plant a good cow hide boot on the foot-board, and instinctively took to any thing that had "go" in it. These men became at once interested in the telegraph. It was in their line. And so first Butterfield, who was a great traveler, and then Faxton, found their way to Washington to watch the progress of the building and opening of the government line. They were not the men to buy pigs in bags, or to accept any thing at second hand. So they characteristically footed it out from Washington to see Ezra Cornell at his work, and then cautiously and quietly watched the opening of the government offices. With the utmost care they made themselves familiar with all the details, and formed their judgment of the value of the invention by what they saw. They soon determined to secure it for their own State, and early in June, 1845, Mr. Butterfield had closed a contract with Mr. Kendall to erect a line of Morse telegraph, curiously enough having its termini at Springfield, Mass., and Buffalo, N. Y., via Albany and Utica. Springfield was designed to be the connecting point with the New York and Boston Company, the absurdity of which was soon apparent. The eastern terminus was not long after changed to the city of New York. It was while Mr. Butterfield was returning from Washington on this errand that, on June 7th, he met, on the Albany night boat, Henry O'Reilly, of Rochester, to whom he imparted the nature of his project, and so fired him with the idea of a similar mission that, in eight days, Mr. O'Reilly had in his possession the important contract which bears his name.

On July 16, 1845, an association was formed in Utica, and arrangements initiated to construct the "Springfield, Albany and Buffalo Telegraph Line." Trustees were appointed. These were Theodore S. Faxton, John Butterfield, Hiram Greenman, Henry Wells and Crawford Livingston. The capital of the company to be organized was to be \$200,000 with the right of increase to \$250,000. The shares were fixed at \$50. \$100,000 of the capital stock was to be issued to the patentees as the consideration of the patent. The trustees became the contractors to construct the line which was to be one of two wires of number 14 copper wire, to have 25 poles per mile, and to be insulated with the

wooden pin and glass knob of the "Magnetic." The terms for building were \$200 per mile. The patentees had no interest in the contract, and very early in the construction of telegraphic lines Mr. Morse and Mr. Vail very properly refused to be connected with profits derived from this source.

Having wisely secured a change in the terminus from Springfield, Mass., to New York, steps were promptly taken to interest the public attention. This was first done by the construction of a line from Utica, N. Y., to the fair grounds near that city, then open. It was built by O. S. Wood in September, 1845. This gave a splendid opportunity to a large number of people from all parts of the State to witness the machinery in action. In the month following Mr. Wood, for a similar purpose, built a line from Buffalo to Lockport, which was opened November 7th, 1845. This was the first line opened in America for regular commercial business. The first message sent was one announcing a whig victory in Niagara. The tariff was peculiar. The charge for twenty-five words was twenty-five cents. For a twelve word answer the charge was twelve and a half cents. Extra words over twenty-five and under fifty were charged half a cent per word. Over fifty words the charge was quarter of a cent per word. The tariff for sending a name to and fro over the wire, and which was a primitive mode of "raising the wind" in the absence of regular business, was six and a quarter cents. A small fee was charged for delivery. It is a somewhat curious circumstance that Mr. Wood instructed and placed in charge of the Lockport office Hon. George H. Boughton, formerly canal commissioner, under whom Mr. Wood had, at a former period, served as subordinate engineer upon the Genesee Valley canal. Samuel P. Carter took temporary charge of the office at Buffalo.

Meanwhile the State was thoroughly canvassed by Mr. Faxton and a fair subscription secured. The earliest subscribers were Theodore Faxton, John Parsons, John Butterfield, J. B. Miller, Hiram Greenman, W. Norris and W. J. Bacon of Utica; J. W. Brooks, E. N. Buell, Asa Sprague, J. Chappell, William Pitkin, D. M. Dewey and Isaac Butts of Rochester; J. Wilkinson, L. H. Redfield, S. S. Weaver and Hamilton White of Syracuse; A. G. Smith, E. P. Williams and T. Y. How, Jr.

of Auburn; Henry Wells, George Davis, G. E. Hays, F. Rumsey and S. T. Otwater of Buffalo; Crawford Livingston of New York; E. Cornell, Ithaca; M. W. Priest, D. and J. Petrie, and A. G. Story of Little Falls. These subscriptions having been secured, the work of construction was energetically commenced.

The first section of the line was built between Albany and Utica. To this Mr. Faxton devoted his whole time and took great interest in its construction. He was a blunt, honest, rugged, fearless, outspoken man, and of very practical mental qualities. Some of his friends laughed at his zeal in the new enterprise, which many deemed utterly foolish and visionary. An Albany cashier, who, like many others, had admired Faxton for his energy and good judgment, hailed him one day from the bank door, and asked him if he was crazy.

"No more than you are" was the sharp reply, "nor half so much."

"Why, Faxton," said the banker, compassionately, "you are the last man I would have suspected to have been caught by such a visionary thing as this. Hadn't you better give it up and go home?"

Turning sharp upon him, and in vigorous Saxon of a somewhat irreverent type, Faxton exclaimed: "See here, old fellow, in a year from now you will be in such need of this crazy thing that you will be wanting to commute. Put that in your pipe, old fellow, and smoke it. Good bye." And the prophecy was true, for this financial functionary actually did apply to Faxton for commutation before the year expired. It was Mr. Faxton's turn to laugh then, which he did, and much enjoyed, but left the question of commutation for future consideration. He did not take to men who laughed at him or derided his judgment.

The line from Albany to Utica was finished January 31, 1846, and the offices were opened, at Utica, in "The Triangle," and at Albany in the Exchange building, by O. S. Wood and S. P. Carter. The relays were composed of eight coils of No. 16 copper wire weighing 10 pounds each, made by Ezra Cornell. The local battery was 12 cells of Grove! The machinery used by the company after the first instruments had done their work was manufactured by S. W. Chubbuck, of Utica, an excellent mechanic, and somewhat of an antiquarian. So excellent

were the instruments made by Mr. Chubbuck that the Canadian lines were supplied almost wholly from his shop. He was accurate and conscientious. He and his son,—the latter of whom inherits all his father's good qualities,—were the originators of the pony sounder which so soon attained a wide use, when the reception of messages by sound came to be the all but universal method. Some of the first fine wire relays were made by him. The operator at Utica, when that office was first opened to the public, was W. B. Ransom, afterward of San Francisco. H. F. Makepeace soon after became receiver there. At Albany S. P. Carter, aided by John Johnson, had charge. The opening of these offices caused great excitement. The newspapers of that day show how intensely the public mind was interested. One of the early feats of these primitive times was to telegraph, from Albany to Utica, the New York news brought up by the Albany boats of the People's line, which arrived in Albany at 5 A. M. A few words, by telegraph, was a great thing in Utica then. It fell on Judge J. W. Bacon, one of nature's noblemen, to go down mornings to poke the operators out of bed in time to get the news. Gustavus W. Swan, so well known in connection with telegraphy in New York, who succeeded Ransom, has still a vivid impression of Judge Bacon's fidelity as a poker.

Meanwhile the line was pushed through from New York to Albany, and from Utica to Buffalo. The latter was completed on July 3, 1846. The former was delayed until September 9th, because of the difficulty in procuring copper wire, and because it had to be built along the route of the public highway. Mr. O. S. Wood constructed the line through New York city, commencing at Post's Building, where the first office was located, through Exchange Place up Broadway to Union Square, and thence to Harlem via Fourth avenue. He had a lively time of it in obtaining right of way, and livelier still in handling the raw Irishmen, just landed, who put up his poles. The first pole was planted on the corner of Wall street and Broadway, August 17, 1845. The office at Poughkeepsie was opened October 19, 1846—N. T. Curtiss, afterward well known as the American Company's receiver at New York, having been appointed manager. Hudson was opened

October 28, 1846, Ben Carter manager. Troy was opened August 7th, by John Johnson.

On the upper section between Utica and Buffalo the offices were opened as follows: Syracuse was opened May 1st, W. Partridge, manager. Auburn, May 25th, by E. F. Barnes, who took charge soon after at Rochester. Geneva, November 9th, 1846, in the fire engine house, Park Fellows, manager. Canandaigua was opened somewhat later by C. C. Butler, now a wealthy owner of real estate in California. When the office was opened in the basement of Congress Hall, Rochester, June 1, the whole city seemed under a general excitement. As soon as the machinery was connected and the operator had adjusted his relay, Albany was heard pounding away at his key, and asking Rochester "Do you hear me?" On Rochester sending back the delighted reply, "To be sure I do," Albany quickly rejoined "Ha! ha! Dr. Tichenor, give me your hand!" These words, communicated to the attending crowd, were caught up by the excited spectators and passed from mouth to mouth, and the telegraph and the mysterious hand shaking was on every lip. The morning papers teemed with vivid descriptions of the machinery and the influence which the telegraph was to exert on human history. The sanctums of the editors were aglow with prophecy. A similar reception attended the opening of the office at Buffalo, which was accomplished July 3, 1846, and which was located in the basement of the Mansion House, a well-known hotel of that city.

It is claimed that between Syracuse and Rochester, for the first time, more than two offices, one at either terminus, was worked on the same circuit. It is claimed, also, that on this circuit, fine wire magnets, of the class now in universal use, were first employed. This is not correct. They were constructed after first carefully testing at Washington with one made in Mr. Morse's rooms by Charles T. Smith, in 1845, under Mr. Vail's directions by James Clark & Son, of Philadelphia, as early as January, 1846. These were in use as early as February, 1846, on the Magnetic Telegraph Company's line between Philadelphia and Fort Lee. A better founded claim for originality was in the working of two independent sections of line in opposite directions by the same main bat-

tery which was done between Albany and Syracuse by a Grove battery of 38 cups grounded at Utica, the circuits being respectively 53 and 97 miles.

The whole line was completed from New York to Buffalo September 9, 1846. Mr. Samuel P. Carter took charge at Buffalo, and Mr. O. S. Wood at New York, and the line was at once successfully inaugurated and thrown open for public business.

Before the main line was completed, R. E. Darrow built a line from Troy to Saratoga, which was manned by John Johnson at Troy, and H. F. Makepeace at Saratoga. Their chief visitors were boys, who flattened their noses against the windows looking in at the sad managers. There was not business enough done out of which to pay board bills. Stirred by their anxious landladies, who, with a perceptiveness peculiar to their race, easily read poverty in their eyes, Johnson and Makepeace started on a lecturing tour. Johnson did the talking, while Makepeace, who had a wise look, did the demonstrating. Both kept an eye on the receipts and held the hat between them. The trip was successful. Before the main line was completed they had returned, paid their bills, and were happy. For some years the Saratoga line was regarded as poor property. In 1848 it was leased to Melancthon W. Perine and G. W. Briggs for one year at ten dollars a mile. It was added to the main line in 1854 and soon became productive. After the line was completed between New York and Buffalo, a number of intermediate offices were called for. Schenectady was opened December 15, 1846, by John D. Stone. Gustavus W. Swan opened Rome October 28th, and was succeeded by John Raymond and its present manager, W. O. Shelley. Little Falls was opened March 1st, 1848, manager, S. G. Lynch, now Gen. Stager's polite and able secretary at Chicago.

After Mr. Wood opened the New York office and had, for a season, given it his personal attention, he was succeeded by Samuel McGowan who, on January 3d, 1853, accompanied by George McGowan, William Butcher and Thomas Newton of the same office, went to Australia and started the Australian Telegraph lines under the Morse system. His successor was N. S. B. Miner. To him succeeded Frank Palmer who became, soon after, superintendent of the eastern section. Following

him as manager at New York was Alonzo B. Cornell, now so prominently connected with the politics of the Empire State. Mr. Cornell entered the service in his boyhood, was manager at Cleveland on the Erie and Michigan line, and was one of the earliest and most adroit of sound operators. He was succeeded, under my own superintendency, by Charles Whiting, a young man of fine ability, and finally by A. S. Brown, now Superintendent of the Hudson River and Metropolitan District of the Western Union Telegraph Company.

The first meeting of stockholders for organization was held in Utica, New York, September 7, 1846. There were present T. S. Faxton, John Wilkinson, Henry Wells, Crawford Livingston, Ezra Cornell, T. Y. Howe, Jr., M. Haskell, Amos Kendall, John Butterfield, Hiram Greenman, W. Morris, W. J. Bacon. The directors elected were: Theodore S. Faxton, John Wilkinson, John Butterfield, S. F. B. Morse, Hiram Greenman, Thos. Y. How, Jr., Crawford Livingston, Asa Sprague. Mr. Faxton was elected President and Treasurer, and he, with Messrs. Butterfield and Wilkinson were constituted as an executive committee.

On the 4th of July, 1846, the line having been completed between Albany and Buffalo, the idea of a State Associated Press was practically born by a call from President Faxton, for a meeting of Editors, by telegraph, in the various offices at that time open. This started the idea of a federation for the supply of telegraphic news. The first daily reports to the press of the State were sent January 1, 1847.

In November, the result of the State elections was telegraphed over the wires amid the most intense excitement, and the result known by midnight. On the 5th of January, 1847, Governor Young's message of 5,000 words was sent over the wires, from Albany to New York, in two and a half hours, by W. C. Buell and John Johnson. O. S. and O. E. Wood received it in New York. It was regarded as a great success. A horse express, started by the New York Herald as, at full speed, it reached White Plains, heard the news boys calling out in the street New York extras with the message, and gave up the fruitless race. The horse express was ended. The New York Herald, naturally enough, resisted the telegraph. It is now, probably, its largest patron.

During the winter of 1846-7 a sleet storm nearly obliterated the line

from Albany to Amsterdam, and from Troy to Hudson. Its operations were almost entirely suspended for six weeks. That settled, as it had done elsewhere, the question of copper wire, which was ordered to be removed. Iron wire, plain No. 9, was at once ordered to be purchased for the whole line. The sale of the copper wire covered the whole cost of the change, and the one was made to supersede the other as rapidly as possible. Yet, before this destructive storm, from the time of the opening of the line until March, 1847, it had worked so well and on the whole so uniformly, that Professor Morse spent much of his leisure time in the office in New York, quietly enjoying the fruition of his work, and regarded this as his pet line. Its working quality was superior to most other lines. Even on it, however, as on almost all others at this period, transmission was tardy and uncertain. The way business was soon so large as to greatly retard "through" messages. It was quite common for despatches to accumulate, during many hours, at either end, while intermediate offices fought vigorously for a chance to work off their business, and then New York and Buffalo would send, alternately, fifty or more messages at a time, to each other. Night work, to a late hour, was the rule.

There was a faithful character at Schenectady, named Walsh, once a vender of pea-nuts on the railroad platform, but who had become manager of the Schenectady office, who often kept the line on a howl from end to end. If Walsh had a message which he deemed important, it was bound to go if it took him all day to get possession of the wire. It was a sight to see him as the sweat rolled down his big brow, while he fought his way to the occupation of the line and got his message off. He was an honest man and went to church, but he caused a great amount of profanity. A few others had similar fighting qualities. The service, at that period, was protracted and exacting. A manager's day averaged sixteen hours. It remained so until additional wires and an improved outside condition made it possible to separate the local and through business.

On May 1st, 1847, when the Albany office had been removed to the Delavan House, Mr. Carter undertook to receive a message from Utica, but the paper twisted, and as he, with difficulty, undertook to translate the message, W. C. Buell, who was sitting near, said "I think Utica

asks if the nine o'clock train has arrived," scarcely knowing how the knowledge came to him. Carter was much astonished to find it correct, and Mr. Ten Eyck, of the Evening Journal, who was present, made it the subject of an article so interesting that it was extensively copied even in Europe. Thus Buell is one of the original sound claimants.

On opening the line for business President Faxton's first act was to offer a bonus of \$100 to every operator who remained in service an entire year. Ezra Cornell was appointed superintendent October 6, 1846, with a salary of \$1,750, but soon after resigned, when Mr. Faxton took the reins and managed things generally with much characteristic vigor. He had a protective law passed by the legislature, as early as May 13, 1845, and being greatly annoyed by the destruction of insulators, and even the shooting of the wire by marksmen and others, offered a reward of \$100 for their apprehension. The insulators were a grand mark for school boys, few of whom could resist the desire to take a shy at them with the first convenient stone.

One of the first contests which arose was in connection with the rights of side lines which were reserved by the patent conveyance to the patentees, and yet with which, when built, an exclusive connection on specific terms was, by the terms of the patent, enforced, the chief feature of which was the division of a tariff based upon distance as on the main line on all messages going over both and divided accordingly. Much angry negotiation was the result. The dispute was finally settled by an agreement to convey the patent to the company covering all side routes, for which an issue of \$40,000 stock as soon as 300 miles of such line was constructed, was to be made, the patentees to abandon all claims for issues of stock on extra wires on the main line.

In the spring of 1848 Mr. Samuel Porter, who had built the line from Niagara to Toronto, and stretched the first wire across the Niagara river, was appointed superintendent. He soon after became superintendent of the House Printing Company. In 1852 he built the marine line to Sandy Hook, and at a later day superintended the construction of the lines of the United States Telegraph Company from Chicago to Omaha. He died, much beloved by a large circle of friends, February 22, 1874.

The first dividend, one of three per cent, was declared February 15,

1847. A second, of four per cent, was declared October 1 of the same year. This greatly encouraged all parties. While, however, dividends were making all happy, a cloud was gathering in the east. The House State Printing Telegraph Company was organized and incorporated under the State Telegraph law, with Freeman M. Edson, Samuel L. Selden, Cambridge Livingston, Francis Morris, Hiram Sibley and John B. Richards as corporators. Of course that meant business. A line, bearing two large wires, was started from New York and pushed through to Buffalo, for the new company. War, of course, ensued. Faxton called his board together, and a resolution of "non-intercourse with all lines not working under the patent of Professor Morse," was passed. This order was also to meet the operations of still another company which was covering the State with its circulars, under the leadership of Marshall Lefferts and Henry O'Reilly, and which proposed to use the Bain Patent in working its wires. It was determined to have a good stand up square fight, all around, with the whole of them. Faxton was a good deal of a belligerent, was partial to a fight and the sound of battle roused him. Dividends were stopped for two years. The Bain line was called "The Merchants' State Telegraph Company;" was carefully built, had two splendid No. 8 English galvanized wires from New York to Cold Springs; there crossing the river and passing up the west bank of the Hudson to Albany by a line originally built for connection with the Erie Telegraph Company, and was continued thence by the line of the canal to Buffalo. So well did Faxton wage his war with a structure in some essential respects superior to his own, that, after a brilliant fight, he bought the property and franchises of the Bain line, June 7, 1852, for \$65,379.20, of which \$26,079.20 was in cash, and the balance in stock at par. After this war was thus closed, two dividends, of four and five per cent, were paid in 1848.

The purchase of the Bain line was valuable in providing two wires of such manifest superiority and low resistance as to greatly aid the effectiveness of the service. It was also valuable in bringing into the circuit of offices the towns on the west bank of the Hudson above Newburg, and also along the new roads of the New York Central Railroad, between Syracuse and Suspension Bridge.

On May 3, 1848, the company was formally incorporated under an act of the legislature, as the "New York, Albany and Buffalo Electro-Magnetic Telegraph Company." Judge W. J. Bacon was, at the same time, elected secretary. Mr. Edward Chapman, who became connected with the company as book-keeper in 1846, was actual treasurer although not formally elected thereto until April 23, 1857. Mr. Chapman, who was a man of very methodical and careful habits, had the receipts of each office, for each day, telegraphed to him on the following morning and recorded. Thus the exact state of the business was known, each day, by the directors, and the effect of changes of tariff, opposition lines, or imperfect performance of the line was clearly noted.

On May 7, 1849, Mr. Faxton bought of F. O. J. Smith the title to the Morse Patent between Syracuse and Oswego, and also, in partnership with John Butterfield, between Utica, and Rome to Watertown, Cape Vincent, Sackett's Harbor, Ogdensburg and Potsdam. These gentlemen also bought the patent for a line from Utica to Oxford with a branch to Berlin. In the same year Faxton bought in the patent covering the line from Troy to Saratoga, and from Buffalo to the Canada frontier. On January 26, 1850, a third wire was ordered to be erected between New York and Buffalo. Stock, to the amount of \$32,800, was created therefor. Half of this was issued to the patentees, but which was agreed should close and cancel all further patent claims. The basis of tariff was at the same time adapted as follows: For 10 words, within 150 miles, 25 cents, and 2 cents for each added word. For 10 words, over 150 miles and not over 300, 37 cents, and 3 cents for each additional word. For 10 words, over 300 miles, 50 cents, and 4 cents for all added words.

The Townsends, well known in early telegraphic circles as building contractors and makers of wire cord, one of the most annoying of early telegraphic experiments, resided near Palmyra. Tired of a long season of enforced retirement, they projected a line from Palmyra to the Buffalo line, with what ulterior design, if any, is not known. The patent was asked for, granted, but never issued. When questioned about it, Mr. Smith remarked that he supposed the project was dead, and he would not much mourn if the projector were in the same mortuary

state. It is a singular commentary on the management of the patent interest that Mr. Cornell was allowed to build from Auburn to Waterloo, and Seneca Falls, New York, towns on the already occupied route of the New York, Albany and Buffalo Telegraph Company, and to have projected a line thence to Clyde, Lyons, Newark and Palmyra to Rochester, all important towns in the very center of the State and touched by the Erie canal. And yet he claimed that this was planned in Faxton's interest to keep off O'Reilly and House who were building through the State, along the route of the canal towns. It did so far cripple them as to make their subscriptions uncollectible but did not prevent their final construction.

In May, 1850, Sidney B. Gifford, one of the truest men who ever served a company, entered the service. After a long and faithful per-



S. B. GIFFORD.

formance of duty in subordinate positions, in all of which he exhibited those sterling qualities of mind and heart which still distinguish him, he was gradually promoted, until now he is the honored superintendent of a large section of the Empire State, trusted and respected by his superior officers, and beloved by the numerous managers and operators of his important district. About the same time Mr. A. S. Brown, another of the

faithful and capable men who have done so much to elevate and make the telegraph effective, entered the company's service at

Oswego, N. Y., and is now one of the Western Union Telegraph Company's most valuable superintendents, with his headquarters in New York. He has capacity for a still higher trust. John Fuller, another true man, strong and assertive, of a kind of mountainous honesty, entered the service in 1852 at Medina, was soon transferred to Albany, then became manager at Oswego, and is now Telegraph Superintendent of the New Jersey Central Railroad. In this year, also, J. E. Smith, a well-read and skillful electrician, author of a very useful telegraph manual, and the inventor, in 1872, of the printing machine of the Manhattan Telegraph Company, New York, entered the service at Utica, and served at Palmyra, Auburn, Canandaigua, Troy, Albany, New York, Poughkeepsie and at the Isthmus of Panama. He is now practical electrician of the well-known house of Charles T. Chester & Co., New York.

On February 22, 1853, after a vigorous and successful administration of seven years, Mr. Faxton resigned the presidency. He had done a splendid work with rough but honest vigor. Two superintendents were thereupon appointed. Otis E. Wood took charge West, and J. A. Johnson east of Utica. All business was repeated at Utica, and a double force was employed for that purpose. April 9, 1853, offices were opened at the St. Nicholas Hotel and Irving House, New York, and a new office was, at the same time, rented, at No. 10 Wall street, for general business. June 13, Edward Chapman was elected treasurer, and July 22d John Butterfield was made president.

The election of Mr. Butterfield to the presidency led to an eruption which changed almost the entire personelle of the board. Mr. Butterfield was, it is well known, largely interested in the Express business. He was a very decided character, energetic, shrewd, had a sharp, quick judgment, and "pushed things." It was his policy to stand well with the New York Central Railroad Company. He deemed it wise, also, to be liberal with a corporation possessing so strong kindred interests and necessities. Reversing their position of a few years before when the railroad managers laughed at the idea of a telegraph being of service to them, and who deemed Faxton a candidate for the State Insane Asylum for building it, they were now applicants for a wire, which the

executive officers decided essential for the proper management of their road. What was once denounced and laughed at as a folly had now become a necessity. Mr. Butterfield offered them a generous contract. It was too generous to suit stockholders who had less reverence for great corporations. Learning of Butterfield's offer war was at once declared, and, at the annual election September 4, 1854, which was conducted with amiable ferocity, a new board, composed of Charles A. Mann, Thomas R. Walker, John H. Edmunds, James Dutton, D. B. Goodwin, Silas D. Childs, John Wilkinson, George Curtiss and E. Chapman was elected. Theodore S. Faxton and John Butterfield were left out until the following year. George Curtiss was elected President, and a contract, acceptable to all parties, was soon after closed with the railroad company. Frank H. Palmer was, at the same time, appointed superintendent of the entire line, and acted as such with fair success, until September 11, 1855, when by an act of ill-judged economy Mr. Curtiss became joint President and Superintendent. Of course it was a failure. Almost every attempt to make a superintendent of a president has failed. Mr. Curtiss was no exception. Without technical knowledge, and pushing economy into parsimony, although in other respects a kind, energetic, practical man, his influence and authority were comparatively nil.

Just before Mr. Curtiss was elected president for the second term, Wilson G. Hunt and Cyrus W. Field, who were on a "still hunt" after property, made a vigorous effort to obtain possession of the line, by lease to the American Company, which was then federating all obtainable eastern lines. They offered eight per cent per annum. But the Utica men resisted. They rejected all offers to transfer their property or relieve them of its management. Meanwhile the company loaned money to Ezra Cornell to prevent the sacrifice of important interests in Michigan. By this they secured an exclusive western connection at Buffalo which greatly strengthened their position. A lease, also, for two years, of the New York and Erie line, at that time newly named the New York and Western Union Telegraph Company, was executed with Ezra Cornell, at \$2,000 per annum. It was abandoned after the first two years of the lease had expired, having been found utterly without revenue, and in no condition for the public service.

During all this time the New York State Printing Telegraph Company had been quietly, and yet with vigor, and somewhat successfully, establishing themselves in the State. They had offered, more than once, to lease the Morse lines, but these offers had been promptly rejected. It was now decided by the New York, Albany and Buffalo Company, to re-organize under a new State law, passed June 19, 1853, to insert a provision for enlarging its capital and to make an offer to the Printing Telegraph Company to take their lines on a lease for ten years at 7 per cent on their capital of \$200,000, and exchange stocks at the close of the lease. This was done, and on February 15, 1856, the lease was closed, and, at the same time, a close and exclusive connection with the New York and Mississippi Valley Printing Telegraph Company at Buffalo was completed. This gave great strength to the company. Opposition was at an end. "Pent up Utica" controlled the State. George E. Allen, now manager at Utica, was made superintendent, and on June 3, 1856, as if to give some token of their victory and successful issue out of battle, the company tendered a wire to Professor Morse, connecting his beautiful home, near Poughkeepsie, with New York, which he gratefully accepted and which greatly pleased him. A line was also opened to Valatie by a branch from Hudson.

The question of the opening of offices on Sunday was frequently a matter of very earnest discussion, and various orders were given, from time to time, respecting it. For a long period the line was kept closed on that day. Then an hour in the evening became the rule. The number of death messages received on Sundays, during the brief period it was open, led to a recognition of the necessity of a service, however limited, on that day. Enforced Sunday labor has, however, always been regarded by many as one of the unpleasant, and, in not a few cases of men of tender conscience, demoralizing necessities of the telegraphic service. To a large number of men engaged in it, the Sabbath is no longer a day of rest.

The business, now that the three companies had become united, was large and growing rapidly. Opposition, and the active canvass to which it led, greatly augmented its public employment. The telegraph system throughout the nation also was already vast, and a

wide and awakened apprehension of its value was everywhere evident. The interests of a company, with a trunk line extending from the commercial metropolis of the nation, through a territory so populous as that of the Empire State, to the great west, required wise, careful, vigorous treatment. Recognizing this, Hon. Charles A. Mann was, September 1, 1856, unanimously elected president. He was a man of the very highest mental and directive qualities. He had been a power in the legislation of the State Senate. He united to marked executive ability, great personal refinement, kindness and sociability. He was a man of clear, vigorous, decided judgment and will, yet always courteous and genial. He was the man the line needed. His election marked a new era in the company's history. I was, at that time, in Philadelphia, in charge of the "Atlantic and Ohio" lines. At the suggestion of Mr. Hiram Sibley and Hon. Amos Kendall Mr. Mann invited me to be his superintendent, which I, after a pleasant interview with Mr. Mann, accepted. David Brooks, after a twelve years itch, took my place at Philadelphia.

The new post was not an enviable one. I was somewhat broken with my southern life and exposures. The line was, to a large extent, in a state of advanced decay. The Bain line was on one turnpike, and the House line on another. The main line was on the route of the New York Central Railroad, but the railroad company was much dissatisfied with the condition of and the management of their wire, which had become practically useless to them. Much money had to be spent. I knew what that meant. It suggested long patience and possible friction. I had my misgivings. Yet the board was composed of men so just and intelligent, and proved so kind and noble, that the service became a constant delight. The very circumstances, however, under which I accepted the appointment, secured for me a quick and easily-earned reputation on the line, which greatly aided me. On the day after my arrival in Utica, which the operators honored by an illumination, Mr. Mann informed me of the difficulty with the New York Central Railroad. Their wire was useless. They would not pay the contract money, and there was danger of greater trouble. Fortunately for me, the telegraph company had two vigorous foremen of

repairs named David J. Evans and Al. B. Waite. I immediately met these men, provided them with hand-cars and material, and instructed them to go, with a few good assistants, one east the other west, attending to nothing but the insulation and clearing of the railroad wire. As they returned all doubtful joints were to be cut out and re-made. All the wires were "black." In less than ten days the work was done and the wire working splendidly. The railroad officers at once noticed the change, and were highly pleased. Mr. Mann was invited to Albany to get his money, and every facility was offered to him in carrying out the company's plans of reconstruction. We became fast friends.

The first lady operator appointed on this line was a Miss Keith, from Canada, to whom I gave the charge at Lyons, N. Y. She came to be known as the "Lady of Lyons." She was a most faithful woman, and would remain at her post at the railroad depot, quarter of a mile from town, until a late hour to report trains, and then go home unattended. She never needed to be called twice. When I left the service of the company Superintendent A. L. Dick dismissed her. Women were deemed unfit for railroad telegraph duties. They are now employed at almost every station, and perform faithful and satisfactory service.

May 19, 1857, the Genesee Valley Line from Rochester to Danville was leased at \$100 per annum, and afterward purchased.

May 29, 1857, an important agreement was closed with the Pennsylvania telegraph lines by which western business was divided by an east and west line through Quincy, Ill. This made possible a joint office in New York with the lines via Philadelphia. In accordance with this arrangement the office of the company was removed, June 19, 1857, from 2½ to 21 Wall street, New York, and John Horner, one of the best known men in the service, became receiver for both companies. Just about this time it was discovered that a system of fraud, by adding small sums to the regular tariff on messages, was widely practiced, and some noted dismissals were made. These frauds were chiefly perpetrated on travelers at hotels and strangers, who had no means of detecting the imposition, and to which the system is greatly liable wherever printed tariffs are not provided, and affords an opportunity for fraud which it is difficult to prevent. The extent to which this was carried on may be

estimated by the fact that an assistant, who had become the object of suspicion and whom I dismissed, offered to his superior in the same office a monthly payment almost identical with his salary to secure his retention.

On August 31, 1857, the company entered, with the other leading companies of the country, into what became known as the "Six party contract" for mutual protection and division of territory. This movement was regarded so favorably by the New York, Albany and Buffalo Company that, although all the patent claims connected with its territory had been fully settled, yet to extinguish these everywhere, and aid in purchasing the Hughes Patent, which it did not need but deemed it prudent to possess, the Company issued, as its share of the cost, \$20,560, of its bonds. At the same time recognizing the necessity of the Montreal Telegraph Company reaching Oswego with its wires, it sold to that company the portion of their line between Oswego and Ogdensburg.

In the fall of 1859 Mr. Mann fell into ill health, and ceased executive work. On September 5, 1859, Thomas R. Walker became President. Mr. Mann died January 19, 1860. His loss was very deeply felt, and by none more than by me. His friendship for me was a constant compliment and enjoyment.

In the fall of 1860 the line from Syracuse to Binghamton was built by J. D. Stone and was purchased by the company. September 3, 1860, Samuel Colgate, of New York, entered the board. January 18, 1861, in concert with the American Telegraph Company, the headquarters of the New York, Albany and Buffalo Telegraph Company were removed to 145 Broadway, occupying portions of the basement and first floors for receivers and delivery, and the third for operating room. In arranging the wires of that office I performed the labor personally, and had them so led to the various tables that not a foot of wire was visible, and the sounders and other machinery were covered by cases with piano fronts so as to modify the sound and keep the machinery clean. The floor was thickly matted to prevent sound. The walls were calcimined with a simple neutral tint and were without pictures or other object except two clock faces where the connections

were made between the outer and inner wires by radiating arms. My object in these arrangements was an attempt to reduce the pressure upon the nerves of operators by extreme simplicity, by the absence of distracting objects, and by the greatest attainable neatness and quiet. It was my expression of what a telegraph office ought to be. At the same time I devised a pocket instrument, to be held near the ear by a support, and so noiseless as to be heard by the operator only. It was in the form and size of a watch, and quite neat. I was led to think favorably of such a device from the ease with which vagrant operators could be employed to hang round telegraph offices and acquire the knowledge of passing messages. I never put it to practical use.

Two gentlemen named Poucher and Owen, the latter known as "Joe," had built a line from Syracuse to Oswego, to be operated in connection with the Bain line. It was not a good enough investment to suit them and was for sale. The New York, Albany and Buffalo Company, after exacting a pledge that neither of the parties would ever again, directly or indirectly, be interested in any similar construction over that route, bought the line for \$8,000. But, when a year or two afterward the United States Telegraph Company commenced building through the State, "Joe" was at it again and had to build another line. He couldn't help it. He is still probably contemplating new enterprises of a similar character. In 1862, Otis E. Wood, a man of great excellence, formerly superintendent of the line west of Utica, was made assistant superintendent, but resigned within a month on account of illness. In September, 1863, I was elected a director, and, under authority from the board, personally negotiated with Mr. Sibley, the terms by which the Company became, January 1, 1864, consolidated with the Western Union Telegraph Company. These terms were:

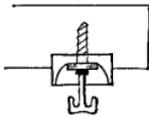
1. The Western Union Telegraph Company to pay 8 per cent per annum on the par value of the stock of the New York, Albany and Buffalo Company.
2. To pay cash, at the rate of \$75 per share of \$50 to all who desire to sell their stock if offered prior to January 18, 1864.
3. To issue three shares Western Union stock for two of the New

York, Albany and Buffalo of the same denomination if offered before February 1, 1864.

4. During the existence of the New York, Albany and Buffalo Telegraph Company two directors to be under its appointment.

This agreement, of course, led to a rapid conversion of stock until the whole capital was absorbed.

This line was free from the strife which caused so much outlay and injury on many other lines in the matter of insulation. The pin and glass in one form or another was the accepted style. Almost the sole exception to this was a plan adopted, to a certain extent, in an effort to



prevent the extensive breakage of insulators, but which was only partially successful. This was the employment of the hard rubber-covered hook and stem insulator in connection with an inverted glass saucer. The imperfect character of the rubber soon made the insulator worthless. Over a considerable portion of the eastern section of the line the upper wire was insulated with the House insulators, which had been removed from the abandoned poles of the Printing Company.

The success which attended the management of this Company was the occasion of a contract between Professor Morse and Mr. Kendall, of a somewhat unusual character. The value of the stock issued to Professor Morse was to be rated January 1, 1848, as of par value, if then earning 7 per cent over expenses. If earning 14 per cent 100 per cent additional was to be the status of value, and so, pro rata on a less or greater profit. Of the first \$100,000, thus valued, Mr. Kendall was to receive 10 per cent. On all other issues of that or other lines, Mr. Kendall was to share dollar for dollar with Professor Morse. This, with the allowance by Mr. Vail, for whom he acted as attorney, gave Mr. Kendall the largest interest in the Morse patent. This lifted him from a condition of almost utter poverty to affluence, and the wealth thus acquired was freely used by him to promote some of the finest charities which appeal to the sympathies of the human heart.

Mr. E. Chapman, the treasurer of the now defunct company, was an exceedingly neat and skillful accountant. The examiners, appointed

by the company at the close of its business prior to absorption with the Western Union Company, reported as follows :

" We find that the accounts have been kept with great method, neatness and accuracy ; that the vouchers invariably corresponded with the entries ; that the accounts themselves are accurate to a degree of exactness that could be obtained only by the most constant and unremitting care and attention ; that the final balance is entirely reliable and accurate. The superintendent's accounts are included in the examination.

" E. S. BRAYTON,  
" S. C. GREENMAN."

UTICA, *February 4, 1864.*

Between 1846 and January 1, 1864, the date of the surrender of the New York, Albany and Buffalo Company's property to the Western Union Company, cash dividends to the amount of \$299,843 had been paid, exclusive of \$105,000 paid in dividends to the House State Printing Telegraph Company. A stock dividend of 9 per cent, December 31, 1852, and 20 per cent November 2, 1860, had also been declared. When the property was turned over to the Western Union Telegraph Company, a balance of \$47,000 United States Treasury notes and \$7,000 of reliable bills receivable were among the assets, the total of which amounted to \$67,475.10.

During the early period of the Company's history Professor Morse relied almost solely on its earnings for support. In 1847 his income from this source was \$3,083.50 ; in 1848, \$3,552.50 ; in 1849, \$4,737.00. No telegraphic organization on the continent has had more uniform prosperity, or on the whole, more vigorous and intelligent management. It is difficult now to recall the names of the men forming the early staff. The following is a part of it :

New York Office — W. D. Schram,	Hudson River Railroad Depot —
E. M. Barton, H. N. Stevens,	Edward Gleason.
Thomas Dolan, now the able	Peekskill — Matthew Hogan.
night manager, J.W. Hawn, Ed-	Yonkers — N. Z. Baker.
ward T. Chapman, Edward Rier-	Waterville — A. C. Stebbins.
don, Sidney B. Gifford, J. R. W.	Norwich — J. W. Weller.
Johnson, Walter Leaming, H.	Earlville — C. L. Cotton.
H. Hill.	Clinton — J. T. Watson.

- Poughkeepsie — Henry A. Reed, Fort Plain—C. Yates, Geo. C. Wood.  
A. G. Davies. Rochester — A. Cole Cheney, Geo.  
Rondout — W. Winters. A. Redman, B. F. Blackall.  
Hudson — S. Lawrence. Batavia — Edgar G. T. Adams.  
Albany — C. S. Cutler, J. R. W. Little Falls — F. H. Phillips.  
Johnston, S. C. Rice, E. S. Keep. Hamilton — John Foley.  
C. S. Jones, M. L. Morgan, Fred. Oxford — H. A. McFarland.  
H. Lawrence. Rome — W. O. Shelley.  
Troy — W. C. Buell, A. B. Cornell, W. H. Collins, M. V. B. Oneida — J. N. Messenger.  
Finch, William B. Clum, Benjamin F. Follett. Saratoga — James H. Rugg.  
Syracuse — John D. Stone, W. H. Baldwinsville — S. C. Suydam.  
Hall, D. C. Chase, S. D. Backus, Oswego — John Fuller, H. B.  
D. L. Pike. Chamberlin.  
Buffalo — Nat. Hucker, J. W. Til- Binghampton — Geo. H. Cooke.  
linghast, W. Wallace, John A. Auburn — W. H. Parsons.  
Burch, Archibald. Seneca Falls — W. L. Ives.  
Schenectady — J. D. Walsh. Geneva — W. H. Steigelmaier.  
Amsterdam — M. T. Kehoo. Lyons — Miss Keith.  
Fonda — T. H. Fonda. Canandaigua — W. H. Moake.  
Canajoharie — R. B. Stafford. Lima — E. Salmon.  
Utica — Simeon E. Mayo, John H. Geneseo — A. Lapham.  
Francis, Patrick Kelly, George Palmyra — L. B. Keeler.  
E. Allen, John J. Flanagan, Eli- Albion — C. D. Ross.  
jah N. Taylor, A. H. Sawyer. Medina — D. J. Willis.  
Lockport — W. M. Coon.  
Niagara Falls — Fred Sibson.

A number of these faithful and devoted men are dead. Many still serve with their accustomed fidelity. Stephen Lawrence — who learned the art by the aid of a wooden key while attending a saw mill at Croton Falls — at Hudson; Benjamin F. Follett at Troy; A. Cole Cheney at Rochester; W. D. Shelley at Rome; D. J. Willis at Medina; Nat. Hucker at Buffalo; Pat Kelly, Elijah Taylor and D. L. Pike at Syracuse; W. H. Parsons at Batavia; George E. Allen at Utica, are some of the steadfast men who give character and stability to the service. No company ever had truer men. C. S., better known as Charlie Jones, is Superintendent of the Telegraphs of the Illinois Central Railroad. Simeon E. Mayo is agent of the People's Line of steamers at New York. John J. Flanagan is on the staff of the Utica Herald and one of the city Police Commissioners.

James H. Rugg, a man pure and noble, is manager at Albany. William H. Weed, who graduated at Illion, is passenger agent of the New York and Oswego Midland Railroad. It is impossible to name them all, or write of them as they merit. There was a bond of affection between us all which time does not weaken.

Of the building and repair force were David J. Evans, A. B. Waite, David Cull, W. J. Cull, George C. Thompson, Harvey Kirtland, James W. Norris, T. J. Tower, George T. Billington, James Larrisee. Thompson, Waite and Larrisee are still in the service and as faithful as ever. W. J. Cull is the efficient Superintendent of the Fire Alarm in Albany.

Of the projectors of the Company many have died. Theodore S. Faxton, however, at Utica, N. Y., yet survives at 84, leading a cheerful and vigorous old age, and enjoying the fruits of an honest and well-directed life. In several noble charities he has sought to elevate and benefit the city where his life has been spent, and in which he is respected and honored.

The Telegraph in the State of New York has meanwhile become one of the fixed necessities of society. Along the Hudson River and Harlem Railroads 24 wires track the way to Albany, while on both sides of the New York Central Railroad numerous wires of the finest quality and carefully maintained lead to the busy centers in the great West. There is no longer any "repeating" at Utica or Albany. There are no longer heavy-laden files of hindered messages in the main offices. Sharply, fleetly, unerringly, day and night, in snow fall and in sunshine, in rain as in drought, the myriad messages of a busy people throb swiftly on to the hands that await them.

While Park Fellows was manager at Geneva, in 1850, E. P. Wright, a slender youth, not far into his teens, but well recommended and active, was engaged as messenger. He served with fidelity, used his feet nimbly, keeping an eye meanwhile on the machinery, and by diligent use of his spare hours, learned to operate. In 1851 Superintendent Porter, seeing his good qualities, gave him the charge of the office at Waterloo, from whence, because of his ability as an operator, he was, after a few months, transferred to Albany under N. S. B. Miner, as assistant, in the work of that important office. In 1853 he went to

Buffalo, where he served under A. Cole Cheney and H. F. Makepeace, both of whom were, for a time, managers there. In the same year he entered the service of the New York and Mississippi Valley Printing Telegraph Company in Buffalo, became manager at Dunkirk, and in 1854 was



E. P. WRIGHT.

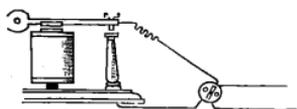
ordered to Cleveland, where, on the organization of the Western Union Telegraph Company, he became chief operator. In this service he remained and conducted the business entrusted to him with so much ability that in 1863, Gen. Stager appointed him Superintendent of the Fifth District of the Central Di-

vision of the Western Union Telegraph Company. This district is a large and important one. It embraces the territory extending from Buffalo, N. Y., Wellsville, Ohio, on the Ohio river, and the region north of Columbus, to Chicago; all of Michigan; and three leased lines through Canada, between Detroit and Buffalo. It includes 7,268 miles of line, 17,689 miles of wire, and 737 offices.

Mr. Wright is still in the prime of his life, is noted for his assiduity, good judgment, and the intelligence and vigor with which he performs the numerous duties of his very responsible position. He is a specimen of many who, by their excellence of character, zeal and fidelity, have risen to the highest positions of trust and honor.

It was at Auburn, in the office of this company, that in September, 1846, Merritt L. Wood, afterward General Superintendent of the lines

of the United States Telegraph Company, planned and put in operation the first telegraph repeater. It was arranged on the principle of the local circuit, employing the magnet and lever of the register or sounder operated upon by one main circuit to manipulate into a second. A simple hand double-acting button or switch was made by the attending operator to close the connection on one side and open it on the other, and vice versa. The cut shows the action on one side with a



single button thrown open, and the lever of a sounder manipulating a main circuit represented by the wires going outward from the button. This device, which is identical with Prof. Morse's early theory of distant transmission by combined circuits, was first employed to transmit press reports passing on the main wires between Syracuse and Buffalo, over the side line between Auburn and Ithaca. It was one of the most useful contrivances of these early years. Since then the automatic repeaters of Hicks and finally of Farmer, Woodman and Milliken have taken its place. All repeaters, however, are based on the same principle, their excellence depending on mechanical devices to alternately open and close the operating circuits by automatic processes.

## CHAPTER XXVI.

## THE TELEGRAPH IN BRITISH AMERICA.

## THE MONTREAL TELEGRAPH COMPANY.

THE Dominion of Canada could not long stand looking on the bright gift which Science, in the plenitude of her offerings, had opened to the world through a citizen of her neighboring Commonwealth, without opening her hand for its reception. To her it was a free gift. She could take it without cost, since no proprietorship in the Morse patent had any claim within her territory. Its value to her as a rising Province of a great Empire seemed evident. Except a line of steamers between Kingston and Hamilton, Toronto and Lewistown, Montreal and Quebec, her means of intercourse with her far separated towns, and her interior settlements were, at that period, slow and tedious. A system, therefore, by which communication could be easily and economically maintained by means so simple and so marvelous, seemed eminently adapted to the needs of the country.

As early, therefore, as 1846, T. D. Harris and a few public spirited Canadian gentlemen associated themselves into a Company to secure the construction of a line of Morse Telegraph between Toronto and Niagara, via Hamilton and St. Catherines. The money needed was easily raised; and when, at last, the company was fully organized, it was named "The Toronto, Hamilton, Niagara and St. Catherines Electro Magnetic Telegraph Company," with a capital of \$16,000, and for which a suitable charter was procured. It was built by Samuel Porter,



THE WOODS

*W. Wood*

long and well known in American Telegraphic circles as an excellent and honorable man, and who was connected as Superintendent and constructor during many subsequent years with various American Telegraphic enterprises. He suspended a wire across the Niagara river to connect the wire at Queenstown with Lewistown, N. Y., and built for this first Canadian Telegraph Company an honest and well-appointed line. After its completion he served for a time as its superintendent. Meanwhile, on the American side, David Kissock constructed a line connecting the Canadian company's wires with Buffalo, N. Y. These lines, not long afterward, became united under Mr. Kissock as superintendent, with William Kissock as manager at Buffalo, and in 1852, both properties were purchased by the MONTREAL TELEGRAPH COMPANY, which had meanwhile been organized in the Lower Province for the purpose of connecting telegraphically, all the chief centers of Canadian commerce.

The MONTREAL TELEGRAPH COMPANY was organized in Montreal, in 1847, with a capital of \$60,000, and in March of that year, Mr. O. S. Wood was invited to become its Superintendent. The Company was meanwhile incorporated under a liberal charter granted by the Provincial legislature, and Andrew Shaw, a gentleman of enterprise and energy, was elected its first President. About the same time Mr. H. P. Dwight, and soon after, Mr. James Dakers, now Secretary of the Company, entered its service.

The appointment of Mr. Wood was in every way fortunate for the new Company. He had studied under Professor Morse and was his first pupil. He had been connected with his brother in law, Mr. Ezra Cornell, in the construction of American lines, and had all the practical information and experience needed in his new position. In actual work, also, as an operator, in the construction and operation of the experimental lines at Washington and New York, and in erecting the first business line between Buffalo and Lockport, in the fall of 1845, he had become familiar with all the necessities of an efficient telegraphic structure. He was thus fortified by experience against the errors and the waste which followed ignorance, to which some of the early telegraph companies had been exposed by inexperienced men and imperfect

knowledge. Mr. Wood was also a man of the highest character and thoroughly comprehended his mission.

The construction of the line, which was at first limited to the territory between Quebec and Toronto, was assigned to Livingston and Wells, the well-known Express men of New York. In this, also, the Montreal Telegraph Company was fortunate, inasmuch as it assured them the faithful fulfillment by experienced builders of an important service. Fortunately, also, the test of two severe winters in the United States had proved the utter want of adaptation to the rigors of an American climate of copper-wire conductors. They had been thoroughly proved and abandoned. By this time, also, English galvanized wire, adapted to telegraphic construction, had been brought into notice and had challenged attention. Thus every element and condition of success was at the service of the new company, and were as intelligently accepted and availed of.

The result of all these favoring facts was that the line of the Montreal Telegraph Company, when completed, was the first on the Continent which united in it from the very start the conditions of success. The poles, which were almost solely of large cedar, were planted not less than five feet in the ground, were thoroughly tamped, and ten rods apart. Wooden brackets of seasoned white oak with glass insulators, much the same as those now in common use, were affixed to the poles on either side, and on these were mounted two English galvanized wires, number nine, the first of the kind employed for such a purpose on the continent, but which soon after came to be universally adopted. This wire was supplied by Marshall Lefferts & Co. of New York, who imported it from England, and who, soon after seeing the inevitable demand which would be made for its extensive employment, commenced its manufacture in New York, and furnished it to telegraph companies in great quantities. Galvanized, or more properly zinc covered wire, is now in preferential use throughout the world. The Montreal Telegraph Co. has never used any other, and there is none other on its lines, except on some portions of property acquired by purchase or lease. The entire structure, therefore, was, when completed, one of exceptional strength, suitability and general excellence.

Its internal arrangements were similarly complete. The instruments with which the offices were furnished were, of course, of the Morse apparatus, and were constructed by S. W. Chubbuck & Son, of Utica, N. Y., from models approved by Mr. Wood, and were of the finest workmanship, strong and durable. The reception of messages by sound had not yet been inaugurated, and was indeed still regarded with much apprehension. Recording registers were, therefore, supplied for every office. Nothing could exceed in excellence this part of the line's equipment. Such, however, was afterward found to be the perfection of the outside structure, and the low resistance of the admirable conductors which had been erected, that not only were registers finally dispensed with, but the line was for a time permitted to be worked by the simple sound of the relay magnet without the aid of the local circuit and sounder. Than this fact, perhaps, nothing could better prove the general excellence of the line. During the eighteen years of Mr. Wood's wise and prudent administration, this state of thorough efficiency was preserved, and gave the line a character for promptitude and reliability which established the Company as one of the most vigorous and useful of the social and commercial organizations of the country. At the close of 1847 the Montreal Telegraph Company worked 540 miles of wire, had nine offices, employed 35 persons, and had sent in all 33,000 messages.

In 1847 Frederick Gisborne, a gentleman who early interested himself in the subject of Atlantic cable communication, started "The British North American Electric Association." It was designed under this organization to erect a telegraph line to connect Quebec with the Lower Provinces, and finally with the Atlantic coast. It was built, however, only as far as River du Loup, 112 miles below Quebec, and there rested for some years. It was afterward extended by John A. Torney to Woodstock, New Brunswick, and there formed a connection with the American Telegraph Company, which, by that time, had leased the lines of the Eastern Provinces. The Capital stock of this Company or association was \$25,000. A second organization bearing the same corporate name constructed a line from Quebec to Montreal, which was, however, soon after amalgamated with the eastern Company. These

enterprises proved so utterly unproductive that the lines east of Quebec became the property of the Montreal Telegraph Company without charge, and the Quebec and Montreal section was purchased by the same Company at one-third of its cost.

About the same time, also, with these eastern extensions, Hon. Malcolm Cameron, a Canadian dignitary of some note, interested himself in the construction of a line in the upper Province from Hamilton to London, but, after a doubtful existence of eighteen months, it was abandoned and soon disappeared.

In 1849 The Montreal and Troy Telegraph Company was organized, and built a line from Montreal to the Canadian frontier, and thence via Whitehall to Troy under what was called the Troy and Canada Junction Telegraph Company. These lines were built and the Company organized by Ezra and Alonzo B. Cornell, and were worked for several years as one line in connection with the Montreal Telegraph Company. Mr. A. B. Cornell, during the first two years after their construction, was Manager at Montreal. The section of this line north of Whitehall, N. Y., became, after a few years, under a compact with the leading American lines, a part of the property of the Montreal Telegraph Company. In like manner the lines of the Vermont and Boston Telegraph Company, from Rouse's Point to Montreal and Ogdensburg, N. Y., were acquired first by lease and finally by purchase.

During all this period a number of minor lines were started here and there throughout the Province, all of which about as quickly expired. One of these which showed a more promising vitality was by a company organized in 1850 by Joseph Aumond and others to construct a line of telegraph from Montreal to Bytown, now known as Ottawa, a distance of 125 miles. But life went roughly even with it, and after a few hard fought years, it was purchased by the Montreal Telegraph Company at a mere nominal price.

A new impetus was given to telegraph line building in the Provinces by the passage, in 1852, by the Canadian legislature of a general telegraph law. This led to the organization of "The Grand Trunk Telegraph Company," under which a line was built from Buffalo to Quebec, and which promised a lively opposition. This company,



Hugh Allen

however, like some of its predecessors, dragged its slow length along during a few tedious years, when its lines were purchased by the Montreal Telegraph Company at a cost of \$11,000. With marvelous vitality, however, the purchase of this line was followed by the building of another over the same ground, under what was called the "Provincial Telegraph Company," an organization brought into being as a branch of the United States Telegraph Company, which at that period was spreading its lines so rapidly and widely through the United States. This also survived a few mournful years, when the United States Telegraph Company becoming, in 1866, absorbed by the Western Union Telegraph Company, the "Provincial" sold out to the Montreal Telegraph Company, which, like a mimic ocean, seemed to have only to wait until the wearied rivulets, tired of their downward dance among the rocks, fell helpless and exhausted into its placid and engulfing waters.

In 1851, Sir Hugh Allan, who had early interested himself in the fortunes of the Montreal Telegraph Company, became its President, a position he still retains. It is believed to be within the truth to say that no one man has made himself more thoroughly felt in the realm of enterprise, in all its most public and prominent features in the history of the American British Provinces, than Mr. Allan. He is known to have early selected the ocean steamship, the rail and the telegraph, as the three great leading channels in which to throw the weight of an unusually brilliant and energetic character. In all these he has been eminently successful, enjoys the immense labor they bring to him with genuine gusto, and has amassed, by his well-directed skill in them all, a vast fortune.

Sir Hugh Allan was born in Scotland, September 29, 1810. His father was a shipmaster, and for thirty years traded between the Clyde and Montreal. It was quite natural, therefore, that the son should take to the sea. He was early in life entered as a shipping clerk and became familiar with the business. He afterward accompanied his father to sea and acquired a good knowledge of navigation. He also familiarized himself with ship building and naval architecture. All these aided him in and led to his future career.

The "Allan line" of ocean steamships, one of the largest and most influential in the world, the existence and success of which is largely due to Sir Hugh Allan, and of which he has been President for twenty-five years, is well known. It has made Canada the fourth maritime power among the nations. Sir Allan was also one of the earliest contributors to the Atlantic cable, and, for some years, a Director. He was also, for many years, a Director of the Western Union Telegraph Company. He has been identified with almost every enterprise in Canada, which has tended to advance its interests. He is President of the Canadian Navigation Company, who own the splendid line of Lake steamers; of the Merchants' Bank of Canada, and many similar institutions. The Queen of England personally knighted him in recognition of his great public services. Sir Hugh owns a magnificent summer villa on the shores of Lake Memphremagog, where Prince Arthur, on the occasion of his American visit, was his guest. No man is more widely known.

Immediately on assuming the Presidency, Sir Hugh Allan, in concert with Mr. Wood, projected important extensions of the lines of the Company and urged the necessity and the propriety of extending the Telegraph to the most remote points of civilization. In this there shone the public spirit, the idea of what was due to society in its lowest conditions in order to its elevation, which has brought to him the recognition and honor of his sovereign. These lines to the frontiers of population were built. Places far remote from railroads and from the centers of commerce were made accessible, and, at the close of 1875, the Company had in operation 20,000 miles of wire, 1,400 offices and 2,000 employees. The number of messages transmitted during the preceding year, in addition to millions of words in press dispatches, was 2,000,000. As an example of how added facilities stimulate the growth of business, it was ascertained that in a single year, during which 1,321 miles of wire had been added to the lines of the company, the increase in the number of dispatches was, 254,366. Of course, there is a limit to the argument of statistics, than which, even when true, there is nothing when used beyond their proper bounds, more potent to mislead. The fact, however, remains, that enlarged opportunity and a prompt service



Sumner Dapers

greatly stimulated the public employment of the lines, and enlarged the business of the company.

Under this enlightened policy and by the enlargement of the capital to \$2,000,000, to enable the company to provide the means of communication wherever needed, the lines of the Montreal Telegraph Company, instead of their limited operation between Toronto and Quebec in 1847, have been extended from Sackville, N. B., to Detroit, Mich.; from Montreal to Portland, Me.; from Montreal to Oswego, N. Y.; from Toronto to Buffalo, N. Y.; and to the most northerly boundaries of Ottawa. Messages are sent direct from Montreal to New York, Albany, Boston, Whitehall, Utica, Buffalo, Oswego, Detroit and Portland. It may not be long before the Canadian lines will push their way westward of their present boundary, and, crossing the plain beyond the Red river, may touch the lines of the Western Union Telegraph Company in British Columbia.

In 1865 Mr. Wood, after a long, useful and honorable service, resigned, when Mr. James Dakers was appointed to the eastern, and Mr. H. P. Dwight to the western, division of the Company's territory. Mr. Dakers was born in Scotland, in 1811, served an apprenticeship in an attorney and notary's office in Forfarshire, came to Canada in 1840, and entered the service of the Montreal Telegraph Company in 1847. He has been thirty years in the service. Of Mr. Dakers, to whose discreet and faithful work so much of the success of the Montreal Telegraph Company is known to be due, and whose honest likeness illuminates one of our pages, Rev. Dr. Ormiston, of New York, so well and widely known as a man of large and noble nature, and who, in his generous and manly qualities recalls to mind his great countryman, the gallant author of "*Noctes Ambrosianæ*," writes us the following warm and appreciative note :

"I thank you for the beautiful engraving you send me. James Dakers is, in many respects, a remarkable man. Notwithstanding many disadvantages, he has fairly earned the high position of influence, independence and usefulness, which he now occupies. He is characterized by indomitable energy, great force of character, unyielding tenacity of purpose. His intellect is of a high order and eminently practical. Inflexibly upright in all his dealings, conscientiously faithful

to all his obligations, punctual and thorough in the performance of all his duties, incapable of meanness, his word is as good as his bond. He is a man universally trusted. His sympathies with the suffering and the struggling are wide and tender. Many bless him for his wise counsels and efficient aid. The extent and genuineness of his christian charity is as manifest as the steadfastness of his religious life. As a true friend he is one among a thousand. Were I asked by a young man for a model of a man, earnest and indefatigable, pure and firm in principle, exemplary and consistent in character, desirable and valuable in friendship, I would not hesitate to point him to James Dakers, of Montreal."

This is very high eulogy. None but a warm, generous soul could have penned it. Yet it is all deserved. Montreal has no more worthy citizen. The Montreal Telegraph Company could not have a more faithful officer.

There is nothing indeed more marked in the history of the Montreal Telegraph Company than the high and faithful character of its executive officers. Still another example of this is found in Mr. H. P. Dwight, who, having by great prudence and ability, and by rare and intelligent vigor, proved himself worthy of the highest trusts, was appointed many years ago to the superintendence of the large and important division of the Company's territory, comprised in the Province of Ontario and such of the lines as enter into Western New York. Here, in the center of the most largely populated progressive portion of the Dominion, absolutely trusted and universally respected, Mr. Dwight has devoted his whole strength with great singleness of purpose to the advancement of his company's interests, and to the public good. Mr. Dwight is a native of Belleville, N. Y. He learned the telegraphic art at Oswego, and in 1847 entered the service of the Montreal Company, and rapidly rose to his present trust. In 1862 a splendid library was presented to him as a token of esteem from his subordinates, and was particularly appropriate to a man of his naturally studious habits and refined taste. To great fidelity Mr. Dwight adds a clear and sturdy judgment, which gives him much weight in the executive management, and which has led to perfect confidence in his administrative prudence and sagacity.

The electrical department of the company is assigned to Mr. Angus Grant, of Montreal, and Mr. Ben Toye, of Toronto, two men of marked excellence of personal character and skillful electricians. Mr. Toye is the inventor of a repeater equal to the best yet known. Mr. Pope, of Quebec, and Mr. Bethune, of Ottawa, also, and of whom the same commendatory language is equally due, are District Superintendents. The money-box of the Company is guarded by Mr. Charles Bourne, Treasurer, one of nature's noblemen, a man greatly beloved, trusted and esteemed.

The Montreal Telegraph Company have built within a few years handsome edifices in Quebec, Montreal, Ottawa and Toronto, wherein every convenience is provided for the easy and comfortable transaction of the business. There is no Company with its general property in more available condition for effective and uninterrupted public use.

The following table, supplied by Mr. E. Wiman of the Commercial Agency, shows, proximately, the ratio of wire to population in various countries, and in which Canada appears to special and to somewhat remarkable advantage:

	Population.	Mileage of wire.	Population for each mile of wire.
Germany .....	190,000,000	19,000	10,000
Russia.....	82,000,000	31,000	2,645
Belgium .....	5,000,000	2,700	1,851
France .....	36,000,000	25,000	1,440
Switzerland .....	2,600,000	3,430	758
United States .....	40,000,000	179,224	223
Great Britain.....	32,000,000	108,000	296
Canada .....	4,000,000	20,000	200

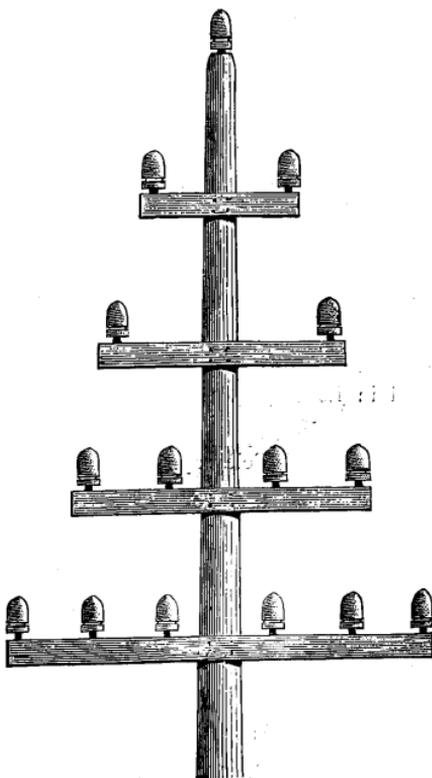
Canada provides an office for each 2,857 of its population, as against 5,715 in Great Britain. It provides one mile of wire for every 142 persons. Messages sent average 35 for each business man in the Dominion per annum. These for a young Province are remarkable results, and speak eloquently in proof of the enterprise of its people. Since the above comparative table was made Telegraphic data has greatly changed, both Canada and the United States showing an increase of many thousand miles of wire line.

For over a quarter of a century the Montreal Telegraph Company have employed a corps of experienced builders under a master of construction, who, provided with tents and material, camp out from seven to eight months of the year, and attend to the repair, renewal and reconstruction of the Company's lines, and to their extension wherever required. Thus no portion of the line is allowed to become weakened by neglect or decay.

One of the most important measures carried out by the liberal policy of the Montreal Telegraph Company has been in the arrangement of its tariffs. In doing this it has been, of course, much aided by its exceptional freedom from the drain caused by inferior construction which, in so many cases, has periled the existence and maimed the service of so many Companies. By resolutely refusing, also, all inducements to increase its stock, except in the acquisition and representation of actual property, it has kept itself powerful for the most radical and aggressive measures. For some years prior to 1871, it had steadily and carefully reduced the basis of its tariff, as its facilities multiplied and its business increased. Thus while lines were extended to new regions, additional wires added to the trunk lines, new offices opened to meet public convenience, and the capital enlarged to cover the cost of new property, the tariff was correspondingly lowered without impairing the average profits of the business. And when, in 1871, the Company found that the outside structure was measurably complete, that all available territory, where population or commerce seemed to demand the telegraph, was covered, that the company was utterly free from debt, and munificent structures had been provided for its great central offices, it ordered (June 1, 1871) the establishment of a uniform tariff of twenty-five cents for ten words and one cent for each added word throughout its entire territory from Sarnia to Sackville. The only exception to this was an order to limit the charge on messages to places under twelve miles from any office to fifteen cents. And it is a significant fact that what the British government after a lengthened experiment has accomplished only at a loss, the Montreal Telegraph Company executed without the reduction of its revenues or diminution of its regularly recurring dividends. These dividends have been as follows:

YEAR.	Capital.	Miles of wire.	Dividend.
1847 .....	\$60,000	500	10 per cent.
1850 .....	60,000	700	10 "
1860 .....	370,000	1,900	9 "
1870 .....	1,000,000	12,400	10 "
1875 .....	1,925,000	20,000	10 "

This contrast with the result in Great Britain is much more marked when all the circumstances are considered. In Great Britain the population is dense, the distances limited, the roads magnificent, the police perfect, labor low, rents largely obliterated by domiciliation with the post-offices of the country, the cost of labor even divided by a mixed service, a state of things in which every element necessary to economy seems provided, and a teeming population and vast national wealth to back it up. In Canada, on the contrary, almost every condition named is absent. And yet, while the one subsists upon the treasury of the state and the taxation of the people, the other pays a handsome profit, which keeps its stock at a premium exceptionally large. In Great Britain all extra words are charged at the rate of three pence or six cents for each five words, and there is no minor rate as in Canada for short distances.



TELEGRAPH POLE -- MONTREAL TELEGRAPH CO.

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In the arrangements of the Montreal Telegraph Company with the Provincial press, the enterprise of the one has been met by the liberality of the other. The Toronto *Globe*, for example, contains, during the sessions of the legislature, from three to five columns of verbatim reports telegraphed from Ottawa, while the local items telegraphed from every quarter of the Dominion occupy three to four columns more. To this must be added the United States and European news by cable. All this vast daily and nightly service is performed at a cost of forty cents for the first one hundred words and twenty-five cents for each additional one hundred, and a further charge of \$20 per week for American and European news. These charges enable the proprietors of the leading papers to receive totally independent reports.

May 29, 1858, the Montreal Telegraph Company became a party to the general agreement by which the leading companies of the Continent associated for purposes of mutual protection, and occupies jointly with the Western Union Telegraph Company, with which it acts in friendly co-operation, offices at the points of contact, at Whitehall, Oswego, Buffalo and Detroit.

At the close of 1876, the Montreal Telegraph Company owned and operated 12,044 miles of line, 20,479 miles of wire, had 1,507 offices, 2,625 instruments, and numbered in its employ 70 female and 2,267 male employees.

The present organization of the Montreal Telegraph Company is as follows:

PRESIDENT—Sir Hugh Allan.

SECRETARY—James Dakers, Esq.   TREASURER—Charles Bourne, Esq.

BOARD OF DIRECTORS.

George W. Campbell, M. D.,  
Peter Redpath, Esq.,

Andrew Allan, Esq.,  
Hon. E. G. Penny.

GENERAL EASTERN SUPERINTENDENT—James Dakers, Montreal.

GENERAL WESTERN SUPERINTENDENT—H. P. Dwight, Toronto.

DISTRICT SUPERINTENDENTS—N. W. Bethune, Ottawa; E. Pope, Quebec; D. Van Ostrand, Watertown.

## THE DOMINION TELEGRAPH COMPANY.

It was not to be expected that the Montreal Telegraph Company would be permitted to settle down in quiet and dignified repose, even after all which had been done to meet public necessities by the extension of lines and the reduction of rates, without some rival again appearing to stir her nest. Counter irritants and exercise are as sanitary for telegraph Companies as for men, and the Montreal Telegraph Company had had, in a somewhat mild way, the benefit of both. But when Selah Reeves, in 1868, began operations to found the Dominion Telegraph Company, on learning something of his antecedents, his mission was regarded as only a new scheme which would serve a temporary purpose of personal enrichment on the one side and of phlebotomy and irritation on the other, and which would then, like all its predecessors, fade away. It seems, so far at least, to have been ordained otherwise.

The organization of the DOMINION TELEGRAPH COMPANY, a very felicitous title, which had a certain stateliness of sound indicative of a large design, took place, in its incipient form, in 1868, under the general laws of Canada relative to telegraph companies. It was organized chiefly on subscriptions said to have been obtained in Clifton, Ontario, which probably had little basis in reality, yet which served the purpose of creating an ostensibly qualified body who could execute a contract for construction. To the founder of a Telegraph Company the contract for construction, especially when made on his own terms, was the nugget on which his heart specially dilated and delighted. This was especially so with Mr. Reeves. When the contract was executed, it gave him an order to build 2,000 miles of single wire line at the rate of \$250 gold per mile. The profits on such a contract, with a line built in the airy style of similar philanthropists, would have amounted to about \$300,000, and which, of course, was a most potent incentive to enterprise. In 1867, however, at a meeting of stockholders held in Quebec, the Reeves contract, after a few hundred miles had been constructed, received a thorough airing and was soon after canceled.

By that time, a few men of energy who had been drawn into the work, determined to endeavor to save the property from ruin and make the Company a success. Under their management the lines were considerably extended, and the affairs of the Company soon after fell into the hands of men of character and established reputation. The further extension of the lines was given to E. Colby, of Oswego, N. Y., under a fair contract, and have, since then, been gradually extended until all the points of importance between Buffalo, N. Y., Detroit and Quebec have been connected.

The Company was not thoroughly organized until January 11, 1870, when its annual meeting was held in Toronto. At that time the line was still very limited and incomplete, but had been freed from embarrassments and had been commended to public appreciation by the election of the following officers: Hon. J. McMurrich, President; J. I. McKenzie, Vice-President; James Michie, Treasurer; Hon. J. H. Cameron, Consulting Counsel; Hon. M. C. Cameron, Solicitor; H. John Colles, Secretary.

The Board of Directors were Hon. J. McMurrich, A. R. McMaster, L. Moffatt, J. Michie, Hon. W. Cayley, of Toronto, J. I. McKenzie, A. Copp, of Hamilton, S. Nelson, of St. Catherines, T. N. Gibbs, of Oshawa. In this Board there was no representative from Clifton, and the names of those chosen were well known as belonging to citizens of influence and ability.

The Company had been organized under the general telegraph laws of the Dominion, but, in 1871, the passage of a special Act of incorporation was secured to clear away the debris of the former. In 1874 a further Act was passed, which granted the same rights and privileges enjoyed in the Provinces of Ontario and Quebec to the eastern Provinces.

At present the lines of the Company terminate at Oswego, Buffalo, Detroit and Quebec, and embrace 3,660 miles of line, 7,162 miles of wire, and 366 offices. Its connections in the United States are with the Atlantic and Pacific and Vermont International Telegraph Companies. The Dominion Telegraph Company also has a contract for a term of years with the Direct United States Cable Company, which secures to

it the European business by that Company for Canada. The Company is engaged in extending a line through Canadian territory from the cable landing at Tor Bay, Nova Scotia, via Halifax, to Quebec, by way of Pictou, New Glasgow, Guysboro, Cape Canso and Antagonish, to complete which, \$300,000 in preferential bonds have been issued.

The capital of the Dominion Telegraph Company is \$700,000. Its present officers are :

## BOARD OF DIRECTORS.

Hon. T. N. Gibbs, Prest.	Hon. Wm. Cayley,
John I. Mackenzie, Esq., Vice-Prest.	W. F. McMasters, Esq.,
James Michie, Esq., Treasurer.	A. Copp, Esq.,
Thomas Swinyard, Esq., Man. Direct.	Lawrence Olyphant, Esq.

## LOCAL DIRECTORS.

M. H. Gault, Esq., Montreal.	A. Joseph, Esq., Quebec.
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## EXECUTIVE OFFICERS.

Thomas Swinyard, Esq., General Manager, Toronto.  
Fred. Roper, Esq., Secretary, Toronto.

## DIVISIONAL SUPERINTENDENTS.

H. Neilson, Toronto.	T. C. Elwood, Toronto.
C. R. Hosmer, Montreal.	D. B. McQuarrie, Halifax.

## THE NEW BRUNSWICK ELECTRIC TELEGRAPH COMPANY.

No movement was made to erect the telegraph in New Brunswick until 1847, when Mr. Lawson R. Darrow started a project to connect the lines of Nova Scotia with those of Maine, from Calais, Me., to Amherst, N. S. An Act of incorporation was granted by the legislature for this purpose March 30, 1848. A project of a line to Quebec proposed about the same time by F. N. Gisborne, on behalf of the British North American Telegraph Association, with exclusive privileges for the construction of telegraph lines within the Province, was rejected.

Mr. Darrow was the agent of the Morse patentees, and on the 17th of May, 1848, at a meeting of the business men of St. John, proposed to construct a line of telegraph from Calais, Me., to St. John, N. B.,

for \$150 a mile. The offer was accepted, and stock books were opened for subscriptions. These, however, remained for some time almost unnoticed. The project for some time bore no promise of support. Stimulated, however, by guarantees of aid by the Associated Press of New York, who needed communication with Halifax, by October 2 the subscription was sufficiently advanced to induce organization into a Company. This was done, and on October 4th the New Brunswick Electric Telegraph Company was organized, and a contract was made with Mr. Darrow to construct the line on the terms of his offer. The capital stock was \$40,000, in 1,000 forty-dollar shares.

The line to St. John, through St. Stephens, St. George and St. Andrews, was completed January 1, 1849, nearly seven weeks before the completion of the lines of the Maine Telegraph Company between Portland and Calais, which were not opened for business until February 13, 1849. During the ensuing summer Mr. Darrow succeeded in obtaining additional subscriptions, which enabled him to extend the line from St. John to Hampton, Sussex, Salisbury, Dorchester and Sackville to Amherst, there to meet the Government line of Nova Scotia. This section was completed and opened for business October 3, 1849. The Nova Scotia Government line, built under the direction of Mr. Gisborne, was completed from Amherst to Halifax November 9, 1849, at which time Halifax, for the first time, was connected telegraphically with New York.

On the completion of the line to St. John, the Company was permanently organized by the election of Francis O. J. Smith, Lawson-R. Darrow, Robert Jardine, Edward Allison and John Duncan as directors. All these men are now dead. Mr. Jardine was President until 1865, when he was succeeded by Edward Sears, Esq., its present executive officer. The present directors are Edward Sears, Robert Reed, John Yeats and Robert T. Clinch, of St. John, and W. H. Wiswell, of Halifax. Mr. Clinch was elected to the directorship in 1869, on the death of Mr. Duncan. Mr. Wiswell is and has been for many years the able and discreet manager of the Western Union Telegraph Company's office at Halifax.

On February 1, 1856, the lines of the New Brunswick Electric Tele-

graph Company were leased for ten years, with the privilege of renewal, to the American Telegraph Company at an annual rental of \$3,000, now \$3,240, and were placed under the superintendence of D. B. Stevens, one of the early stockholders of the American Telegraph Company. He was succeeded in April, 1865, by James G. Smith, whose jurisdiction was extended from Sackville to Boston, and whose assistant was Robert T. Clinch, to whom was given the charge of the lines in New Brunswick. Mr. Smith resigned in 1867, when the management of the lines from Sackville, N. B., to Bangor, Me., which by that time had come under the direction of the Western Union Telegraph Company, was given to Mr. Clinch. On the resignation of Jesse Hoyt, superintendent of the Nova Scotia lines in 1869, Mr. Clinch was assigned to the management of all the lines under the direction of the Western Union Telegraph Company in New Brunswick and Nova Scotia.

The telegraph lines through the eastern provinces of the Dominion of Canada owe their origin largely to the influence of the New York Associated Press. During 1847-8, the Press association ran a steamer between Digby, N. S., and Portland, Me., to carry news received by the Canada steamers at Halifax, and from thence sent overland by express riders to Digby, 149 miles, and which was sometimes accomplished in less than eight hours and a half, or  $17\frac{1}{2}$  miles an hour, to be dispatched from thence by steamer to Portland and telegraphed to New York from Portland in advance of the arrival of the Cunard steamers at Boston. This was conducted with much vigor under the management of D. H. Craig. The express rider was the great event of the day. As he flew past Annapolis, his horse white with foam, and the whole population lining the road, a gun was fired to inform the captain of the steamer of his approach. Immediately anchors were weighed, steam raised, the pilot took his place at the wheel, and the small boat, manned by athletic seamen, was sent ashore to receive the bag of the express rider, as at full speed he arrived at the shore.

This process, though full of eclat and splendidly performed, was expensive, and the Associated Press agent offered to guarantee the payment of a liberal sum to any company who would construct lines of telegraph between Calais and Halifax, which they could use for

their business. Until this was offered no subscriptions of any value were secured. For this guarantee the press stipulated for the exclusive use of the wire, thus erected, on the arrival of a steamer from Europe, long enough to transmit a dispatch of 3,000 words. Without this guarantee the lines in that region would probably have long remained unbuilt. The importance of this press arrangement became apparent when F. O. J. Smith commenced his battle with D. H. Craig, and determined to prevent the transmission of foreign dispatches for the New York Associated Press. Writing to Mr. Smith, protesting against his inimical measures, Mr. Darrow, representing the Company, thus reveals the dependence of the Canadian lines upon the press support :

“Without the sum paid by the Press, it will be impossible for us to support ourselves under the best of circumstances. There is no alternative that we can see, as the stock will not be worth a penny under the circumstances you seem disposed to place it in.”

Mr. Smith, however, persevered, and refused transmission of Associated Press dispatches over his lines between Portland and New York. This led to the rapid construction of a Bain line by Henry O'Reilly between Boston and Portland, on the pledge of receiving the steamers' news for transmission, which, with the decided stand taken by Peter Cooper, President of the American Telegraph Company, in ordering Craig's dispatches to have priority whenever justly entitled thereto, placed the Associated Press forever free from Mr. Smith's control.

Among the early telegraphers on the New Brunswick lines were Waldo H. Collins and Samuel Black, at Calais ; — Mount and John Byrne, at St. John ; John Raymond, formerly of Rome, N. Y., and Henry Frink, at Sackville. One of the aboriginal operators at Sackville was a character, and bore the name of Spike. He was skillful but erratic, and “replenished his local” with dangerous frequency. He had a large iron spike stuck at a convenient place on the operating board, to which, when under full sail, he held on by the left hand, while he made the key trot at a lively pace with the right. Both the spike and the man have long since passed away.

Mr. Robert T. Clinch, the superintendent of the lines in Nova Scotia and New Brunswick, entered the service as operator at Richibuctoo, in

1849. He was transferred shortly thereafter to Miramichi, where he remained until 1852, when he was appointed book-keeper and cashier at St. John. When the lines were leased to the American Company, Mr. Clinch was appointed auditor of the New Brunswick district, and in February, 1867, became Superintendent of the Second District, E. D., of the Western Union Telegraph Company. This important post he still retains, directing its affairs with ability and discretion, commanding the utmost confidence of the company, and highly esteemed as a citizen and friend.

#### THE NOVA SCOTIA ELECTRIC TELEGRAPH COMPANY.

In the Eastern British Provinces the telegraph system was inaugurated by the construction by the Government of Nova Scotia, of a line of 125 miles in length, between Halifax and Amherst, to meet the American and New Brunswick lines at that place, and which was erected in response to the demand for the telegraphic transmission to New York of European news received by steamers arriving at Halifax.

This line was built under a peculiar pressure. F. N. Gisborne, as agent of the British North American Telegraph Company had attempted to obtain from the Legislature of New Brunswick an exclusive grant to extend lines from Quebec, into and in the Eastern British Provinces. The merchants of St. John had defeated this project. Their interests lay and they wanted connection with the United States seaboard. To grant an exclusive right to a party interested only in extending the lines to Quebec might prevent or delay such a connection. When application, therefore, was made to the New Brunswick Legislature to grant exclusive privileges, such as was asked, it was at once vigorously opposed and defeated.

Failing to carry out his plans in New Brunswick, Mr. Gisborne attempted to secure similar rights from the Legislature of Nova Scotia. At that period the Premier of the Government of Nova Scotia was Hon. Joseph Howe. He opposed the grant of a charter to Mr. Gisborne's Company, but had a bill passed granting a similar authority to Government. Under this authority, a grant of \$16,000 was passed to

construct a line of 125 miles, between Halifax and Amherst, the latter being the connecting point with the lines then projected in New Brunswick. The pressure behind all of these projects was the demand of the New York Associated Press, for the means of obtaining the telegraphic transmission of news which the Cunard steamers dropped at Halifax, on their way to Boston. The line was built by Mr. Gisborne for the Government, and was completed November 9, 1849. When completed it was placed in Mr. Gisborne's management as Government Telegraph Director, and in which he continued until 1851, when it was sold at cost to the Nova Scotia Electric Telegraph Company then organized. A line of 45 miles in length, erected by private parties, under special governmental sanction, between Pictou and Truro, was erected in 1850, and afterward sold with the Government Telegraph property.

The origin of the Nova Scotia Electric Telegraph Company was partly political. The opposition party in the Legislature saw in a telegraph under Government control, a means of influence which they vigorously decried as wrong and dangerous. At the same time, many had come to regard the telegraph as capable of being made highly remunerative as a private enterprise. Between these two sources of agitation an Act was passed conveying the Government Telegraphic property and franchises at cost to a private Company to be organized as the Nova Scotia Electric Telegraph Company, with a capital of £20,000, and which was afterward increased to \$120,000. This Company was chartered March 31, 1851. Its incorporators were Thomas Killam, William A. Henry and Hiram Hyde. Among the obligations required by this charter was the purchase of the Government and Truro and Pictou lines at cost, and the extension of the system to Yarmouth and Sidney, C. B., at both the extremities of the Province. The Imperial and local Governments were to be entitled to preference in its employment. Some of these exactions were deemed oppressive, but as they were connected with the exclusive privileges granted to the Government, they were accepted. These exclusive rights thus acquired, have never been formally withdrawn, but, since the Provincial Confederation Act, have been practically ignored by grants of charters to other Telegraph Companies.

The act of incorporation provided :

1. A single tariff, applicable to all messages going from any office to any other office within the Province. This tariff to be subject to legislative approval.

2. No dividend exceeding eight per cent per annum to be declared, but a "casualty fund" to be created from surplus earnings until such fund amounted to one-quarter of the capital. Any excess over such an accumulation to be employed either in the extension of the lines or in reducing the tariff.

3. Branch lines might be erected and connected with the trunk line, upon the parties erecting them guaranteeing the payment of the expenses of their maintenance.

4. The Telegraph Company to present to the legislature, within ten days of the opening of its sessions, a detailed statement of the business of the Company and the tariff of charges.

5. Government to have the right of purchase of the lines at cost, interest and a bonus of ten per cent.

6. Operators, before entering the service, to take oath before a Justice of the Peace to preserve the confidentiality of dispatches, and who thus became liable to charge of perjury for violation. No sworn operator to be subject to jury or militia service.

7. All towns where stock was subscribed to have the right to elect one local director. Where 160 shares had been subscribed, two directors could be chosen, and so of larger amounts up to 2,080, which entitled to a representation of five directors. Local directors were permitted to vote by telegraph in the election of officers and of members of the executive committee.

The lines of the Nova Scotia Electric Telegraph Company were erected with great care, in accordance with a printed form, which stipulated :

1. That forty poles were to be planted per mile, each to be set five feet in the ground, to be twenty feet long, preferably of Hachmatack if to be found within ten miles of the place of planting, and to be not less than five inches at the small end.

2. The wire to correspond with the wire of the Government lines, and to be of the finest of annealed charcoal iron.

3. The insulators to be of the best glass on iron pins or hooks, corked and properly covered with canvas.

4. Batteries to be of the best material.

Immediately upon the preliminary organization of the Company, stock books were opened, and the capital quickly subscribed. The shares were \$20 each, and were held by parties all over the Province. "Double liability" was one of the prominent features of the stock. A contract was at once made to extend the wires from Pictou to Sidney, C. B., and from Halifax to Yarmouth, by two routes, one via Windsor and the other via Liverpool, with various branch lines from each. On the opening of 1856, the Company had in operation 1,770 miles of line and 53 offices.

The Company, as first organized, had no superintendent. The chief operator at Halifax had general charge of the line. The fiscal affairs of the Company were managed by a Secretary and Treasurer. The repairs of the line were made on contracts for certain sections, under the inspection of local Directors until 1857, when a Superintendent of repairs was appointed.

The first President of the Nova Scotia Telegraph Company was Sir Samuel Cunard. United with the President as an executive committee were Charles Dickson, James Stewart, Thomas Hosterman and George E. Morton. Hugh Hartshorne was Secretary and Treasurer.

The Nova Scotia lines were all worked on the Morse system, and, until 1859, the Morse recording registers were in universal use. The first to read by sound was A. M. McKay, at that time chief operator at Halifax, and now Superintendent of the Anglo-American Company's lines in Newfoundland. Transmission by sound soon after became universal. The tariff was fixed at 12½ cents for ten words between the two nearest offices. The highest tariff between extreme points was 75 cents. Until 1859, a preferential contract existed with the New York Associated Press. It gave immediate and exclusive use of the line to transmit 3,000 words on the arrival of a steamer, upon a payment of \$150.

The Nova Scotia Electric Telegraph Company, although under prudent and able management, was not a financial success. The shareholders for two years received interest on their investment, and then all dividends not only ceased, but the Company began to fall into debt. The hopes based on the Atlantic cable had so far failed. Permission,

therefore, was obtained from the legislature to effect a lease to responsible parties.

Meanwhile, Cyrus W. Field had perfected new arrangements for the landing of the Atlantic cable on the shore of Newfoundland, and it became of the utmost importance to him and his associates, to acquire the lines through Nova Scotia. After a number of careful conferences with the directors of the Nova Scotia Electric Telegraph Company, a lease of the Nova Scotia lines to the American Telegraph Company was effected May 4, 1860, at a yearly rental of \$6,500 per annum for ten years. This lease was made renewable for ten years longer at the expiration of each ten years, up to fifty, and to then terminate. At each renewal, the terms of the lease were to be enlarged \$1,200 per annum during the term of the first renewal; \$2,400 during the second; \$3,600 during the third and \$4,800 during the fourth. An additional \$6,000 per annum was to be added as soon as the Atlantic cable became an established means of communication.

This important lease, which embraced a system of carefully constructed lines to all portions of the Province, and which were also extended to Cape Breton, was executed on the part of the Nova Scotia Electric Telegraph Company by E. O. Maynell, President, and W. H. Wiswell, now the excellent and much respected manager of the office at Halifax, as Secretary. On the part of the American company, the lease was signed by Zenas Barnum, President, John McKesson, Vice-President, R. W. Russell, Secretary.

On the execution of the lease, James G. Smith was appointed Chief Operator and Jesse Hoyt, Superintendent. Mr. W. H. Wiswell, who had for six years been Secretary and Treasurer of the Company, was made Auditor and Cashier. About \$75,000 was expended in reconstruction and extensions. The failure of the cable of 1865, however, introduced dissensions between the lessors and lessees, and the lease was terminated May, 1866. In December of the same year it was renewed on favorable terms with the Western Union Telegraph Company, through the agency of Hon. R. B. Dickey, who was delegated by the Nova Scotia Company for that purpose. This lease is still intact.

The Montreal Telegraph Company in May, 1872, proposed to pur-

chase the Nova Scotia lines, and \$150,000 was named as the purchase-price. The time allotted for the purchase, however, was allowed to expire. An offer of a like amount for a transfer of the stock of the Nova Scotia Telegraph Company, the capital having been fixed by law at \$150,000, was then made by the Western Union Telegraph Company. This offer was accepted and ratified at a meeting of stockholders December 5, 1872, when the transfer was immediately made. The organization of the Nova Scotia Electric Telegraph Company, in order to comply with the requirements of the Acts under which it was chartered, is still maintained. Its officers are W. M. Harrington, President; C. H. M. Black, R. B. Dickey, R. T. Clinch, Directors; W. H. Wiswell, Secretary and Treasurer.

The whole of the region covered by this lease, from Vanceboro, Me., to Sidney, Cape Breton, is under the direction of Mr. Robert T. Clinch, District Superintendent of the Western Union Telegraph Company. Mr. Clinch has risen from the ranks by great fidelity to his various trusts and by fine administrative ability. He is also a man of much purity of personal character, and natural refinement.

The Telegraph lines of Newfoundland, which were constructed by the NEW YORK, NEWFOUNDLAND AND LONDON ELECTRIC TELEGRAPH COMPANY, in connection with the Atlantic Cable enterprise under Cyrus W. Field and others, are so connected with the history of the AMERICAN TELEGRAPH COMPANY, that they are omitted from what otherwise would be their appropriate place as a part of the Telegraph organizations of the British Provinces of North America.

## CHAPTER XXVII.

## THE NEW YORK AND BOSTON MAGNETIC TELEGRAPH COMPANY.

HON. F. O. J. SMITH was, in 1839, the representative in the Twenty-sixth Congress from the Cumberland Congressional District of Maine, and Chairman of the Committee on Commerce. He was a man of active intellect, shrewd, vigorous, aggressive, and of a nature cold, sharp and imperious. His eye was grey, his forehead high and indicating power, his lip thin, his profile sharp, his mouth willful. His aspect was hard, assertive, impregnable. He had a gentler visage to his home and friends, and to them was undoubtedly genial and devoted. Like many such men his best qualities developed themselves at his death, which took place October 15, 1876, when, among other charities, he left a large legacy to a home for aged women, and a library for his native town.

Mr. Smith became acquainted with Professor Morse in 1839, when the latter appeared before the Committee on Commerce to exhibit his invention in connection with his application for congressional aid for a public test of its availability as a national means of communication, and in response to the circular of Levi Woodbury, Secretary of the Treasury, requesting information on the general subject. Before this committee Mr. Morse, after a brief history of its origin, illustrated his invention in detail, and gave his opinion of its capacity as a public agent. Mr. Smith was thoroughly interested. Mr. Shaffner, in his own grand way, says of this interview: "The hidden power of the crudely formed agencies employed by the Professor were seen and appreciated by Mr. Smith's searching perceptions, and their sublimities and subtilities seemed to challenge his admiration and aid. He felt the awe of a

divinity's wisdom and presence." Whatever awe Mr. Smith felt stirring his somewhat frigid blood as he looked on the Morse mechanism, he instantly perceived its pecuniary value, and so communicated this conviction to his committee as to induce them unanimously to agree to a favorable report. Mr. Smith was even frank enough to say to Mr. Morse that there was a million in it. He was so unreserved, also, that he informed Mr. Morse that the framing of the report of the committee would be left to himself, and that he wanted to secure an interest in the invention. His perceptive faculties were alert and strong.

Professor Morse, on the advice of Hon. Henry L. Ellsworth, Commissioner of Patents, with whom he consulted in reference to Mr. Smith's proposals, declined the proffered partnership, because of Mr. Smith's position as a member of Congress. He deemed it improper and offensive to public morality to have a report recommending a comparatively large appropriation of public money presented by a party in interest. He saw that the knowledge of such an act could not fail to cause it to be regarded as in the nature of a bribe. Further consultation, the result largely of Mr. Smith's pertinacity, aided by Prof. Morse's needy position, led to an arrangement by which Mr. Morse's scruples were respected, and one-quarter of the patent interest became assigned to Mr. Smith. The terms of the assignment were as follows: 1. Mr. Smith was to resign his seat in Congress, and which he did by obtaining a furlough for the balance of the session, then near its close, and declining re-election. 2. He was to become Prof. Morse's counselor, was to aid him in protecting his rights, and to be, in general, his legal guide in prosecuting their mutual interests. 3. He was to accompany Prof. Morse to Europe, to provide the means and adopt the measures for securing European patents, and bear for a period Prof. Morse's expenses.

Under these stipulations he at once became possessed of one-quarter proprietorship of the Morse patent. His control over it was strengthened by making his assent necessary to any conveyance. Never was a partnership in all respects more unfortunate. A territorial division, such as afterward became necessary because of the utter incongruity of the alliance of two men of natures so opposite, would have kept out of the courts and out of the literature of the law the record of

much personal suffering and of much destructive and shameful litigation. The other proprietorships in the patent were, viz.: Professor Morse, nine-sixteenths; Alfred Vail, two-sixteenths; Dr. Gale, one-sixteenth. Professor Morse afterward purchased Dr. Gale's interest for \$15,000, thus making his interest five-eighths. Mr. Smith's interest in the patent abroad was five-sixteenths.

On the execution of the contract respecting the proprietorship, arrangements were made for active operations. Hon. Amos Kendall, as agent for Professor Morse, was sanguine in the belief that Mr. Smith and he could pull together. As autocrat of the post-office, he had imbibed a strong sense of personal power. Their first mutual effort was not assuring. It was as a committee of the Magnetic Telegraph Company in an attempt to secure right of way along the New Jersey railroads for the construction of its projected lines. This failed so signally that Smith declined longer service upon the committee, and, with natural gravitation, and with the consent of Mr. Kendall, commenced measures to inaugurate the telegraph in New England.

Preliminary steps were taken in Boston to interest capital in the invention, similar to those in New York. An experimental line was built from Milk to School streets, and Mr. E. Cornell was appointed to exhibit the apparatus. In order to clear expenses, admittance was by twenty-five cent tickets. Mr. Cornell was to have all the profits, and pay all expenses. Prof. Morse furnished the machinery. During the progress of this exhibition, Mr. Cornell wrote Hon. H. L. Ellsworth, Commissioner of Patents, November 23, 1844, as follows:

BOSTON, *November 23, 1844.*

DEAR SIR— I am happy to be able to inform you that the exhibition of Prof. Morse's Telegraph here is doing much to interest the business men of this city in favor of it, and its extension between the principal cities; I frequently hear men of the soundest minds express the opinion that it will become indispensable in the transmission of business intelligence in a very short time.

It is already, and very justly, regarded as the greatest invention of the present age, and Prof. Morse is destined to reap a rich reward.

Your obedient servant,

E. CORNELL.

Hon. H. L. ELLSWORTH.

Prof. Morse, for a brief period, personally assisted Mr. Cornell in the demonstration of the invention, and returned to New York. Mr. Cornell, soon after, wrote him as follows :

“ Professor MORSE :

“ Dear Sir— I don't know what Smith is moving about, but I am sure that if I had the business to manage, I should have no difficulty in getting a good Company organized at once, with ample means to erect the line from this to New York. The Board of Brokers have visited the Telegraph and were delighted with it. The improvement in the number of visitors will prevent any loss from the exhibition of the machinery. The paper for the register I obtained of Curtis Newton, of Lower Falls, at fourteen cents a pound. I have taken extra pains in behalf of your interest.”

The result, however, was, that Boston did not invest a dollar in the Morse Telegraph, and Mr. Smith commenced its construction from New York to Boston with his own means and money invested by his own personal friends. The failure to secure capital in Boston was ascribed to the influence of Dr. Jackson, Prof. Morse's companion on the ship “ Sully.” He certainly did his utmost to disparage the telegraph as the offspring of any brain not his own.

The route selected for the line was via Bowery and Third avenues, along the Harlem Railroad for a few miles, thence along the turnpike via Stamford, Norwalk and Bridgeport to New Haven ; and from thence by way of the Hartford, Worcester and Western Railroads to Hartford, Springfield, Worcester and Boston, the patent covering also “ all points intermediate by any other route.” The trustees appointed, under the articles of agreement respecting the patent were, Crawford Livingston, Benjamin B. Mussey and James W. Thompson, whose powers, as in the case of the O'Reilly contract, were defined by reference to the articles of association of the Magnetic Telegraph Company. The terms of the patent required the issue of one dollar to the patentees for each dollar expended in the construction of the first three wires or in issues of stock therefor. The contract for construction was given to George E. Pomeroy, of New York, which stipulated that the line was to be built with twenty-five poles per mile, and to be mounted with two copper wires properly insulated.

In connection with the requisitions of the contract for the construction of the line to Boston, it is very curious to notice the operation of the inventive faculties of such men as Mr. Smith and Mr. Kendall in the matter of insulation. Mr. Smith, at one time, was understood to regard insulation as a device entirely unnecessary. This idea he either imbibed from his friend, John J. Speed, who once held a somewhat broad idea of the limited value of insulation, or it was a spark of his own genius. Perhaps he obtained it from H. Highton, the English clerical electrician, who, in after years, proposed to lay a naked wire across the ocean for transatlantic correspondence. Amos Kendall, on the contrary, was so anxious to secure perfect insulation, and so magnified its necessity, that he had every alternate pole cut down over a large section of the Magnetic Telegraph Company's line, to reduce the number of the points of contact.

Mr. Smith's attempts at insulation, when the line was first built, were peculiar. In a letter written to Henry O'Reilly, in December, 1845, he described his plan, and to which he added the accompanying sketch, by which he illustrated it. "I put my wires up," he wrote, "in both a more useful and, in milder latitudes, cheaper form. I use no glass cap, nor cross-bar, but only blocks saturated thoroughly with tar and resin, and also a tin cover and saturated cloth thus." And he magnified this extraordinary arrangement with refreshing ardor. The drawing is his own. Many an operator, as he looks at it, will shudder as he wonders how with such an insulation the operators ever got their files clear on wet nights! How patient and long-suffering they must have been as they turned, turned, and re-turned seventy times seven the patient adjusting screw of the spring of the relay! The long and weary nights of service of these happily bygone years are all written on the crooked lines of Smith's insulator, and on the massive spikes which held it to its place.

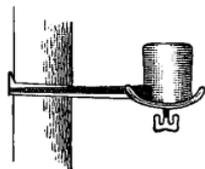
Mr. Kendall's was equally remarkable, and he gave it a careful and lengthy description and illustration. He wrote of it as follows: "India-rubber, it is believed, is an effectual insulation. I think the following the cheapest mode yet devised and as effectual as any. With a wide set-saw or otherwise, make a gap in the post downwards, at an angle



of forty-five degrees, wide enough to receive the wire with its covering. Just cover the wire with the best India-rubber cloth, or a composition of which India-rubber is the chief ingredient, so far that the covering shall extend about two inches from the post on each side. Over that wrap sheet-lead or tin-foil, not, however, extending more than an inch on each side of the post. Sink the wire so covered into the gap in the post, then pass large twine turned around the lead covering on each side of the post and tie it tight around the side of the post opposite to the gap. It will have the double effect of confining the lead and turning off water." The modern operator sighs as he gazes on these primitive methods, and wonders how there can be a solitary survivor of that scientific period. Happily, Mr. Kendall never tried his insulator.



Strange also, as it may seem, Mr. Cornell, who had introduced the glass insulator, took the epidemic itch to experiment on new methods of insulation. The habitues of the telegraph offices at No. 5 Hanover street, remember with a shudder as perhaps suggestive of a lower depth, how the fumes of brimstone came reeking up from the sub-cellar below the operating room, where Mr. Cornell was endeavoring to mould into form, by fire and sulphur, one of the most disastrous modes of insulation ever employed. He had much to do in the introduction of the brimstone age. Mr. French adopted it on the Magnetic Company's lines almost to their ruin. Mr. Cornell put it on the Erie, and, perhaps, that ill-starred company therein found a quick passage to its grave. The Novelty Works also, at Pittsburgh, Pa., made great quantities of the brimstone insulator, which consisted of an iron hat filled



with hot brimstone, into which an iron stem, with hook, was held until cooled. There was disaster wherever it went. They were used on the Boston line, when, in 1848, the Board of Directors, disgusted with the Railroads, built another line across the country from Clappville near Worcester to Enfield Bridge, Conn., using the new brimstone insulator as, perhaps, indicative of the vengeful feelings under which it was employed. It was the outgrowth of an economy which cost untold trouble and

loss. But it was one of the errors of a period which was full of them, and which, perhaps, because of its extreme badness, hastened the adoption of better modes. It was probably owing to the brimstone improvements that the Treasurer for that year made the following somewhat discouraging statement :

Receipts for the year.....	\$34,835 00
Expenses during the same period.....	36,034 00

The Company was organized under an act of the Legislature of Connecticut, passed in the session of 1845-6, as the "New York and Boston Magnetic Telegraph Association," with a capital of \$175,000. F. O. J. Smith, President ; Thomas M. Clark, Secretary and Treasurer. Prior to organization, J. I. Marshall had served as secretary. The Legislature, about the same time, passed a law granting protection to telegraph property.

The line was finished between Boston and Lowell February 21, 1846, and Miss Sarah G. Bagley was appointed operator at the Lowell depot. She was, undoubtedly, the first lady operator. The line to Springfield was finished March 22d ; Hartford, March 26th ; and New Haven about the 1st of May. The line was completed between New York and Boston June 27, 1846, and was, a few days after, opened to the public. The offices at Boston and Worcester were in the Merchants' Exchange rooms of those cities. In Springfield the office was in Massasoit Row ; in Hartford at Imlay's, corner Main and Pearl streets ; and in New Haven at Brewster's.

The office in New York was in Post's Building, corner Beaver and Hanover streets, within a few rods of Prof. Morse's mother's birth place. The manager of the office was Mr. J. F. Foss, a man of much excellence, skill and method, whom Mr. Smith afterward sent south with Charles Carville, J. P. Nash, Goulding and Brown, to open the New Orleans and Ohio lines below Louisville, Ky. Joseph Beach was receiving clerk ; George B. Prescott was assistant and operator. Mr. Prescott entered the service March 6, 1847. W. H. Grogan and Dr. J. A. Cure were copyists, whose duty it was to write off the messages as they were read aloud to them by the operators. This was the early practice on all

lines. It caused many errors. The copyist usually stood by the side of the reader, and, mistaking sounds, very frequently wrote words not spoken. In some western offices I endeavored to correct this by double desks, which placed the reader and copyist face to face. During the first year a single messenger performed all the work of delivery of the office in New York.

In Boston the manager was Mr. Ira Berry. George B. Prescott became his assistant in June, 1847, and in October of the same year became manager at New Haven, Conn. The manager at Worcester was John Lane.

For a short time after the doors of the New York and Boston Telegraph Company were thrown open to the public, all went "merry as a marriage bell," and a goodly business was done. But the line had been cheaply and carelessly constructed. With fatal want of thought the copper wires, with their easy tenuity, were made to cross and re-cross the railroad to avoid the necessity of removing the least obstacle. As soon as a storm set in, the wires swung against each other and broke in numerous places. In one of these, 170 breaks were reported in a section of 30 miles. These breaks occurred with such frequency, that during the first year of the Company, Mr. Smith reported that the wires had not worked half of the time. Even when they did work, the business was not forwarded with the promptness of its early promise, and all through the long hours of almost every night, messages left during the day were slowly and laboriously forwarded to their destination. There were, of course, gleams of better accomplishment. Delay, however, was the rule. To add to the disasters of the opening year, the wires not infrequently dropped in the way of passing trains, and on one occasion caused the death of one man and the serious injury of another. This, and a widespread feeling which had rapidly grown against the line and its management, led to a repeal of the telegraph protective laws, and to the passage of an act so stringent in its provisions for the public safety and the protection of the rights of property owners along the route, that Mr. Smith bitterly denounced it as an act not creditable either to the sense of justice or to legislative sagacity, and urged re-organization under a charter offered by the legislature of Massachusetts.

It is not strange to find that Mr. Smith, about the same time, seriously questioned the advantage of railroad routes for the telegraph, and induced his Board of Directors to build upon the public turnpike, and remove to it a portion of the wires. Mr. Smith's report in 1848, on this subject, was as follows :

" This seemingly endless catalogue of accidents and hindrances incident to the conjunction of telegraph lines with a railroad, and especially in this climate, with each under a distinctive administration, and of which an impatient public takes but little count in their strictures on telegraph lines, and the great losses consequent therefrom, illustrated to the directors of the line *the great error* involved in the preference hitherto given to railroads over public or country roads for the site of telegraphs, and induced their advice and resolution to authorize and hasten as much as possible, *the absolute removal* of at least one wire of their line." In the same report Mr. Smith also stated that to keep the wires apart had been found to be " utterly impracticable."

At the same time that the change which followed the recommendations of this report was made, iron wire was ordered to be employed, and the further use of copper for outside conductors was discarded and abandoned.

In the emergency which soon after arose, when it became evident that, to carry on the business successfully, the outside structure required to be remodeled and strengthened, and that considerable outlay would be necessary, Mr. Smith in vain appealed to the Boston public for aid. The enterprise, as an organization, had become eminently unpopular. It had disappointed public expectations. Thus far not more than \$20,000 to \$25,000 had been raised by the sale of stock, outside of Mr. Smith's own advances. The Company had earned no money. Mr. Smith had therefore to resort to his own exchequer for the means to accomplish the changes necessary. These, however, when completed, gave very satisfactory tokens that business only waited a fair opportunity to be large and remunerative. The superintendence of the line was given to Mr. L. L. Sadler, a man of refined manners and character, formerly a clergyman, who devoted himself with much vigor and good judgment to his new duties.

In 1847, to add to the embarrassments of the company, the owners of

the House patent, which was now very prominently before the public, and more fully referred to elsewhere, projected a line from New York to Boston, under the auspices of men of capital, and which was proposed to be built with all the improvements which experience had by this time suggested, to render its operation prompt and continuous. Mr. Smith, enthusiastic over the Morse patent, was roused by this movement and derided it. He wrote to Mr. Kendall, October 29, 1847, as follows:

"To-day I bring out an offer in Boston. I propose to deposit \$1,000 in Merchants' Bank in Boston, against \$1,000 that my DURHAM BULL, weighing over 2,500 lbs., will carry a message of 1,000 words from Boston to New York in less time than the House patent can carry it, and I give the House instruments the Boston wires gratis to try on, and October and November to accept the offer in. If this offer don't get the public right, I don't know how big a bull they want to do that for them. Let this proposal have a good run through the United States, as it certainly will; for its mixture of the serious, ridiculous and sublime will make it take, and House and his Cincinnati coadjutors will run bull mad.

"F. O. J. SMITH."

This challenge, of course, afforded much amusement. But it did more than merely amuse. It heralded more effectually than by any other means, the fact of opposition by a mechanism of so singular capacity as to excite universal interest and expectation. It was one of those swords which had a double edge. Smith had announced to the world, by a handbill bigger than his Durham bull, that Morse had found an antagonist. His bull was not half so potent as he believed. Ridicule is sometimes a boomerang which returns, with damage, to the arm that wields it. The House patentees laughed, but went on building, soon completed their line and entered into a lively and, for a time, somewhat successful competition.

Among the orders given at this somewhat lively period, was one issued by F. O. J. Smith, cutting off intercourse with the western O'Reilly lines. This order re-acted disastrously. Its folly was soon seen. Other companies refused to countenance the position thus assumed. In a brief period the order was recalled. Other lines were too ready to

accept the rejected trade of the Western lines, to permit of a lengthened hostility.

Nor was it long before another tormentor came. In 1848, Henry O'Reilly had finished his western work, and had come to New York. His hatred of Smith, Morse and Kendall, kindled in the west, was still warm and eloquent. He had got hold of Alexander Bain, the Scotch scientist, who had brought from England his Chemical Telegraph, and which he exhibited in New York before many wondering eyes, who thought they saw in this a solution of the telegraphic problem. In these exhibitions, Bain, by means of a sharp battery acting through a short wire on chemically prepared paper upon the surface of a large drum, transmitted automatically by the use of a punctured paper ribbon, over a thousand words per minute. It was a process which, because of its utter simplicity and independence of mechanism, first interested Professor Morse's mind on board the *Sully*. It required only a battery and a motionless needle brought in contact with a flowing paper ribbon saturated with prussiate of potash, upon which the passing current, by interaction with the salts, left a blue mark.

Misapprehending this invention, and especially that peculiar feature of it which dispenses with the use of the relay, Mr. Smith wrote Mr. Kendall as follows :

"A horse-shoe without nails, or a shoe without a horse, is as worthless in use as the Bain Telegraph without the Relay Magnet. But, behind all this, it is God's truth and within man's reach to demonstrate, that Bain has not introduced into the Telegraph one original conception of any denomination.

"Very respectfully, your obedient servant,

"FRANCIS O. J. SMITH."

Although it was true that, excepting the rapid method, there was really no new feature introduced by Bain, yet on the exhibition of its powers, such had come to be the amount of popular interest in the Telegraph, that capital was readily found to build a third line to Boston from New York, known as the "New York and New England Telegraph Company." This route became, indeed, the electric race course of the country.

Meanwhile Mr. Smith, soon after the completion of the line to Boston from New York, organized a company to construct a line from Boston to Portland, Me., 110 miles, in which, as in the former line, he retained a largely controlling interest. The patent was also granted to James Eddy for a line from Portland to Calais, under which the "Maine Telegraph Company" was organized, and of which Hon. H. O. Alden became President. The New Brunswick Telegraph Company was organized to construct a line from Calais to Sackville; Robert Jardine, President; Douglas B. Stevens, Superintendent. Rapidly following these also, the Nova Scotia legislature erected a government line to continue the connection from Amherst to Halifax, which, at that time, was a great objective point as the landing-place of the European steamers.

#### D. H. CRAIG.

While F. O. J. Smith was thus building the telegraph through New England and before the American Telegraph Company took form, two men appeared whose work had much to do in shaping the future of the telegraph in the east, and, eventually, of the entire seaboard. The first of these was D. H. Craig, a cool, shrewd, indefatigable man, to whom processes were valuable only as they secured success. His manners were peculiar and unique. He preserved at all times the placidity of a summer's morning. His speech was as gentle and suave and courtly as if the world had made him its exceptional favorite, and he was its benignant son. Beneath this calm exterior there was a fertility of resource, a capacity of terse Saxon, especially with his pen, and an energy and force of will, which, for a time, made him a very prominent factor in the telegraphic enterprises of the period. The other was Henry O'Reilly, who having flashed through the west until his path was checked by personal disaster, returned east to take up Alexander Bain and his Chemical Telegraph, and let slip the dogs of war upon the Morse patentees with undiminished vigor and revenge.

Shortly before the advent of the Electric Telegraph, Mr. Craig had embarked in the European news business for speculative and other purposes, using trained carrier pigeons to anticipate the arrival of foreign steamers. His first field was between New York and Boston, and after-

ward between Boston and Halifax, Nova Scotia. In 1846, when F. O. J. Smith had built the line to Boston, Craig was anticipating the Liverpool steamer's news, via Halifax, from one to five hours. This led to a quarrel between Craig and Smith, which resulted in the latter assuming the right to refuse Craig's news reports until the regular press dispatches were transmitted.

After the Cunard steamers began to run between Liverpool and New York, touching at Halifax, the New York and Boston press chartered a



D. H. CRAIG.

steamer to express the news from Halifax to Boston, and thence by telegraph to anticipate the arrival of the steamers at New York. Craig, of course, did not like this, and undertook to head it off. Putting a couple of his trusty carrier pigeons into a basket, he traveled by the land route to Halifax in season to take passage on board the press express boat for Boston, and when the steamer approached the shores

of Massachusetts, his pigeons, heavily freighted with the European news, were sent off from a window in his stateroom! This was so adroitly done, that long before the Press steamer had landed, Craig's pigeons had delivered his news reports in the city, and they were published in advance by the opposition press journals! This defeat, and the heavy expenses connected with the express, led to a quarrel between the parties concerned, the boat was given up, and Craig was left in undisputed possession of what was, doubtless, a very valuable mine of trade.

Soon after the telegraph reached Boston, arrangements were made to

extend it to Portland, Bangor and Calais, Me., on the borders of New Brunswick, and in 1849 it was opened to St. John, N. B. At this point Craig had the discernment to discover that pigeons were no match for electricity, and accordingly he arranged for a horse express over the 150 miles between Halifax and Digby, N. S., and an express steamer thence 50 miles, across the Bay of Fundy, to St. John, N. B. In the first attempt to get the Liverpool steamer's news by these means, Craig encountered the opposition of John T. Smith, the then Boston joint agent of the telegraph companies and the New York and Boston press. Craig, however, beat all opponents, telegraphed the news to Boston and New York hours in advance of his competitors, and forced them to accept it through his agents at a fabulous price.

The late Mr. Hudson, then manager of the New York *Herald*, and the late Mr. Henry J. Raymond, of the *Times*, then of the *Courier and Enquirer*, were the representatives of the New York press. Appreciating now Craig's indomitable pluck and vim, they invited him to New York and tendered him the position of European news agent of the New York press, which he promptly accepted.

During the succeeding year Craig continued to superintend the express and news business of the press in the Provinces, without any interference, but on the opening of the line to Halifax, in 1849, he was startled by the re-appearance there of John T. Smith, who announced himself as charged with the duty of superintending the intercommunication between Europe and America by telegraph between Halifax and New York. Craig was to be snuffed out. Hudson and Raymond, the representatives of the New York press, refused, however, to recognize Smith and stood by Craig. Thus the matter stood when the first steamer arrived at Halifax. The government commissioner of the telegraph, the late Hon. Joseph Howe, was appealed to, both by Craig and Smith for recognition, but he decided that the only rule would be "first come, first served." Accordingly, as the steamer approached the harbor, Craig and Smith were at the steamer's wharf, a mile from the telegraph office, with the fastest horses in the Province, ready for a race. Half of the people of the city were out and lined the streets leading to the telegraph office, to witness the race between the two "Yankees." As the

steamer neared her wharf the excitement on shore became intense, but when the steamer finally came within thirty or forty feet of her dock, the purser of the steamer mounted the paddle-box and tossed a parcel of London and Liverpool journals, and a well-condensed summary of the fortnight's news directly into Smith's hands, and in a few seconds afterward, he was on his way, at high speed, to the telegraph office. Long before Craig got on board the steamer and obtained his news-packages, Smith had undisputed possession of the single telegraph wire leading to New York. Craig was badly beaten.

Here was a dilemma. Craig's reputation was at stake, and he set his wits to work to master the difficulty. His resolution was quickly formed. He telegraphed to Hudson and Raymond to instruct the Liverpool agent of the press to obey his (Craig's) orders. He, at the same time, by the outgoing Boston steamer, instructed the Liverpool agent to send, by special messenger by succeeding steamers, duplicate copies of latest European journals and news summaries; one parcel to be thrown over to his news-boat, five miles below the city, and the other to be thrown over to another news-boat stationed opposite and near to the telegraph office, one mile from the steamer's wharf.

But these arrangements required time, and time was an important factor in this "*diamond-cut-diamond*" contest of these two "Yankees." Smith had all of his arrangements completed, and the pursers satisfactorily feed, while Craig seemed to be without hope, for a month or two at least, before he could complete his arrangements. But he was equal to the emergency. A week before the next steamer was due, he manned his two news-boats and arranged for a fast-horse express from a point five miles below the city, and caused the secret to leak out to Smith that his news parcels were to be thrown over to his boats as the steamer neared the city. This was pure strategy, and was designed to impress Smith and prepare his mind for what was then near at hand.

The evening before the next steamer was due, Craig made up a parcel of old European journals, including Willmer & Smith's *European Times*, then a very noted journal of Liverpool, taking care to have a portion of the name outside the wrapper, but carefully concealing the date. A trusty agent was employed to stand with this parcel by the water's edge,

and as the steamer passed up the harbor, this parcel was thrown into the water and recovered, and then the messenger, a young fisherman, rushed at the top of his speed to the telegraph office and deposited the dripping parcel upon the table of the office, with the breathless announcement, "Here is Craig's parcel of European news." Fifteen minutes afterward Smith was seen behind a noted fast trotter, rushing from the steamer's wharf to the telegraph office. Before the horse had fairly stopped at the telegraph door, Smith had cleared the carriage at one bound and was at the top of the flight of stairs which led to the operating rooms. Running quickly into the telegraph office, the clerk pointed to the wet package upon the table, and told him he was beaten. With a single glance at the dripping package, and a fearful malediction upon his competitor, Smith turned upon his heel, drove to his hotel, and in half an hour afterward was steaming out of the harbor on board the steamer bound to Boston; Craig, meantime, proceeded at his leisure, after receiving his parcels from the steamer, to prepare the news for the telegraph. This inside history of the battle for the control of the Halifax telegraph news has never before been written, except in the private correspondence of Craig with Hudson and Raymond.

Of course, to Mr. Smith, this man Craig, with his pigeons and lively ways, was a great offense. He endeavored by every means to head him off, but Craig was always just round the corner. Driven to desperation, he finally refused to allow his messages to be sent over the wires. This roused the press, and denunciation loud and long commenced howling along the whole line of seaboard cities against what was called the "Morse management."

The Magnetic Telegraph Company first felt the mischief of Smith's course. The directors complained of it in bitter terms. The President of the company thus addressed Mr. Smith:

"What is your position? A message comes to your line, after having passed over three legitimate Morse lines, and you assume a right to stop it — to send it no further. For what reason? Not that it is connected with any crime committed, or in contemplation; not that it would be encouraging piracy upon Morse's patent rights; not that it came upon the Halifax line through any fraud or deception; not even because it

reached Halifax by a carrier pigeon; but simply because the agent of the Associated Press, at Halifax is, in your opinion, a bad man, not to be trusted by the public; that he has avowed his purpose to employ carrier pigeons; and that he has threatened, under certain circumstances, to cut down the lines. No overt act has been traced to him; it is not shown that he has employed carrier pigeons, or cut the wires; he is sustained by the public authorities of Nova Scotia and his employers in the United States.

"Under these circumstances, it seems to me you assume a high prerogative when you undertake to stop messages, for no other reason than suspicion or dislike of the person who sends them. You virtually condemn the public authorities of Nova Scotia, and attempt to dictate to the customers of the telegraph whom they shall not employ as their agents, and in what manner their business shall be done, not only on your lines, but on lines beyond, and even beyond the limits of the United States.

"Whether the managers of the Nova Scotia line ought to receive and send messages which may have been brought to Halifax by carrier pigeons, is one question; and whether the manager of a line in the United States ought to stop them on that account, is another. Certainly, the manager of a line in Wisconsin would hardly venture to give, as a reason for refusing to forward an item of news, that it had been brought to Halifax by a carrier pigeon, or that he had not a good opinion of the man who sent it. In what does your position differ from his?"

The reply of Smith was prompt and defiant. Full of flashing periods he assumed the position of the protector of the rights of men, and that, with his consent, no newspaper bummer should control the great highway of commerce and the people. Like all special pleas, it was long, far too long to have power, and too involved to be appreciated. Smith's defense of stopping press reports exasperated the public mind and greatly aided the erection of opposition lines. He prepared the way for O'Reilly and Bain, and House and Lefferts, and gave them ready access to eastern capital and encouragement. Craig meanwhile stirred the pot of discontent, and enjoyed with a silent and superb chuckle and smile the hurricane he had roused.

Before abandoning the controversy, and feeling how deeply Mr. Smith was injuring the whole enterprise by his perverse policy, Mr. Kendall addressed him the following letter:

"In behalf of my principals, I protest against the further use of their property in the Boston and Portland line in this warfare, and request you to forward all dispatches coming from the Maine line, no matter by whom sent. I wish you and the country to understand, that you alone are responsible for the course now pursued on that line. Would that I could as easily avert its injurious, if not fatal, consequences!

"I have not thought it necessary to consider the question of your *abstract power*, as the owner of a large majority of the stock, on the Boston and Portland line. Power ceases to be rightful when perverted from its legitimate object, and oppressed communities do not fail to find means to rid themselves of its dominion.

"God forbid that by any act of mine, the people of the United States should ever justly come to consider the pirates upon Morse's patents, their friends and deliverers.

"Very respectfully,

"Your obedient servant,

"AMOS KENDALL."

To understand the absolute nature of Mr. Smith's authority in the telegraph legislation of the New England Morse lines it may be stated that Mr. Smith was the owner of \$140,000 of the \$175,000 which was the capital of the New York and Boston line, and was the owner of thirteen-sixteenths of the line between Boston and Portland.

Shortly after this Mr. Smith demanded the dismissal of Craig and the employment of his own namesake, by the Press at Halifax. The Press of New York, however, refused to accede to Smith's demand.

Mr. Smith therefore announced his resolution to exclude all messages from or to Craig from passing over his wires. At this time—1849-'50—but there was only the Smith line between Boston and Portland. Craig immediately hastened to Portland and induced the Maine Telegraph Company to stop all messages from Halifax at Portland, until the Press and all other European messages were received at that point. Craig then run a locomotive express over the Eastern Railroad from Portland to Boston, with the Press and other messages and at Boston, they were re-telegraphed by the Bain line to New York.

Craig now urged on and found ready means for the continuation of

the Bain line to Portland, and thus quickly secured direct telegraphic facilities from Halifax to New York.

Mr. Craig remained at Halifax in charge of the Press and Commercial Trans-Atlantic Telegraph business until 1851, and was then called to New York where he reorganized the New York Associated Press, in which he greatly distinguished himself, and created an organization known all over the civilized globe as one of enterprise, brains and energy. Craig filled the position of general agent of the Associated Press for about 17 years, and left it in 1866, in a flourishing condition.

One of Mr. Craig's movements was characteristic of the activity and enterprise which distinguished him. In 1850 he resorted again to the use of carrier pigeons, and supplying himself with a sailing yacht, lay off the Nova Scotia coast in the track of steamers bound to New York, obtained the latest news, transferred it to his pigeons, and dispatched it to the telegraph office in Halifax. He subsequently leased in the interest of the Associated Press, in 1858, the New York, Newfoundland and London Telegraph Co., from Cape Breton, N. S., to St. Johns and Cape Race, N. F., and conducted it for several years, keeping a fleet of well-manned life boats at Cape Race, where steamers were boarded and Press and Commercial messages telegraphed to New York four or five days in advance of the arrival of the steamers.

When Mr. Craig came to New York in 1851, he prevailed upon the underwriters to unite with the Press in securing the construction of an electric telegraph line from New York to Sandy Hook. At the latter he placed his carrier pigeons, and for years afterward, and until the Atlantic cable was laid, had the incoming steamers boarded far east of Sandy Hook, the news obtained, prepared, and dispatched to the telegraph office, and there telegraphed to all parts of the country long before the steamers arrived in the harbor.

Five or six years after Mr. Craig removed from Halifax to New York, a bitter controversy arose between him and the executive committee of the American Telegraph Company, who then controlled the lines from New York to Sackville, N. B. In Nova Scotia the Government Commissioners of the Telegraph between Halifax and Amherst, built by the Nova Scotia legislature, sided against Craig, and the Halifax operators

were forbidden to send any press reports addressed to him until certain other parties had been served. Craig, however, induced Peter Cooper, president of the American Telegraph Company, to order the operator at Sackville, N. B., that whenever Craig was fairly entitled to precedence, to hold all messages from Halifax until Craig's press report reached him. Craig meanwhile organized a fast-horse express to run between Halifax and Sackville, and as soon as the steamer was announced as off Halifax, instructed his agent at Sackville to commence to telegraph the first part of the Bible until the express arrived, and then go ahead with the news! These orders were faithfully carried out. The Bible had an extensive use, and some of the operators learned more of ancient Biblical history than they had ever dreamed of before. Before the next steamer arrived, however, the controversy concerning Press matters had become so bitter that the executive committee of the American Telegraph Company had resigned, and a new committee, favorable to the press management as represented by Craig, was elected. Craig's smooth face was as placid as ever, but his grey eye had a gleam of triumph in it, and a quiet chuckle escaped him now and then as he felt how completely he had conquered success.

The changed relations between the telegraph company and the press was accomplished by the election of a new board of directors, of which Col. E. S. Sanford, the well-known president of Adams' Express Company, was elected president; Francis Morris, treasurer; Cambridge Livingston, secretary; and Marshall Lefferts, general manager and engineer. By this time the American Company had absorbed all the New England lines, had extended its jurisdiction along the whole Atlantic seaboard, had fraternized with the press, and was rapidly assuming vast proportions and power.

#### MOSES G. FARMER.

Among the men employed by "The New York and Boston Magnetic Telegraph Association," no more interesting character has appeared in the whole field of electrical enquiry than a man sent by Mr. Smith to open the office at Framingham, in December, 1847. This was Moses Gerrish Farmer, born February 9, 1820, at Boscawen,

N. H., a graduate of Dartmouth College in 1844. As early as 1846, Mr. Farmer had invented an electro-magnetic engine, which, with a miniature railroad, he exhibited in connection with a lecture on electro-magnetism, in which, among other adaptations, he showed how the electric current could be



MOSES G. FARMER.

used for torpedoes and sub-marine blasting.

Mr. Farmer was first appointed by Mr. F. O. J. Smith to open the office in the depot at South Framingham, and to superintend line repairs between Boston, Worcester and Springfield, Mass. He had scarcely entered upon his duties at Framingham before he tried the experiment of telegraphing by means of

induced currents. At the request of Mr. Smith, he here also contrived and constructed models of apparatus for striking fire-alarm bells.

On account of conscientious scruples respecting Sunday work which his duties at Framingham required of him, Mr. Farmer, in July, 1848, took charge of the office at Salem, and of temporary repairs between Boston and Newburyport. Here he contrived an automatic circuit closer, which opened with the pressure of the hand while transmitting, and closed on its removal. He received an order also from Boston, for two machines to strike fire alarms, and which were made from the models previously prepared by Mr. Farmer for Mr. Smith by Howard & Davis, the celebrated clockmakers of Roxbury, Mass. One of these was placed in the office of Superintendent Sadler in Boston, and the other in connection with the Boston Court-house bell, both

being united in a local circuit. In experimenting with this apparatus, the bell circuit was connected with that of the wire to New York, and the bell was rung by the New York operator.

Of course a fertile-minded man like this could not long be kept in Salem. This bell ringing resulted in his association, in 1851, with Dr. W. F. Channing, of Boston, who had, unknown to Mr. Farmer, been pursuing investigations in a like direction, and who had made a publication on the subject as early as 1845. Dr. Channing and Mr. Farmer now arranged a system of fire alarms, which they mutually perfected, under an appropriation of \$10,000 by the Boston city government for that purpose. This resulted in Mr. Farmer's appointment as Superintendent of construction of the Boston Fire-alarm Telegraph, which was the pioneer of the system of fire-alarm telegraphs now so general in all the large cities of the country. In this system, Mr. Farmer, in connection with Dr. Channing, introduced the use of the closed in preference to the open signal circuit, and the automatic circuit wheel propellers instead of the finger key, for sending signals. The open circuit was afterward abandoned because of the defectiveness of insulation. The fire alarm was successfully demonstrated in Boston April 28, 1852, after two years of bitter opposition on the part of the firemen and many influential citizens.

In 1852, just before the New York and Boston Magnetic Telegraph Company ceased its independent existence, Mr. Farmer built a line for Prof. A. D. Bache, of the United States Coast Survey, connecting the Cambridge Observatory with the Boston office. Permission also was granted to Captain Charles Wilkes, United States Navy, to make use of the company's circuits in conducting experiments to determine the velocity of sound. To aid this, stations were provided at the Navy Yard, Boston, at the Watertown arsenal, at Salem, Cambridge, South Boston and at Fort Independence. Mr. Farmer constructed a chronograph specially for this purpose. Many experiments were made. The results were highly interesting, and attracted much public attention.

While these government experiments were going on, Mr. Farmer's brain was busy at other things. In 1852, he devised one or more closed circuit repeaters. He also commenced the construction of apparatus

for the simultaneous transmission of four messages upon one wire. This was patented in 1853. In 1852, Mr. Farmer secured patents for his electro-magnetic bell-striking apparatus of 1848, his electric clock of 1849, and crowded the year with experiments on rheostats, voltmeters, magnetometers, and galvanometers. The degree of A. M. was conferred on him in 1853, by the Faculty of Dartmouth College.

The fertility of Mr. Farmer's mind exhibited itself from this period in an almost endless variety of subjects. Connected with the telegraph were experiments on dial telegraphs and double or duplex transmission, which he claims to have explained to James Eddy and J. B. Stearns. About the same time he made experiments looking to the construction of apparatus to enable two reporters to send over one wire between Washington and New York, reports in short hand of congressional debates. In 1855, as a member of the American Association for the Advancement of Science, he read a paper on Multiplex Transmission, showing how it could be accomplished. In 1859, he produced the first undercut electrotype in this country, from a gutta percha mould. Also, about the same period, in connection with A. F. Woodman, he produced the well-known closed circuit repeater. In partnership with John M. Batchelder, he invented and patented the rubber insulator, sometimes referred to as Eddy's. In 1856, Mr. Farmer perfected the double transmitter, with reversed currents and constant resistance, and worked the double transmission system between Boston and Worcester, when two messages were sent simultaneously in opposite directions. This process was patented in 1858. He secured a second patent for double transmission in 1859. At this period also, he constructed a duplex printing telegraph, driven by an electro-magnetic motor. It contained the automatic unison stop, the continuously running train, and the detent for printing. The motion of the train was controlled by the centrifugal force of a fly-wheel.

In 1859 Mr. Farmer devoted much time to devising electro-magnetic apparatus to show the height of water in steam boilers; to an automatic regulator for controlling the distribution of electricity to numerous electric lamps; to the general subject of household illumination; to burglar alarms; alloys of aluminum with copper and other

metals; the electrical deposition of nickel; electro-magnetic locks; the velocity of the blood; the dyeing of wool and the clarification of sugar. It was surely a busy life which crowded so much into its narrow limits.

During 1858-59-60, Mr. Farmer attempted to interest parties in the introduction of the duplex system of telegraphic transmission, but without success. It was not yet needed. He was more successful with an electric automatic regulator of light, for the means of perfecting which, and for valuable counsel, he was indebted to Messrs. Smith and Bates, of Boston. The attempt to operate such mechanism with thermo-electric batteries was a failure. After the most careful experiment only about one three-hundredth part of the fuel could be converted into electricity.

During 1865-66, Mr. Farmer, in conjunction with George F. Milliken, the well-known and able manager of the Boston office of the Western Union Telegraph Company, invented what is known as compound wire, for which two patents were secured. The core was of iron or steel, with a copper cover, so as to combine strength with lightness, and at the same time secure a diminished resistance. This led to the formation of the American Compound Telegraph Wire Company in 1868, the incorporators of which were M. G. Farmer, George F. Milliken, Chester Snow and Alanson Cary. The first half-mile of wire produced by this company was formed by the electro deposition of copper upon a core of steel, in a vat containing some two or three hundred gallons of blue vitriol solution. The current was supplied from a thermo battery of 3744 pairs, arranged in 12 in series and 312 in multiple arc. The total internal resistance of this battery was 260 microms. Its total weight was about 1,500 pounds. It consumed 109 pounds of anthracite coal in 24 hours. The deposit of copper during the same time was about 12 pounds. A considerable quantity of this wire has been manufactured, but the demand for it has not as yet been extensive. In connection with the thermo-electric battery, Mr. Farmer claims to have been the first to construct a magneto-electric machine in which the field was maintained by the current derived from a thermo-electric battery.

In 1865-6, Mr. Farmer made another effort, in connection with W. H. Mendell, to introduce duplex telegraphy, which he successfully demon-

strated upon a circuit of 300 miles, in Ohio. Nothing practical seems, however, to have resulted therefrom.

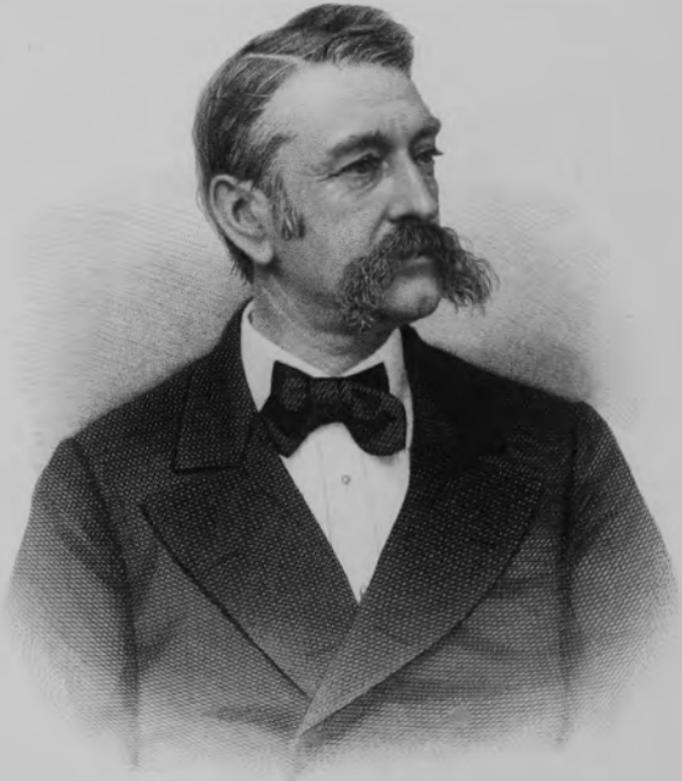
It is proper to say that the duplex method of Dr. Gintl was not, as first presented by that eminent electrician, practical. Mr. Farmer, uniting his own methods with Gintl's general plan, made it successful. It was worked with excellent practical results during 1858 and 1859, between Boston and Portland. Had the device been then needed, Farmer's duplex would have undoubtedly been properly valued and adopted. It may truthfully be said of Mr. Farmer, whose modesty is only equaled by his ability, that in invention he has been unfortunate in being almost always in advance of the necessities of the times. He thus became the feeder of others, while his own platter remained empty. If the facts were all known, it is believed that Mr. Farmer would be found entitled to priority in the invention of the mechanism by which automatic unison in the printing machinery is secured, and which forms so valuable a feature in much of that remarkable class of telegraphic mechanism.

One of Mr. Farmer's most successful experiments has been in the construction of permanent magnets. One of these, weighing only one pound, sustained, with its keeper, 39 pounds. Another, made from Firth & Sons' black diamond steel, and weighing only 10 ounces, sustained 28 pounds. These are but a portion of many interesting investigations in which Mr. Farmer has been engaged during the past 30 years, and which he still prosecutes with undiminished ardor.

Nothing has been said in this very condensed notice of one of the best and most unselfish of men of his love of music or the time devoted to it or instruction given in it. There is, indeed, something bird-like in the character of the man; pure, cheerful, full of hope and strong of wing. He is now engaged at the United States Torpedo station, at Newport, R. I., where he is developing, by careful experiment, new uses for the electric current in connection with the naval service of the United States Government.

Of the New York and Boston Magnetic Telegraph Company, little more has to be written. It fought the New York and New England Telegraph Company pertinaciously until the mutual war made the fight-

ers desire peace. At last conferences were proposed. These ended in a consolidation of the two companies under a capital of \$300,000, two-thirds of which was issued to the New York and Boston Magnetic Telegraph Company, and one-third to the New York and New England Telegraph Company. The companies thus united, re-organized under the name of the New York and New England Union Telegraph Company, July 1, 1852. The parties acting for the stockholders in accomplishing this union were, Francis O. J. Smith, Thomas M. Clark, John McKinney, John J. Haley, John McKesson, Abraham B. Sands.



Engraving by A. S. Eaton

Marshall Lefferts.

## CHAPTER XXVIII.

### THE NEW YORK AND NEW ENGLAND UNION TELEGRAPH COMPANY

THE New York and New England, generally known as the Merchants' Telegraph Company, owed its origin to several causes more or less active. The New York and Boston Magnetic Telegraph Association had disappointed public expectation. Yet it had done enough to prove how valuable an agency the telegraph was capable of being made to commerce and society. Men felt instinctively the possibility of a better and more liberal service, and were ready to welcome any effort for its provision. Henry O'Reilly had meanwhile closed his western work, and though broken in purse, had come east full of thoroughly kindled hatred to the Morse patentees, had secured a patent for Alexander Bain after its rejection by the Patent office, and was eager to enter the eastern field against his old antagonist, F. O. J. Smith. To Marshall Lefferts, an active New York merchant, engaged in a traffic of which the supply of English zinc-plated wire formed a prominent feature, and who provided the first of that character for telegraphic use in America, was, however, the chief agency of its origin, due. The sale of wire had brought him into contact with the active pioneers of telegraph lines. To a man of his tastes and tendencies, it was only natural that he should take a deep interest in their work and share in their enthusiasm. Fond of mechanics, ingenious, methodical, popular, and seeing through the possession of the Bain patent a field for new telegraphic structures in which his own legitimate business would receive an incidental benefit, Gen. Lefferts gave the weight of a strong local influence in New York city, sharpened by a just personal ambi-

tion, to the organization of a Company to compete with the Morse line to Boston. This was effected early in 1849, by the formation of the "New York and New England Telegraph Company," and its incorporation under the general telegraph law of the State of New York, with a capital of \$100,000, which was, under the influence of Gen. Lefferts, promptly subscribed.

The route of the line was quickly mapped out, and well and rapidly constructed. It was built along the Pawtucket pike road from Boston to Providence, R. I., then following the railroad to Olney, and southward by the New London, Middletown, Norwich and New Haven pike to Eighth avenue, New York. A single number nine galvanized wire, of fine quality, was erected, which soon required a companion, as public confidence crowded the first with business. An insulator, known as the



Lefferts' block insulator, was largely employed on this line. It was a glass cylinder with a depending iron stem and hook secured in a block of wood, saturated with gum shellac. It is not now used.

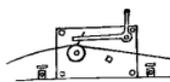
Alexander Bain, the inventor of the so-called chemical telegraph, was a native of Edinburgh, Scotland, and an electrician of high standing. He patented his chemical telegraph in England in 1846. The following is the material portion of Mr. Bain's application for a patent in the United States:

"What I claim and desire to secure by letters patent is the copying of surfaces by the electric current through a single circuit of conductors by means substantially the same as herein set forth. I claim the exclusive right to the use of Prussiate of Potass, as the most useful ingredient in relations of chemical compounds for preparing paper to receive marks formed by the action of electric currents thereon for telegraphic purposes."

The application for a patent was refused by the Commissioner of Patents as an infringement on Morse. The reason for this refusal was, that Morse had filed a caveat for the same thing in January, 1848, and had asked for a patent in July of the same year. Bain made his application May, 1848, and was allowed to go back in his proofs to December, 1846, the date of his English patent. Even with this allowance

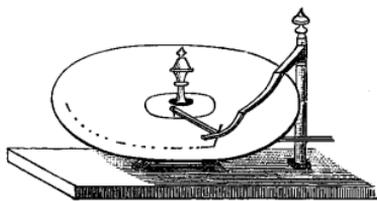
Morse proved priority. Judge Cranch, however, at the instance of Henry O'Reilly, reversed this decision and ordered a patent issued. With this decision in his hands, Mr. O'Reilly, when the Kentucky court enjoined the Columbian, put the Bain machine on the People's line, from Louisville, Ky., to New Orleans. He was now in the field for a line to Boston.

The mechanism of the Bain telegraph was very simple. In its common forms it consisted of the ordinary Morse correspondent or key for transmitting, and of a simple train of clock work as in the



Morse register for moving a ribbon of paper moist with the solution of Prussiate of Potass—six parts; nitric acid—two parts; ammonia—two parts, on which the point of a stylus of number thirty iron wire was made to rest, for transferring the record, and of which the positive current of a main battery, at the sending station, interacting with the elements of the moist paper, was the producing or recording element.

At the terminal offices in New York and Boston, however, another form was adopted which gave a fine opportunity to exhibit the action in an elegant and somewhat showy exterior. Instead of the ribbon



and roller of the way instruments, there was arranged a large brass disc, of a diameter of fifteen inches, which was made to revolve by a shaft connected with clock work in an independent frame, and on which numerous layers of

the saturated paper, cut in the form of the metal disc, was laid. The metal disc was arranged to revolve on a pivot, giving the surface an angle of about twenty-five degrees, so as to present its face at right angles to the eye of the operator. Over the disc thus mounted a needle or stylus rested, and the writing was executed in gradually diverging lines, under a guide, until the surface of the paper was covered. The alphabet was Morse's with some unimportant changes. The action of the machinery, except the mere clock movement, was noiseless. The current passing through the needle or stylus was pro-

duced by a main battery at the sending station. No battery was used at the receiving station in the act of recording. This peculiarity made it often possible, in the early condition of telegraph lines, to receive messages by the Bain method when the other systems were practically useless. There was no magnet to adjust. A very slight current sufficed. This advantage was, however, only where insulation was imperfect or the resistance of conductors great. Morse relay magnets were secretly used for calls. The labor of receiving and copying by the same person was tedious. The presence of the acids was unhealthy. The disc instrument was elegant, but destructive to vision.

In New York, Mr. Bain gave an exhibition of the great rapidity with which messages could be transmitted by the chemical process. A moist paper of suitable dimensions was placed on a large revolving drum, which was connected with machinery capable of imparting rapid motion. A strip of dry paper, half an inch in width and of any required length, was perforated with the characters to be transmitted. By placing the perforated paper on the periphery of a rapidly rotating metallic wheel connected with an earth wire, and over which a stylus connected with a battery, was made to pass, the characters were automatically recorded upon the paper on the drum. In this way it was shown to be possible to send over a short circuit, where no static charge interferes with the record, one thousand words per minute. This is the basis of the automatic method of transmission, which, however, has not been employed to any very great or useful extent on the American lines.

In 1850, Henry J. Rogers invented a system by which the surface of the brass disc took the place of the paper. He used a fountain pen supplied with salt solution. He also used the Morse relay. It was a substitute for a better thing.

When the line was reported ready for public use, Mr. O'Reilly, the builder, who knew how to touch the public pulse, advertised that on the day of opening, messages would be sent free between New York and Boston. This was a clever appeal to public favor and no doubt Mr. Smith, as he read the glowing placards signed by his western enemy, a second time wished that "the devil had the special care of Henry O'Reilly." Of course, everybody who knew anybody in either

city, had a message to send. There was then as now, a fascination for a free lunch, which appealed to the average human heart. The offices were crowded and received a thorough warming. It was red-letter day in the lightning line. But somehow the fates were contrary. Most of the messages had to go by mail. It was a new proof of the total depravity of things inanimate.

In a few days, however, the line went into successful operation. The offices were neat, eligibly located, and attractive. The receivers were selected for their politeness and were well dressed and silver-tongued. A large business was offered, which was promptly and skillfully handled. The receipts for the year ending March 31, 1851, were \$34,529.25. The second year the receipts were, \$41,521.30.

Of course, this active opposition was not productive of peace with the Morse lines. A bitter war ensued. The rates were cut down first to two cents and then to one cent a word. This greatly stimulated business and had the effect of enlarging the area of telegraphic employment. The following shows the increase of business by the New York and New England Co.: messages sent 1850, 20,000; 1851, 29,000; 1852, 42,000.

Although continued war might have resulted in the destruction of the opposing line, and the battle was not without zest, yet it was evident that business could only be prosecuted at a loss at the prices to which competition had driven the tariff. It became a question of length of purse and endurance. Throwing silver into the sea was alliterative, euphonious, and, perhaps, under some circumstances, heroic. But it was not profitable. There was another peril at the door. A suit against the Bain patent was in progress in Philadelphia, and the highest talent of the country was engaged to sustain the Morse patent. It was likely to end disastrously to the Bain interests, and, with this in view, the parties there were already arranging a compromise. These were strong arguments for peace. The result was that, stirred by a mutual sense of danger, an interview was simultaneously proposed to see if the game of ruin could be changed to one of mutual advantage. It led, after a courtship of more or less acrimony, to an agreement to unite the two companies in a new organization, to be entitled the "New

YORK AND NEW ENGLAND UNION TELEGRAPH COMPANY," with a joint capital of \$300,000, two-thirds to be issued to the "New York and Boston Telegraph Association," and one-third to the "New York and New England Telegraph Company." The parties attesting this agreement were:

F. O. J. Smith,	John McKinney,	Peter Naylor,
Thomas M. Clark,	John J. Haley,	Ezra Cornell,
John McKesson,	A. B. Sands,	C. H. Seymour,
A. A. Pattengill,		H. M. Schieffelin.

With the accomplishment of this union, Gen. Lefferts ceased to be President. In recognition, however, of the energy, skill and executive ability displayed in the organization and management of the company, and the result of his labors in liberalizing and popularizing the telegraph, a splendid service of plate was presented to him by the stockholders and by the Associated Press of New York city, the inscription upon which was as follows:

"TO MARSHALL LEFFERTS, Esq., President of the New York and New England, and New York State Telegraph Companies, from the stockholders and Associated Press of New York city, as a token of the satisfaction and confidence inspired by his efficient services in advancing the cause and credit of the telegraph system—the noblest enterprise of this eventful age—June 25, 1850."

The New York State Telegraph Company referred to in the inscription of the silver service, was the name of a company organized under the Bain patent to construct a line of telegraph through the State of New York, from New York to Buffalo, of which Gen. Lefferts was elected President, S. W. Jerome, Secretary and Treasurer, and John McKinney, a man of great excellence and promise, Superintendent. N. T. Curtiss, W. C. Buell and F. O. Gilbert were superintendents. B. F. Davis, a name well known on eastern lines, was Manager at Utica. It was built by Henry O'Reilly and Gen. Lefferts, and promised well. But the New York, Albany and Buffalo company was too thoroughly entrenched in the popular favor for an opposition to win, and after a sharp and vigorous fight, the line was sold to that company, and the Morse

machinery applied thereto. The Bain instrument was never used west of Buffalo, and only for about two years between Louisville, Ky., and New Orleans.

The articles of association of the New York and New England Union Telegraph Company were signed July 1, 1852. Henry M. Schieffelin was elected President; Levi L. Sadler, Treasurer, and John McKinney, Superintendent. John McKesson and Thomas M. Clark were appointed a committee in connection with the superintendent and treasurer, to manage the business. Mr. McKinney immediately thereafter sold or rather reconveyed his interest to Marshall Lefferts and resigned. Marshall Lefferts was thereupon elected a Director, and John A. Lefferts was appointed Superintendent. The salaries to office managers at way stations were, at the same time, fixed at \$500 at Hartford, New Haven and Worcester; \$600 at Providence; and \$400 at Bridgeport, Springfield, Norwich, New London and Middletown. Thus re-organized, the Company entered into a new and healthy existence. So successful did the union of lines prove that on October 9, 1852, a dividend of two per cent was declared from the first quarter's earnings.

At this time a stroke of economy was made by Director Thomas M. Clark, who had a sharp eye for expenses and leaks generally, who moved "that all Morse operators be instructed to copy their own messages as they receive them."

This order, simple as it seems, and solely designed to reduce the office force, had an effect in a direction quite out of the mover's intention. The operator having to copy his own messages, which was a laborious, tedious, and somewhat dangerous method, learned instinctively to catch the sounds by the ear. Thus the drudgery of reading from the paper and then copying, taxing alike the eye and the memory, to say nothing of translating which, of itself, as the signs were sometimes manipulated, was no small task, soon gave place to the modern mode, which even then was more or less prevalent, of receiving messages by sound. And, although this process was long dreaded by the officers of telegraph companies, it proved a distinguished advance and success, and is now all but universal in America. The transition was

easy and natural. Every office call from the time the first message was sent was received by sound. Prof. Morse and Mr. Vail early recognized its practicability, and it was made prominent in the Morse patent. Mr. Clark's motion, however, even as designed, led to a great reduction of expenses, and a number of persons employed as copyists were dismissed.

On November 1, 1852, George B. Prescott, chief operator at Boston, resigned to become connected with the "Commercial" or House Printing Telegraph office at Springfield, Mass. He was succeeded by William Richards. Superintendent John Lefferts also resigned to prosecute a large business growing out of the demand for galvanized wire. Gustavus A. Swan, of New York, an old and well-known telegraph manager, was appointed in his place, and commenced his duties January 1, 1853.

On the first of March, 1853, the lines of the Rhode Island Magnetic Telegraph Company were purchased for \$5,000. They were built by John Y. Lane at \$100 a mile, and were opened for business in February, 1848. The projectors of this line, which was built on the route of the Worcester Railroad from Providence to Worcester, and from Pawtucket to Taunton, and thence to New Bedford and Fall River, were James Y. Smith, Henry B. Anthony, Earl P. Mason, William M. Bailey and others. Henry C. Cranston, H. N. Williams, Superintendent of the Providence and Worcester Railroad Telegraph, W. P. Potter, manager at Fall River, B. R. Paine, manager at New Bedford, were students of Mr. Lane at Providence. The office at New Bedford was opened by Mr. William Arnoux, now of New York. At the time of the purchase of this property an order was issued by President Schieffelin discontinuing the use of the Bain machinery, and substituting the Morse. The use of the Morse alphabet throughout the lines was also ordered. The alphabet adopted on the Bain lines differed from the Morse chiefly in having no spaced letters, such as those which represent the letters C. O. R. Y. It was deemed by many easier and safer. Prof. Morse regarded the changes favorably. It was attempted on the Boston and Buffalo lines, but, through dread of error, failed of adoption. When the Board of the New York, Albany and Buffalo Company

ordered its introduction, Superintendent O. E. Wood said he would resign rather than take the risk. The order was not issued. The alphabet remained unchanged. The New York and New England Union Telegraph Company leased commodious rooms in New York, for its central office, at 23 Wall street, a portion of which was sublet to the Atlantic and Ohio Telegraph Company, hostility with which had long since ceased.

Mr. Swan did not remain long with the Company. He had become interested in a project in New York, which promised him an easier post and a larger revenue, and to which he determined to give his whole attention. He had constructed a line in New York connecting an eligible office in the Astor House with the main offices of telegraph companies who were willing to accept public business from him on a commission. The Astor House was at that time the busy center of commercial men from other cities, and the opening of a telegraph office there was to them a great convenience, and which they freely employed. Every project of this kind educated the public into the use of the Telegraph. It was contrary to human nature to sit within hearing of a machine operated by a man seated in the same city with one's own home and business, and not have some message suggested to send thither. The proximity of such facilities of intercourse have always provoked their employment.

This project of Mr. Swan was at once successful, and ever afterward proved a source of very considerable revenue. It gave a great impulse to the opening of auxiliary offices in large cities. So much has this been cultivated, that in New York the Western Union Telegraph Company have now one hundred such offices, in Boston twenty-four, Philadelphia thirty-five, Cincinnati twenty-one, Chicago one hundred and nine, and so of numerous other places. The tendency is to their further multiplication.

In one of the last of Mr. Swan's reports to his company, he makes the somewhat surprising statement, that the company owned five wires to Boston from New York, "placed on different sets of poles following different routes." Of course, under such circumstances, communication between the two cities seldom failed. At the same time Mr. Swan

confessed that the insulation was so defective that a six days' rain stopped every wire, except one, during four days.

At the meeting at which this report of Mr. Swan's was presented, Mr. F. O. J. Smith presented the case of a complaint of error in a message, for which the parties claimed damages. In a letter to the parties, the language of which is peculiarly suave and placative, Mr. Smith takes the same ground with Judge Caton, in claiming the telegraph to be entitled to consideration in the case of error, by reason of its general advantage. He says :

"We regret the occurrence very much, and hope it may not again rise. And that, ever in view of it, you can, in looking back, discover how much, and how often the telegraph has done for you good service, and that if it be sometimes the occasion of a disappointment, it is much oftener the source of advantage, as to entitle it to a small margin of forgiveness."

Whether forgiveness, and the retrospection to which it so benignantly invited the complainants, followed this bland letter, does not appear. It certainly merited their gentle consideration, from the dove-like humility of its close.

On September 1, 1853, Mr. Swan resigned after a most energetic, faithful and laborious superintendence, which was acknowledged by the company in the passage of resolutions of unusual warmth, and tendering to him their united desire for his future prosperity. At the same time, on motion of Director Thomas M. Clark, Mr. Charles F. Wood, so well known in all telegraph circles, was unanimously elected superintendent, and at once entered with characteristic vigor upon its duties.

Mr. Wood made his first report November 12, 1853. It had the ring of the man, full of good hard sense fervidly uttered. He says :

"The best report you require, and the one I wish to exhibit, is a good and reliable line. Therefore, I wish the lines themselves to be my report when I shall have put them in such condition as to render them useful at all times. Upon this issue depends your welfare and prosperity. Because it rains it is no reason why we should be compelled to stop operations, or be reduced to one or two wires. As much business is offered on rainy, as on clear days. The secret of success lies in keep-

ing the lines, at all times, in working order, doing business expeditiously, serving the public faithfully, and in giving them what they have ever wanted, and what they are ever willing to pay for — RELIABILITY."

Such language was significant of the quality of the man. It is scarcely necessary to add that what he so clearly saw to be required he did not fail to successfully secure.

Mr. Wood continued to superintend the lines of the company during its existence, and by an energetic and prudent administration, greatly



CHARLES F. WOOD.

raised the telegraph in the estimation of the public. The amount of discretion called for, may be comprehended, when it is stated that these lines extended over the routes of not less than twelve distinct railroads and occupied nearly 300 miles of turnpike road. Mr. Wood's success was manifested every year, not only by the treasurer's reports, but by a general friendliness and co-operation throughout the line, such as Mr. Wood, with his frank and sunny nature, never fails to inspire. The officers of the railroads gave him every facility he required. In all his

work, also, Mr. Wood was fortunate in having an able and noble aid in President H. M. Schieffelin, who cordially and enthusiastically sustained him, and who himself greatly aided to secure to the company the reputation and success it so rapidly acquired. In 1856 the Board, comprehending this devotion of their worthy president, tendered to Mr. Schieffelin a massive service of silver, as a token of their appreciation of his services, and in other ways also expressed their confidence and respect for their genial superintendent.

In 1860 the American Telegraph Company, having purchased all of Mr. F. O. J. Smith's telegraph stocks and proprietorship in the Morse patents, acquired thereby a maximum ownership of the stock of the New York and New England Union Telegraph Company. A lease was soon after executed by which the entire property came under its jurisdiction, and was rapidly merged with its own. Mr. Wood, whose merits as an executive officer were well known beyond the circle of his own company, of course retained his position under the new proprietorship, and when, after a few years, the American Telegraph Company became, in its turn, merged with the Western Union, Mr. Wood not only retained his post, but might have had higher honors had he chosen to accept them. He is now the Assistant General Superintendent of the vast field occupied by the Eastern Division of the Western Union Company's lines, and enjoys, as of yore, his accustomed popularity, and the confidence and esteem of all who know him.

Mr. Wood entered the service at an early period. After some experience in a subordinate capacity he became Manager of the New York office of the Magnetic Telegraph Company in 1851, and afterward was appointed its General Superintendent. In this capacity he became widely known and popular. His mind is practical, cheerful, conservative, and alert. His popularity is based on a quick perception of public taste and necessities, and a *bonhomie* which, with occasional moodiness and a little "Boston," is always radiant and attractive. Mr. Wood is still in the prime of life, and has apparently before him many years of useful and effective service.

## CHAPTER XXIX.

## THE VERMONT AND BOSTON TELEGRAPH COMPANY.

MR. CORNELL was not successful in the attempt to introduce Morse lines into Northern New England. A line projected by him from Bridgeport to Bennington, Vt., died as soon as born. The Morse patent was already passing under the shadow of litigation, and the management and odor of the New York and Boston line had not added to its acceptability. Aside from this, it was true of New England generally, that no one not a resident could successfully conduct an enterprise of this character, which depended so wholly on local aid. It was not, therefore, until a few well-known citizens, who had the confidence of the community, determined on the erection of a telegraph from Boston along the northern cities in the direction of the upper St. Lawrence, that any effective steps were taken for that purpose. The first movement of this character was in the fall of 1848, when William Warner and Isaiah Silver, of Burlington, and Elisha P. Jewett, of Montpelier, Charles Paine, of Northfield, Vt., and Benj. P. Cheney, of Boston, procured an act of the General Assembly of Vermont, November 11, 1848, incorporating THE VERMONT AND BOSTON TELEGRAPH COMPANY. The capital was to be rated upon a cost of \$220 per mile of the lines as constructed by the company. The organization was perfected December 6, 1848, at Montpelier, by the election of William Warner as President, and Elisha P. Jewett as Secretary and Treasurer.

Before the company commenced operations, the Morse system was presented by Henry F. Rice, and the Bain system by Professor G. W.

Benedict, a citizen of Burlington. Professor Benedict, who had the advantage of a local reputation, offered to construct the lines projected under the act of incorporation, under a contract for \$212 per mile, one-third of which to represent the cost of title in the Bain patent, and to be paid in stock. The offer of Prof. Benedict, after some discussion, was preferred, and a contract based upon it promptly executed. On March 21, 1850, Prof. Benedict reported the line completed from Boston to Lowell, Nashua, Manchester, Concord, Woodstock, Northfield, Montpelier to Burlington. On this report the officers of the Company engaged Messrs. E. Stevens, of Franklin, and Moses G. Farmer, the latter widely known as an educated and practical electrician, to make a thorough examination of the whole line and offices, before the acceptance of the line from the contractor. These gentlemen reported April 24, 1850, that "the line was well and substantially built; that the wire was of No. 8, of the highest quality of Swedish iron, and of great tenacity; and that the insulator used was the invention of the contractor, was the best of any yet produced, and, being covered with iron, was proof against injury. The insulator of Prof. Benedict was no doubt honestly praised by Mr. Farmer. It was, like the House insulator, glass moulten in an iron shell, with a hook suspended in the glass. But experience soon caused its removal, and iron no longer forms a part of any approved American insulator. The committee reported, also, the machinery as being of a new pattern, of superior workmanship, and very elegant. The poles were of oak, chestnut, cedar, spruce, and hemlock. The line was worked from Boston to Burlington with three troughs of twelve pairs each of the "sand battery."

Before the line was accepted, also, it was carefully measured with a surveyor's iron chain, and ascertained to be 228 miles 2,016 feet in length, and which, at \$212 per mile, amounted to \$59,016.94. This amount was ordered to be paid, one-third in stock when the Patent title was completed, and two-thirds in cash. The subscriptions, with a few minor exceptions, were all promptly paid, and the line was thrown open to the public, complete in all its parts, entirely free from debt, with every share of the company's stock sold at par, and the capital the exact representation of the money expended. Mr. Farmer was

urged to act as superintendent, which he accepted until the following year, when he became connected with the Boston Fire Alarm service in connection with Dr. Channing. J. C. Rowe was chosen for his successor. Mr. Warner also resigned the presidency, and Mr. Benj. P. Cheney, of Boston, took his place, and who was for some years the company's chief executive officer. Mr. A. B. Chandler, now Secretary and Treasurer of the Atlantic and Pacific Telegraph Company, entered the service of the Vermont and Boston Telegraph Company in 1857, at West Randolph, Vt. He was at the time an apprentice in a book-store into which the wires were introduced, and an office opened, of which he became the operator.

During the same year the lines of the company were extended from White River Junction to Springfield, and from Burlington to Rouse's Point. The following year they were still further extended by a branch from White River Junction to St. Johnsbury, and by the purchase of a line from Lowell to Lawrence, and of what was known as the "Stoney Brook Line" from Lowell to Groton Junction and North Chelmsford, the latter at a cost of \$1,450. A connection was also secured to Montreal and Ogdensburg by the issue of four hundred and forty-eight new shares, and a large and prosperous business was anticipated. This was encouraged by the rapid growth of receipts as the line was thus opened up to public use. During the first year, with the line partially built, the receipts were \$1,008.83, and expenses \$793.69. During the second year, ending January 1, 1853, the receipts were \$32,503.83, expenses \$28,211.56, showing a balance of \$4,292.27. The exhibit was encouraging. A dividend of three per cent on 2,485 shares, representing the money paid in, was declared. The whole length of the company's lines was about six hundred miles.

Early attention was given to the preparation of by-laws, which, by their peculiar guards and limitations, denote the character of the men who framed them. Among the more marked rules were:

1. That the President of the company shall be without authority to create any debt amounting to more than \$300, and shall not, even with the assent of the board, create a debt over \$500 at any one time.
2. No superintendent, manager, agent or operator shall be eligible to

appointment unless of good moral character, and an abstainer from all intoxicating drinks.

The other rules were of a like conservative character. The result was that the Company, during its entire history, kept free from debt, never had to borrow money, and had, at all times, a reliable and devoted staff. Prof. G. W. Benedict was elected Secretary and Treasurer. The stockholders were allowed to telegraph to the amount of six per cent on their stock, annually.

In 1856 J. Hobart Norris became Superintendent, and Joseph Lathrop, President. About the same time an arrangement was made to enter the terminal wire at Boston in the office of the New York and New England Union Telegraph Company, where the entire service was performed, except delivery, at the rate of \$1,300 per annum. This took effect April 1, 1857. The receipts for a few years had not only not enlarged as expected, but the expenses inseparable from a perishable structure began to obtrude themselves with so clear and enlarging outline that a strong sentiment in favor of leasing the entire property was making itself heard. The annual results of the business were as follows:

Net profits 1853.....	\$2,160 96
Net profits 1854.....	1,903 12
Net profits 1855.....	212 32
Net profits 1856.....	1,950 25
Deficit 1857.....	776 96
Deficit 1858.....	679 37

There was great ingenuity shown in the annual reports to account for this paucity of profits. The argument of the Treasurer on the deficits was especially copious and eloquent. But meanwhile the figures remained the same. The treasurer's hopeful message produced no dividends. An effort was proposed to oblige the railroad companies to pay for their messages, so as to enlarge the revenue. But the measure only revealed the inherent weakness. The line was also ten years old, and had begun to show evident signs of decay.

On April 1, 1869, Mr. G. W. Gates was appointed Superintend-

ent, and in the year following, G. G. Benedict was elected President. By this time the American Company was absorbing the New England lines. It was not long in perceiving the inherent value of the property of the Vermont and Boston Company. In two years it had purchased a maximum of its stock, and on August 6, 1863, Col. E. S. Sanford, President of the American Company, was elected President, and Marshall Lefferts, Treasurer. The patent interest was paid off by an issue of six hundred and three shares, and the line west and north of Rouse's Point to Ogdensburg and Montreal was leased, and finally sold to the Montreal Telegraph Company.

On September 20, 1866, Gen. Thomas T. Eckert was elected President, when a lease was executed with the Western Union Telegraph Company at four per cent per annum, and an offer of \$40 cash per share was at the same time made for the stock. Meanwhile the lines were thoroughly rebuilt, the Morse machinery applied, and by the enlargement of the area of communication, the lines became remunerative and valuable. During the war the receipts greatly enlarged.

Mr. Gates, who is now Superintendent of the Western Union Company over all that region, and who is much trusted and respected, both for his personal character and his good judgment and fidelity as an officer, is also the Secretary of the Vermont and Boston Company, the existence of which is still carefully maintained. Hon. William Orton is President, and Mr. R. H. Rochester, Treasurer. With these arrangements the Bain system practically disappeared from American telegraphs.

## CHAPTER XXX.

## THE MAINE TELEGRAPH COMPANY.

ACCORDING to the estimate of some of its early promoters, the Maine Telegraph Company has occupied in telegraphic history a place similar to Palestine in connection with sacred learning, an influence out of all proportions with its limited extent. Its origin was indebted to James Eddy, who secured from F. O. J. Smith in 1847, the right to use the Morse Patents from Portland, Me., through Brunswick, Bath, Wiscasset, Damariscotta, Waldoboro, Thomaston, Rockland, Rockport, Camden, Belfast, Winterport, Bangor, Ellsworth, Cherryfield, Machias, East Machias, Eastport and Pembroke to Calais. A charter for "The Maine Telegraph Company" was granted by the Maine legislature of 1848. The capital of the company was originally fixed at fifty thousand dollars. The length of the line was two hundred and seventy-five miles.

Of the origin of the Maine Telegraph Company, Hon. Hiram O. Alden, who had been President since its origin, and who resigned in June, 1876, because of ill health, in his letter of resignation writes as follows:

"An enterprise, started, as it was, in advance of the times, and under auspices so unfavorable and forbidding, and which, in its very inception, was so uninviting, and inspired so little faith in either its value or utility, that the first attempt of its projectors to get stock taken along its lines from Portland to the Provinces proved a failure, and its progress was for awhile suspended. Nor was it resumed until Mr. James Eddy, its original projector, inspired, by his address, a personal friend with such faith in his telegraphic ability, and so much confidence in his

assurances in bringing out his promised financial results, that he concluded to hazard the guarantee of the balance of the stock, being about one-quarter of the whole, and thereby secure the completion of the entire undertaking."

The first meeting of the stockholders of the Maine Telegraph Company was held at the Commercial House, East Thomaston (now Rockland), January 4, 1849. The directors chosen were B. C. Bailey, of Bath; Abner Stetson, of Damariscotta; Joseph Clark, of Waldoboro; Edward O'Brien, of Thomaston; Knott Crockett, of East Thomaston; H. O. Alden, of Belfast; Samuel Farrar, of Bangor; Joseph Granger, of Calais; James Eddy, Amos Kendall and F. O. J. Smith. The first meeting of this board was held March 22, 1849, at East Thomaston, when Mr. Eddy, as contractor, reported the line completed and ready for acceptance by the company. After examination by a competent committee, it was accepted, and Mr. Eddy appointed superintendent.

At this meeting Hiram O. Alden was elected President and Treasurer. James Eddy was elected Secretary, and in the following year was made Secretary and Treasurer. The head-quarters of the company were established at Bangor.

To enable the company to extend its field of operations, an amendment to the charter was obtained, by which the capital stock was enlarged to \$75,000. On securing this, the company purchased, in September, 1853, from its surplus earnings, the interest of F. O. J. Smith in the Portland and Boston line, of which he was almost the sole owner, and thus secured a continuous seaboard line from Boston to Calais. About the same time the branch lines from Portland to Gorham, N. H., Danville to Waterville, Me, and Belgrade to Augusta, Me., were purchased. These were all taken possession of October 1, 1853, and the head-quarters of the company were removed to Portland, Me. A stock dividend corresponding with the amount of surplus earnings used in making the purchases of the lines referred to, was soon after declared. No company has shown more marked financial success.

On January 1, 1856, the American Telegraph Company, in accomplishment of its now determined policy, offered to take the lines of the Maine Telegraph Company on a liberal lease. The advantages of such

a connection were obvious enough to lead to its prompt acceptance. This lease was executed for a term of fifty years, in decades, the rental to be ten per cent on a capital, which by various important extensions and increase of wires, had been enlarged to \$112,500. On its execution, Mr. Eddy was offered the General Superintendency of the lines of the American Telegraph Company, which he accepted, and made his head-quarters in New York. At the same time Mr. Alden became a member of the board of directors, Vice-President, and an active member of its executive committee.

Mr. Eddy's first appointment in his new capacity, was that of Mr. Asa Woodman to be superintendent of the Maine lines, of which he made a special district. The following year Mr. Woodman died, and was succeeded by Mr. James S. Bedlow, who entered the telegraph service December, 1852, and became manager at Bangor on the February following. Mr. Bedlow was elected a director of the Maine Telegraph Company in 1859, and so remained until 1865, when he resigned both offices to connect himself with the United States Telegraph Company, which at that period was gathering to itself all the available forces of the country, in a dashing contest for telegraphic supremacy. When the United States Company, having fought its last battle, finally fell in 1866 into the conquering arms of the Western Union Telegraph Company, Mr. Bedlow returned to his old post, where he still remains, in rubicund health and unfading youth, usefully and vigorously pursuing the duties of his responsible position.

In June, 1857, Mr. William P. Merrill, a gentleman of much refinement and character, was made Secretary and Treasurer, and was also elected a member of the board of directors. All these he still retains.

The present (1877) members of the board of directors are Albert W. Paine, Jacob A. Smith, Albert Holton, William Gallupe, of Bangor; William H. Simpson, Daniel Faunce, of Belfast; Bion Bradbury, William P. Merrill, of Portland, and Edwin F. Littlefield, of Winterport. Albert W. Paine, President; William P. Merrill, Secretary and Treasurer.

Mr. James Eddy, whose name first appeared in connection with the telegraph in the construction and management of the lines of the Maine Telegraph Company, was a man of great excellence and sweetness of

character. He was an accomplished telegrapher, and was thoroughly posted in all the practical details of the art. By his careful management, the company was, from the start, a financial success. He was strict, but of exceeding kindness to his subordinates, making their interests his own, and completely won their respect and affection. He was, in the highest sense, a christian gentleman, and was widely and warmly loved. Had he lived, he would unquestionably have held a high place in the executive management of the telegraph interests of the country. In the brief time between his entrance upon his enlarged duties as general superintendent of the American Telegraph Company, in January 1, 1856, until his sudden death in August, 1858, he had greatly distinguished himself as a disciplinarian and organizer. Honor, kindness and truth were written on every line of his fair face.

Of the old staff of the company some still remain. Of these, Michael Austin at Portland, George A. Hanscom at Bath, and Sam Black at Calais, are among what may be called the ancient landmarks of a company which had an honored history.

Hon. Hiram O. Alden, on retiring from the presidency of the company, has left the following remarkable record in a letter, which was ordered by the Board of Directors to be entered in the minutes of the company :

“Geographically considered, the territory of the Company is small, but large when measured by the important influences it has exerted in building up and shaping the courses of the more noted and extended telegraph operations, both at home and abroad. Its success, in truth, gave a new impulse and appreciation to telegraphic undertaking everywhere. In fact, the officers of the Maine Telegraph Company were the originators and pioneers of the California line, and obtained from Congress, in 1855, the first land grant and charter for its construction. They, also, in the year succeeding, gave both the inspiration and the impetus to the laying of the first Atlantic cable, by so clearly demonstrating the practicability of working it when laid, that a company was started, the cable manufactured, and its successful laying and working were accomplished in 1858.”

Mr. Alden is an able lawyer, now residing at his home in Belfast, Me. He was for some years Vice-President of the American Telegraph Co.

## CHAPTER XXXI.

## THE AMERICAN TELEGRAPH COMPANY.

IT is always interesting to trace the development of great enterprises. Sometimes, indeed, their morning is so brief and dim, that they burst upon us full orb'd, as if they were the creation of the hour. But every Hercules has a childhood out of which the giant sinews grow. Great events are like storms which have their origin in the gentlest breeze which fans the brow or stirs the aspen.

The steps which preceded the project of the laying of the Atlantic cable — an enterprise forming, in some important respects, the prominent event in a century thus far full of surprises, had their incipiency in the intelligent mind of a Roman Catholic Bishop of St. Johns, Newfoundland. Bishop J. T. Muloch, under date of November 8, 1850, in an article addressed to one of the provincial papers, urged attention to St. Johns as the point on the American seaboard to which the system of inland telegraph lines should tend, in order to catch, at the earliest moment, the news brought by European steamers, for transmission thence along the telegraph lines of the seaboard. The extension of the land lines to the seaport nearest Europe, was the measure of his conception.

Either from the perusal of this article, or, what is quite as probable, from a similar thought naturally inspired by his connection with the construction of telegraph lines, Mr. F. N. Gisborne, a gentleman of enterprise and energy, who built the Nova Scotia Government line from Halifax to Amherst (125 miles), under an appropriation of \$16,000, at the instance of Premier Hon. Joseph Howe, not only perceived the

value of such a project, but resolved to accomplish it. He belonged to a class of men to whom difficulty in connection with an undertaking adds to its fascination, and inspires to its achievement. To carry out this new enterprise, he resigned his post as an officer of the Nova Scotia telegraphs, and planned a line from St. Johns, N. F., through four hundred miles of dense wilderness and forest to Cape Ray, there to connect by steamers, or by carrier pigeons, or by cable, with the inland lines. To enable him to carry out this project the Legislature of Newfoundland granted £500 for a survey of the route. An act was also passed incorporating the

NEWFOUNDLAND ELECTRIC TELEGRAPH COMPANY,

with an exclusive right of way for thirty years, and valuable concessions of public land.

Having thus carefully laid the groundwork of his scheme, Mr. Gisborne went immediately to New York to raise capital. In this he was successful. Horace B. Tebbets and Darius H. Holbrook were among the more prominent supporters of his undertaking, and a company was soon organized under the charter which had been granted. Soon after the organization of the Company Mr. Gisborne left for England to purchase a sub-marine cable, to attempt a connection thereby between Cape Ray and Cape Breton. In 1852 thirty miles of the line inland from St. Johns had been completed, and Mr. Gisborne had skillfully and successfully laid the first cable of any considerable length in America, between Cape Ray, Prince Edwards Island, and across the Northumberland Straits to the shores of New Brunswick.

Such energy was worthy of success. In 1853, however, the cable gave out. About the same time the New York stockholders withheld their support. This caused the work to be suspended, and the company became bankrupt. Mr. Gisborne finding himself unable to proceed, gave up all he possessed to pay the accrued debts, and for a time, abandoned the enterprise.

Under such circumstances, and with renewed courage, Mr. Gisborne, in 1854, returned to New York to endeavor, if possible, to resuscitate interest in his work. Among other gentlemen to whom he now found

access, was Mathew D. Field, a New York engineer, to whom he communicated his circumstances and plans. Mr. Field, however, declined to interest himself in them, but politely offered to introduce him to his brother Cyrus W. Field, at that time somewhat retired from active commercial pursuits. This led to several interviews, which had the effect of exciting a general interest in telegraph movements in Mr. Field's mind. Standing, however, one evening over a large globe after one of these interviews with Mr. Gisborne, and tracing the lines overland to St. Johns, Newfoundland, an idea dawned upon his mind, which gradually strengthened its hold upon his imagination, and soon absorbed his whole heart and life. While following with the finger the track of the inland lines to the ocean, it was natural to traverse also the course of the steamers over 1,611 miles of watery waste which separated the two continents from each other. It was but a step further to plant the finger on London, and to feel that to reach the center of English civilization by telegraph from America, were such a thing practicable, would be the sublimest work of the age.

Curiously enough, as Mr. Field, thus roused to a comprehension of a possible opportunity for a grand enterprise, began to make inquiry respecting such a project, he found that the feasibility of laying a cable in the waters of the Atlantic ocean had been just then determined by the discovery of a plateau across the bed of the Atlantic, as if laid there by the Almighty for some such grand purpose. It was an under ocean pathway between the two continents, waiting the hour when human skill would demand its use. This was the fruit of a careful government survey under Lieut. Maury, full reports of which were soon after published by order of Congress. Professor Morse also assured Mr. Field that the project was entirely feasible, and warmly asserted the certainty of its ultimate accomplishment. He emphasized the language of his letter dated August 10, 1843, to the Secretary of the Treasury, when he wrote words which now seemed prophetic—“The practical inference from this law (Ohm) is, that a telegraphic communication on the electro-magnetic plan *may, with certainty, be established across the Atlantic ocean! Startling as this may now seem, I am confident the time will come when this project will be realized.*” This letter was the

result of a successful experiment in October, 1842, when Prof. Morse laid a submarine wire from Castle Garden to Governor's Island, New York, and for which a gold medal was awarded him by the American Institute of Philadelphia, Pa.

Thus thoroughly aroused to the possibilities of a grand enterprise, Mr. Field communicated his thoughts to his friends, Peter Cooper, Moses Taylor, Marshall O. Roberts and Chandler White, names familiar in the history of American enterprise. It met with a ready attention and response. Mutual consultations resulted soon after in the organization of a company with a capital of \$1,500,000 to carry out the project, and the immediate purchase of the Gisborne charter. It resulted also in the generous enlargement of the franchises of the charter by the Colonial legislature, the grant of an exclusive right to land ocean cables during fifty years, a grant of £50,000 to aid the work, a grant of fifty square miles of public land, with a further grant of fifty square miles of land when the Atlantic cable was successfully laid. The government of Prince Edwards Island also granted a liberal charter. With these important arrangements completed, on May 6, 1854, the

#### NEW YORK, NEWFOUNDLAND AND LONDON ELECTRIC TELEGRAPH CO.

was formally organized. Peter Cooper was elected President, Chandler White, Vice-President, Moses Taylor, Treasurer, and Prof. Morse, Electrician. Mathew D. Field was at once appointed Engineer, and went without delay to Newfoundland to commence operations. First honorably paying the debts due to workmen under Mr. Gisborne, Mr. Field, with six hundred men, pushed the work of construction through the vast forests of Newfoundland until the wires were erected between St. Johns and Cape Ray. Meanwhile Cyrus W. Field made his first voyage to England to contract for a new cable to connect Newfoundland with Nova Scotia, and to continue his inquiries into the scientific obstacles to laying and operating a cable between the shores of the Old and the New world.

In England, Mr. Field met John W. Brett, the father of European submarine telegraphs, who acknowledged having received much assistance therein from the English engineer, Crampton, and who greatly

encouraged Mr. Field in his project. Mr. Brett took some shares in the Newfoundland Company, and was, at that time, the only Englishman associated with the enterprise.

In 1855 the cable for Cape Ray was shipped from England. It weighed 400 tons, and was manufactured by W. Kupert & Co., London. The steamer James Adger was chartered by Mr. Field to convey a large party to Newfoundland to witness the submergence. Among these were Peter Cooper, Robert W. Lowber, Professor Morse—who had been elected honorary electrician of the company, Rev. H. M. Field, Rev. Gardiner Spring, Rev. J. M. Sherwood, Dr. James A. Sayre, Bayard Taylor, Fitz James O'Brien, and John Mullally. The cable had arrived in a small English brig, which had to be towed by the steamer from shore to shore. Every thing seeming favorable, a hawser was thrown from the steamer to the brig, and the cable began to find its way to its appointed bed. Unfortunately, while yet in mid-channel, a furious storm of wind set in, the overloaded brig became unmanageable, and fearing destruction, the cable was cut, and the work for the time abandoned. In 1856 a steamer amply provided for the purpose was chartered, by which, after lading with the cable, it was easily and successfully laid. The line was now finished, and although it had to wait during many years for the completion of the great work for which it was erected, it ultimately showed the wisdom of its construction, and became of much value to its projectors. It had cost so far \$1,000,000. On the formation of the Atlantic Telegraph Company the charter of the New York, Newfoundland and London Telegraph Company, conferring the exclusive right for fifty years to land cables on the American coast, was made over to the new company.

In 1855, Mr. Chandler White died. On his death Wilson G. Hunt, a name well known among the merchant princes of New York, took his place as director, and gave the company during its existence, the benefit of his able counsel and active and intelligent support. Mr. Cyrus W. Field was at the same time elected Vice-President, and Robert W. Lowber, Secretary.

The history of the Atlantic cable enterprise has been already spread before the world in the admirable volume entitled "The Atlantic

Telegraph," by Henry M. Field, and forms no part of this record, beyond its unavoidable mention as the stimulant of other enterprises. Its history demands an exclusive record. It was first successfully laid August 6, 1857, carried a few messages from continent to continent, and expired September 1st, the day given up throughout America to rejoicings over its success. Almost its first message was the announcement of the death of James Eddy, "the first and best telegrapher in the United States," as the dispatch described him, August 23d, and which appeared in the London *Times*, August 25th. The transmission, also, of a message from the Cunard Steamship Company announcing a collision between the Ocean steamers Arabia and Europa, and their consequent detention, and by which much anxiety was prevented, revealed the vast value of a trans-atlantic cable service. The regret was universal throughout the world when the cable was found to be defective, and, as Professor Morse had predicted, soon after ceased to operate. Undaunted, however, by the loss of the first cable, convinced of its final triumph, and aided now by the steamship Great Eastern, which easily carried in its capacious hold the cable for the entire distance, nine years afterward a second attempt was made. The great ship, lightly carrying her gigantic burden, again steamed out to sea, followed by the mingled hopes and fears of the civilized world. Half the Atlantic was passed over in safety, and a thousand miles of cable were successfully laid. The signals were clear and perfect. Success seemed certain. In mid ocean, however, the cable broke, the fleet returned to England, and the Atlantic Telegraph Company, with an exhausted treasury, suspended operations. Such, however, had been the indications of success in laying the cable of 1865, that in 1866, the

#### ANGLO-AMERICAN TELEGRAPH COMPANY,

under arrangements with the Atlantic Telegraph Company, was organized with a new capital. The Great Eastern with a third cable was once more started across the deep. An indomitable will was again cautiously breasting the waves of the big sea, determined to succeed. The great work was at last accomplished. Universal joy followed the announcement that the cable was successfully laid. Not only so, but

the lost cable of 1865 was, to the general wonder, found, picked up, spliced, and continued to the American shore. The public confidence in established cable communication was now perfect. The cable was thrown open for public traffic August 26, 1866. A large and remunerative business followed, which has continued unbroken ever since.

It is a curious and somewhat startling fact, that Professor Gould, in experimenting with the conductor of the first Atlantic cable, succeeded, by the use of a battery composed of a gun cap, a drop of ocean water, and a small strip of zinc, in sending intelligible signals from continent to continent. A tear dropped between the metals might have proved as effective, and thus the quiet, but eloquent, and everywhere recognized emblem of suffering, would have united the Old world and the New.

The lines of the New York, Newfoundland and London Telegraph Company, which by that time had been extended from Port Hastings, on Cape Canso, to Heart's Content on the extreme northern shore of Newfoundland, became at once valuable. So intimate were the relations of the "Anglo-American" and the "New York, Newfoundland and London" companies, that on November 1, 1866, Mr. Henry H. Ward, well known in America as an experienced and able telegrapher, was appointed American superintendent, resident in New York, of both companies. In this relation he remained until 1873, when by a syndicate, of which the London house of J. S. Morgan & Co. were agents, the capital of the New York, Newfoundland and London Telegraph Company, of three and a half millions of dollars, was purchased by the Anglo-American Telegraph Company, and became a part of its own. On the amalgamation of the French, Anglo-American, and New York, Newfoundland and London Telegraph companies, the New York cable agency ceased.

The lines of the New York, Newfoundland and London Telegraph Company were valuable, of course, only as a link. They were utterly dependent for any future value on the success of the Atlantic cable. They were almost as much so on the inland companies whose lines extended from Cape Breton to the great centers of commerce, to which European correspondence would of course be largely directed. In the hands of able men, such a state of dependence on the other companies

could not long be borne. A vigorous and successful transmission of European correspondence, demanded direct access to the heart of international traffic. Mr. Field and his friends, therefore, determined, in the full faith of the ultimate success of the cable, to endeavor to obtain the control of the lines of the eastern seaboard to New York. In the initiation of this design, the prominent actors were James Eddy, H. O. Alden, Cyrus W. Field, Peter Cooper, Wilson G. Hunt, and Hiram Hyde of Truro, who was the representative of D. H. Craig, holding his stock and voting his policy.

Just at this period, D. H. Craig, the agent of the Associated Press of New York, unearthed from one of the towns of central Kentucky, David E. Hughes, a professor of music, who had been attracted by the power of vibration upon isolated tuning forks, and who had invented, down among the blue grass of that gallant State, a telegraphic printing instrument of great apparent merit. It required only a single electric wave to produce a letter. It was so sensitive that A. B. Talcott worked it by aid of a battery composed of a cherry pit and the ordinary metals and fluids. It was called "The Compound Magnetic and Vibrating Printing Instrument." The name was euphonious and suggestive of high art. It dispensed with the step by step movement, on which Royal E. House had founded his invention. It was a printing chronoscope in which minute divisions of time were transformed by mechanical action into printed letters. Perfect synchronism, which was, of course, essential, was regulated, even under great speed, by a vibrating spring. The revolution of the type wheel was continuous, and was not arrested to imprint as with the House machine. This was new. It made great rapidity of movement possible. Unlike Gray, who in his local printer made mechanism an inferior factor in his instrument, Hughes used electric action merely to release an armature from the electro magnet. It was readily actuated by a battery one-tenth of the power required for the House machine. Mr. Hughes at the same time had prepared a plan for duplex transmission. Here then was something new and valuable, just such an instrumentality as was needed to enable a bold and resolute organization to enter the telegraphic lists on the eastern field, as Sibley had done in the west. Mr. Craig was quick-witted enough to

see its value, and lost no time in bringing Hughes and his invention to New York and in contact with Mr. Field and his friends. He saw in it, also, an important factor in his own enterprises.

Although the Hughes instrument was at that time in a very imperfect condition, was not even patented, and was subsequently greatly improved under Mr. Geo. M. Phelps, at that period a mechanician of Troy, N. Y., yet its elements of value were apparent enough to induce an immediate purchase. The sum agreed upon was \$100,000, and the purchase was consummated November 1, 1855, nearly two years before a patent for it was secured. The purchase covered the right to use it throughout North America. The Hughes patent was granted September 23, 1857.

The Hughes instrument, as first constructed, was meritorious chiefly in what it showed itself capable of accomplishing. But its workmanship was imperfect, and its parts unequally adjusted. Its action was irregular. To accomplish speed, it was made so light as to be incapable of steady and reliable movement. It had to be re-made on a more consistent adjustment of the parts to the work they had to perform. This required long experience in mechanical detail. Fortunately it fell into the hands of a man capable of the work it required. George M. Phelps made it a success. By new appliances of his own, he, in after years, perfected, so far as seems possible, the art of printing telegraphic transmission.

Mr. Phelps removed the weight by which the Hughes instrument was run, and applied a pedal treadle. He substituted a governor for the vibrating spring, using a Morse relay in connection therewith. He also applied the key-board of the House instrument. Other changes were made. Mr. Hughes himself went to England, and was to have been accompanied by Rufus B. Bullock, but who, knowing the imperfections of the instrument, declined. Louis A. Smith and William B. Clum, both experts, declined for a similar reason. He was accompanied by Henry Bishop, and after a few years, during which many changes had to be made, the instrument was so successful that it was introduced very largely into European telegraphs, and Mr. Hughes was honored with the title of Baron.

The Hughes patent was purchased by Peter Cooper and associates November 1, 1855, under an agreement to organize a company, and erect, or secure lines on which it could be worked. Preliminary arrangements were, therefore, promptly made with John McKinney, D. H. Craig and Charles Spear, who had become the owners of the lines of the "BOSTON AND NEW YORK PRINTING TELEGRAPH COMPANY," to obtain possession. Three other lines named the "EAST AND WEST," "TROY AND BOSTON" and "NAHANT AND BOSTON," worked upon the same principles, and owned by the same parties, were to be included as a part of the general property. These lines had come into the possession of McKinney, Craig and Spear primarily in the interests of the New York Associated Press, to get rid of the obstructions thrown in the way of eastern press dispatches by F. O. J. Smith.

The Commercial, or Boston and New York Telegraph Company, was organized in 1848 by Hugh Downing and associates. The line was, in every respect, inferior. Unfortunately, also, Mr. Downing, who was a manufacturer of wire cord, had influence enough to induce the company to agree that he should erect two wires of that material on the line. The terms of the contract on which the line was built were strict, clear and particular. But Mr. Downing was partial to profits, was impecunious, and had a limited subscription. To secure his profits he sublet the whole work, accepting it in sections as they were reported complete. The builders had to advance much of the money needed to carry on the work.

In 1850 the sub-contractors, N. R. and B. S. Alford, delivered over the last section to Mr. Downing. They had probably done the best they could with their limited means. But it was an abortion. The poles were light, and did not average more than two and a half feet in the ground. When Mr. Downing, therefore, offered it to the company, its President, Mr. James Sturgis, of Boston, had it examined throughout, and rejected. It was only accepted on Mr. Downing's relinquishment of a large part of his reserved interest, from which funds were raised to place the line in working order. It was during this transition state that F. O. J. Smith offered, on a bet of ten thousand dollars, to

run his Durham bull from Boston to New York quicker than a message could be sent by the Downing line.

The chief misfortune connected with this line was in the employment of wire cord for conductors. This wire was one of the most unfortunate inventions of an era when invention was prolific of many unfortunate things. The printing instrument required a strong electric current. For this a large conductor was necessary. Upon the theory then prevalent, that the electric current depended for its easy flow upon the amount of metallic surface of the conductor, and in order to unite the maximum of metallic fibre with the maximum of surface, three, and sometimes five strands of number sixteen naked wire were braided into a cord. This, to many minds, seemed the very *ne plus ultra* of telegraphic conductors, both as to strength and conductivity. But its very form detained moisture on its surface, and being without outer coating, rust quickly supervened. Instead of being one of the best of conductors, it soon became the worst. In a very brief period it became so oxidized as to be friable, and from being one of the strongest of conductors, it rapidly became one of the weakest.

Notwithstanding all these adverse circumstances the printing system had a strong hold on the public interest, and attracted to its service some of the finest operating talent of the country.

The offices of the New York and Boston Telegraph Company were few, but well manned. New York had for its first manager A. B. Talcott, a name well known among American telegraph managers, and now a journalist of Washington, D. C. His assistant was W. W. Downing. John Horner was receiving clerk. New Haven was opened by Thomas Slack, afterward of New York, who was succeeded by Humphrey Webster. Hartford's first manager was Walter O. Lewis, well known of late years as the New York marine agent of the Associated Press, and who was soon after appointed its superintendent. M. S. Roberts, the present chief accountant of the Western Union Telegraph Company at New York, and, still later, J. W. Stancliffe, became his successors. The office at Springfield, which became a busy nursery of men, was first managed by Joseph E. Hood, afterward one of the editors of the Springfield *Republican*. This became the repeat-

ing office of the line, although for a brief period the repeating was done at Hartford. At Providence the office was opened by E. H. Coville, who had for assistant Thomas M. Miler, now of the printing staff of the Western Union Telegraph Company of New York. Captain William Macintosh, the now efficient Western Union Telegraph Company's superintendent of construction in New York, entered the service shortly after the opening of the office at Providence. An office was opened at Middletown by Benj. P. Elliott.

At Boston, the headquarters of the company, E. B. Elliott, one of the first mathematicians of the country, now of the United States Treasury Department, and recently one of the Commissioners on Civil Service, was the first manager, with Walter H. Gilson, W. H. Knapp and Humphrey Webster as assistants.

At a later period Mr. Elliott became an associate superintendent with Mr. Lewis, and these gentlemen for some time, during a period in which the line's existence seemed to be in danger, and with much to discourage men less ardent and persevering, endeavored to make its work effective, remunerative and popular.

The staff of this company were of a somewhat peripatetic order, and "changed round" as the convenience of the service required. On its roll-call appear, at different periods, many honored names of men of whom it would be grateful to refer to at length. Among these appear the names of Rufus B. Bullock, H. C. Bradford, Frank L. Pope, Gerritt Smith, A. J. Partridge, Frank Ashley, J. C. Cresson, Fred. J. Grace, Michael Lubey, Samuel J. Burrell, W. K. Godfrey, John Murphy, Joseph L. Edwards, Thomas M. Miler, Thomas P. Scully, George B. Prescott, George H. Grace, J. W. Stancliffe, Henry Lloyd, James N. Ashley and others. Many of these are referred to in other connections. Mr. Bradford is now the popular manager of the Western Union lines at Providence, R. I., where, while serving in 1852 as a copyist for the press, Mr. Ashley learned him to operate. Mr. Tobey is manager of the Atlantic and Pacific Telegraph Co. at Worcester.

Mr. J. N. Ashley demands a more lengthened notice. He entered the service at Providence, R. I., under Mr. A. A. Lovett, and soon after went with him to Ohio, on the new lines of the New York and Mis-

Mississippi Valley Printing-Telegraph Company, Mr. Ashley returning the year following to Providence, and Mr. Lovett to New York. In 1853 Mr. Ashley went to England in the employ of the Sub-marine and European Telegraph Company, to introduce the House machines in connection with underground lines. The revelation of the hindrance to efficient work by subterranean lines, by reason of what is now so well known as the static charge, made the mission a failure, and broke up a similar scheme in America. In 1854 Mr. Ashley was placed in charge of the operating department of the House Printing Company at Boston, where he remained until in 1859, when he became assistant superintendent of the third district of the American Telegraph Company. Subsequently he served as army correspondent of the *New York Herald*, and in which he greatly distinguished himself. When the United States Telegraph Company, in 1865, entered the lists of contestants for public business, Mr. Ashley was appointed to manage its press arrangements. During the last ten years Mr. Ashley has been connected with telegraphic journalism, first as editor of *The Telegrapher* and now as the able editor of the *Journal of the Telegraph*, the literary representative of the Western Union Telegraph Company.

After a comparatively brief period, notwithstanding the talent thus brought into its service, the line became so irregular in its operations, and was so unprofitable, that its abandonment began to be seriously proposed. It was to prevent this that Mr. Lewis and Mr. Elliott determined to work the line upon their own responsibility, Mr. Lewis taking the southern, or New York, and Mr. Elliott the Boston section. The withdrawal of the Press business, however, compelled the abandonment of the scheme, the company went into liquidation, and the property passed into the hands of several Boston merchants, and was re-organized May 18, 1852, under the name of the COMMERCIAL PRINTING TELEGRAPH COMPANY, under the laws of the Commonwealth of Massachusetts. The wire cord was removed, and a No. 9 iron wire took its place. But, even with this change, the line did not pay expenses. It was thereupon offered in 1853 to the New York Associated Press for \$40,000. The editors, however, decided that the telegraph was an outside business, and declined to have any thing to do with it. To

encourage other parties to purchase and manage it, however, the editors agreed to have all their reports sent over the line, and thus secure for it a certain revenue. Under this pledge it was purchased July 23, 1853, by John McKinney, a well-known, able and experienced telegraphist, and under him and D. H. Craig, general agent of the Associated Press, the line was managed during several subsequent years. The line itself was carefully rebuilt by these gentlemen, and soon after became remunerative and prosperous. Captain Charles Spear joined in this purchase. Soon after, because of McKinney's ill health, under which he soon died, Mr. A. A. Lovett became superintendent. Mr. Lovett was one of the first to enter the service after the office at Boston was opened. He was a man of very winning manners, and had a large and generous disposition. As a superintendent he was able, stirring, energetic, minute, kind, thorough and successful. By adopting a plan proposed by Mr. Lewis, of repeating business at Springfield, he greatly increased the efficiency of the service.

In 1853, when the line passed into the hands of McKinney and Spear, Mr. Lewis resigned. In the execution of his duties, under circumstances so unpropitious, he secured in a very marked manner the esteem of the staff of the entire service, and managed the affairs of the Company with so much kindness and fidelity that, on his departure, he was presented with a beautiful silver pitcher, bearing the following inscription :

"Presented by the operators of the Boston and New York House Printing Telegraph Line to Walter O. Lewis, Esq., their late superintendent, as a testimonial of their regard and esteem, January 25, 1853.

## BOSTON :

W. H. Gilson, M. Luby,  
H. A. Lloyd, C. M. French.

## SPRINGFIELD :

A. A. Lovett, J. N. Ashley,  
H. C. Bradford, J. I. Tobey.

## HARTFORD :

M. S. Roberts.

## NEW HAVEN :

H. Webster.

## NEW YORK :

T. A. Slack.

This pitcher he still cherishes as the most precious of his treasures. On leaving the service of the company, Mr. Lewis was offered the charge of the construction of the Printing Telegraph lines in the island of Cuba. This offer, however, Mr. Lewis declined. On its acceptance

by Mr. H. C. Skinner, manager at New York of the office of the New York and Washington Printing Telegraph Company, Mr. Lewis accepted the vacant managership, and was for some time connected with its duties. Mr. Skinner completed his Cuban task, returned, and soon after died.



WALTER O. LEWIS.

Not long after Mr. Lewis had commenced his new duties, Samuel Cutter and Samuel Porter built, in the interest of the merchants and underwriters of New York, a marine line from New York to Sandy Hook. This line Mr. Lewis leased. To this and the supply of marine news for the Associated Press he determined to devote himself. He therefore resigned the managership at New York, and betook himself to his new duties.

As a token of esteem, a gold-headed cane was presented to Mr. Lewis, August 31, 1853, by the staff of the New York and Washington Printing Telegraph Company, on the octagonal panels of which appeared the following names:

*"Presented to W. O. Lewis."*

NEW YORK :		PHILADELPHIA :	
Dickinson,	Filer,	Carr,	Scranton,
Horner,	Herbert,	Phillips,	Hinchman.
Kennedy.			
WASHINGTON :		BALTIMORE :	
Talcott,	Walworth,	Westbrook,	Burgess,
Phelps.		Mengenhardt.	
TRENTON, N. J. :		WILMINGTON, DEL. :	
Patrick,	Gazley.	Buckley,	Elliott.
PATERSON, N. J. :			
Bishop,		Rea.	

In the coming centuries, when the antiquarian is digging for the memorials of past times, instead of seeking for hieroglyphics upon the panels and entablatures of fallen temples, he will have to hunt for canes and silver pitchers.

The property of the Commercial Telegraph Company was leased by the American Telegraph Company, May 30, 1856, and purchased by that company in 1858. On this line the Hughes instruments were placed according to agreement. They were so imperfect, however, that they had soon after to be removed, and were replaced by what is known as the Phelps Combination Printer, which was a union of the best features of the House and Hughes instruments.

Having thus established a base of operations, although the lines of the Commercial Telegraph Company were not actually leased until May 30, 1856, a lease of the lines of the Maine Telegraph Company between Boston, Mass., and Calais, Me., was executed December 12, 1855, to take effect January 1, 1856, for ten years, at \$11,250 per annum. The lines of this company were very favorably located along the line of the "Boston and Maine," "Portland, Saco and Portsmouth," "Atlantic and St. Lawrence," "Androscoggin and Kennebec," and "Kennebec and Penobscot" railroads. The lease brought, also, into the circle of the new enterprise, Hon. Hiram O. Alden and James Eddy, the former the president, and the latter the originator, constructor, and general manager of the Maine Telegraph Company's lines. It also brought into its service Henry H. Ward, manager at Portland, Me., now cashier

at New York, and George F. Milliken, the inventor of the repeater which bears his name, who entered the service as a messenger boy in the Bain office at Portland, and who is now the honored manager of the Boston office of the Western Union Telegraph Company. The names, also, of George Shepard, Billy Porter, Sid. Fairchild, and many others, good men and true, were among the captured.

Cotemporaneous with these arrangements,

#### THE AMERICAN TELEGRAPH COMPANY,

with a capital of \$200,000, was duly organized under the telegraph law of the State of New York, the incorporators of which were Wilson G. Hunt, H. Hyde, W. G. Crosby, Douglas B. Stevens, P. Jardine, Peter Cooper, Cyrus W. Field, Hiram O. Allen, James Eddy and David E. Hughes. Peter Cooper was elected president, Hiram O. Allen, vice-president, and James Eddy, treasurer and general superintendent.

The American Telegraph Company was the natural outgrowth of the control of the Commercial line between New York and Boston by McKinney and Craig. After the death of McKinney in 1854, D. H. Craig induced James Eddy to enter into a project to purchase the Commercial lines, and unite them with others to Halifax. This project, connected with Craig's private purchase of the Hughes patent, and the fact that Cyrus W. Field had, at the same time, mapped out in his busy brain, a more extensive, though similar combination, compelled the events which so quickly resulted in the organization of the American Telegraph Company.

In connection with these movements, it is curious to know that, in 1855, James Eddy in his own interest, and that of D. H. Craig and others, conceived the idea of building an overland telegraph line to San Francisco, and petitioned Congress for aid for that purpose. But the time had not come. It was denounced, ridiculed, and abandoned.

The head-quarters of the American Telegraph Company were established and executive offices opened at No. 10 Wall street, and the operating department at No. 21 Wall street, New York.

An office in Brooklyn was opened by Lewis H. Smith, December 2, 1856, in Montague street, near Court, where the building of the Con-

tinental Insurance Company now stands. The connection with New York was maintained by means of a cable laid under the East river at the crossing of Astoria ferry, Eighty-sixth street, and by a wire which is still in use between Astoria via Brooklyn and Fort Hamilton, originally erected by Frank H. Palmer for D. H. Craig.

Meanwhile Mr. Eddy, who was one of the finest characters which the telegraph in America had up to this time developed, devoted himself with great skill and with large discretionary powers to the systematization of the lines under his charge. He was a man of much refinement, gentle as a woman, kind and considerate of others, and yet thoroughly energetic and industrious. Men like Eddy were valuable additions to the formative forces which were then shaping the future of a great company. Mr. Eddy introduced into the American Company's lines two features which had ultimately to be discarded. The first of these was the use of vulcanized rubber as an insulator. There was a great demand for an article which promised permanence. The havoc made on the glass insulators was very great, constant and annoying. The lines were kept imperfect, and men were required to be constantly patrolling them to preserve them in efficient working condition. The test of the vulcanite rubber in the test-room seemed absolutely complete and perfect. This led to their being made in large quantities. The form preferred was the iron stem surrounded by the rubber, and on which a screw was formed, terminating in a bell-shaped water shed, for insertion from beneath in wooden arms. In a very short time these gave much trouble; and, on examination, it was found that the action of the sulphur in the vulcanite had caused rapid oxidation of the iron stem, and had resulted in extensive fracture of the rubber cover. The iron stems were then tinned, but although this prevented oxidation, it was found that the rubber became easily foul from dust and moisture, was often imperfect and, as an insulator, unsatisfactory. Under more perfect conditions they are still used for local purposes. The other was the erection of poles of an average of ten to twelve feet above the ground, so as to avoid high winds and atmospheric electricity. There can be no question that the lines built by Mr. Eddy were models of solidity and regularity; but the submergence of

long reaches of them during a spring freshet, and their inapplicability for the additional wires the enlarging commerce of the lines so soon after demanded, led to their abandonment.

When the summer of 1857 dawned, the preparations made for laying the Atlantic cable gave great importance to the position of the American Telegraph Company, all the operations of which had been based on its successful accomplishment. At last the day of triumph came. The announcement, August 6, that the Niagara and Agamemnon had completed their great work, and that the cable had been landed safely on either side of the great ocean, gave universal joy. The offices of the American Telegraph Company were crowded with distinguished citizens who hastened to congratulate the officers on the auspicious event. On the 16th, the heavy booming of cannon, on the battery of New York harbor, announced the reception of the congratulatory message of Queen Victoria. September 1 was appointed as a day of public rejoicing. Before it arrived, however, Mr. Eddy, while in Burlington, Vt., was taken suddenly ill, and died August 23. The intelligence caused much grief. He was a man of most winning and attractive manners. Integrity was written on every line of his pure and gentle face. His death was felt to be a great loss. It was a melancholy prelude to the expiration of the cable itself, which soon followed. Mr. Eddy was succeeded, in the direction of the company's accounting and auditing department, by William H. Abel, a gentleman of education and refinement, who for many years skillfully and successfully performed the duties of his office until ill health caused his retirement. The general superintendence of the lines was assigned, temporarily, to A. A. Lovett, until the union with the southern lines made it politic to elect John Kendall to that important post. Mr. Lovett went to Washington in 1861, and became telegraph censor under the Secretary of War. This post he resigned, in 1863, to take charge of an enterprise styled the "People's Telegraph Company," in the interest of the American Telegraph Company. While in this service he expired suddenly in the office of the American Telegraph Company, 21 Wall street, New York, April, 1864, of aneurism of the heart.

After the discouragement occasioned by the loss of the cable and the death of Mr. Eddy had subsided, the American Company took measures to strengthen its position and enlarge its business. Failing in an attempt to make terms with the lines of the New York and Washington Printing Company, the American Company constructed a line of its own from New York to Philadelphia. It was built with great care and with the most approved material. Printing instruments of great transmitting capacity were put upon the line, and vigorous opposition was at once inaugurated against the "Magnetic" and "New York and Washington Printing Company." Rufus B. Bullock was made manager at Philadelphia; W. P. Westervelt, superintendent; Lewis H. Smith, chief operator at New York, and George Stoker, cashier. The war which followed was sharp and short. Before much shot had been wasted, a union of interests was proposed, which rapidly gathered strength, and was not long after accomplished.

In accomplishing a union combining so many and important elements, and to enable the Company to act with freedom and vigor in other directions, a new charter was procured from the State of New Jersey, March 28, 1859. The incorporators named in the charter were E. Cooper, Wilson G. Hunt, Abram S. Hewitt, Hiram O. Alden, and E. M. Archibald. Pending organization under this new act of incorporation, Abram S. Hewitt was chosen President.

On February 23, 1859, a compact was formally entered into between the American Telegraph Company, the New York and Washington Printing Telegraph Company, Francis Morris and R. W. Russell, Trustees of the House Patent, and on their own behalf, by which \$740,000, stock of the American Telegraph Company, was distributed among the parties in the proportion of their interests. This was increased not long afterward by an issue of \$100,000, to cover arrangements made with Dr. W. S. Morris and his associates, R. W. Crenshaw, John S. Langhorne and Ch. Scott, by which numerous lines and leases of lines in Virginia, Carolina, Georgia and Tennessee were brought into the connection. These arrangements, rapidly and vigorously executed, combined with the known wealth of many of the chief characters directing them, made the American Company so formidable, that on Novem-

ber 1, 1859, the leading stockholders of the Magnetic Telegraph Company, including Professor Morse, Amos Kendall and William M. Swain, accepted an offer of an issue of \$500,000 of the American Company's stock in exchange for that of the Magnetic. The offer was soon after accepted by all the remaining stockholders, and thus this vigorous organization, the first, and, in many important respects, the best ever organized in America, became a part of the American Telegraph Company. By accepting, with this union, the lease to the Magnetic Telegraph Company of the Washington and New Orleans lines, which had been executed July 16, 1856, the American Company obtained the control of lines extending along the entire length of the United States Atlantic seaboard. The connection of the Magnetic Telegraph Company with the American Company was in the form of a working union, and on its terms being perfected and agreed upon, the parties organized under the new charter October 12, 1859, electing as officers Zenas Barnum, of the Magnetic Company, President; Francis Morris, Treasurer; R. W. Russell, Secretary; W. H. Abel, Auditor; and John Kendall, General Superintendent. John C. Hinchman was made Manager at New York. The Board of Directors were as follows: Zenas Barnum, Amos Kendall, Wilson G. Hunt, John McKesson, John H. Purdy, Robert W. Russell, Abram S. Hewitt, Francis Morris, William M. Swain, S. F. B. Morse, Cyrus W. Field, Hiram O. Alden.

The lines controlled by the New York and New England Union Company between New York and Boston alone remained to dispute the unbroken possession of the Atlantic seaboard. Hon. F. O. J. Smith was its chief stockholder. It was desirable to obtain the property of the Company, but Mr. Field and his friends hesitated about the man. Mr. Smith was as coy in regard to them. It was finally decided by a purchase of Mr. Smith's interest therein and a lease of the lines, which brought into the management Mr. Charles F. Wood, the transfer of whom was an important item of the marriage act. This was soon followed by a lease of the Vermont and Boston Telegraph Company's lines, by which Mr. G. W. Gates, now so well known as one of the corps of Western Union Telegraph Company's superintendents, came into

the American Company's service. The line of the Northern Telegraph Company, under O. A. Dodge, was also leased January 1, 1857. This practically united the entire telegraphic interests east of the Hudson river, and which were so methodized and arranged as to greatly promote efficiency and give value to the common property.

The American Telegraph Company was now a powerful organization. Combination had not only enlarged its jurisdiction, but given to it the elements of vigor. As a result, the revenues quickly enlarged, and it was determined to commence the declaration of quarterly dividends. The first of these was one of three per cent, and was paid March 1, 1860. A second of like amount was paid June 1 of the same year. The auditor's statement of the result of the first quarter was as follows:

Receipts for messages .....	\$174,340 62
Balance net profit .....	50,716 68
Dividend .....	43,050 00
Surplus .....	7,666 68

At the close of the second quarter the surplus was \$20,574.36.

Number of offices .....	283
Miles of wire .....	13,015
Miles of poles.....	8,700

The company had seven distinct routes to Boston from New York, four between New York and Philadelphia, and three between Philadelphia and Washington.

In accordance with a wise policy, early adopted, of securing the possession of all valuable patent claims, the American Telegraph Company purchased, as already stated, for \$165,000 the interest of F. O. J. Smith in the New York and New England Union Telegraph Company. They also purchased all his proprietary rights in the Morse patent by a payment of \$301,108.50, thus placing him outside of all telegraphic ownership or control. The same course was taken with the patent interests of Messrs. Morse and Vail. In this purchase of the proprietary and other interests of the Morse patentees the other leading companies of

the United States and the Dominion of Canada, connected with the American in friendly federation, paid \$129,054.25 and received severally the conveyance of the rights connected with their territories.

Profiting also by the experience of Mr. Wade and Judge Caton with Western railroads, valuable contracts were completed with most of the important railroads in Connecticut, Rhode Island, Massachusetts and New York, the railroad companies giving important aid in the construction of the lines built thereon.

The capital of the American Telegraph Company at the period of its re-organization, October 12, 1859, was apportioned as follows:

To the old American Telegraph Company.....	\$450,000
New York and Washington Printing Telegraph Company...	200,000
Messrs. Morris and Russell, trustees .....	40,000
Magnetic Telegraph Company .....	500,000
Messrs. Morse, Kendall and Vail.....	107,000
New York and New England Union Telegraph Company...	303,000
Southern marine lines.....	100,000
	\$1,700,000

In the settlements resulting in this act of capitalization were included not only the purchase of all the Morse patent claims and interests outside of stocks individually held, but also of the House patent interest in all the New England and Southern States. On March 24, 1863, the Company also purchased the Bain patent for New England, New York east of the Hudson, Long and Staten Islands, New Jersey, Delaware, North Carolina, South Carolina, Georgia, Florida, New York to Washington, and Baltimore to Cincinnati.

Various attempts were made by Mr. Hunt and Mr. Field to obtain possession of the important lines of the New York, Albany and Buffalo Telegraph Company, but without success. Other important acquisitions were, however, effected. One of the most important of these was perfected May 4, 1860, by which a lease of the lines of the Nova Scotia Telegraph Company for fifty years in decades was executed, the terms of the lease changing with each decade, and a special enlargement of the rent to commence co-temporaneous with the success of the Atlantic

cable. The basis of the rent was five per cent on the Company's capital of \$120,000. The line of the New Brunswick Electric Telegraph Company, between Calais, Me., and Sackville, N. B., was leased on similar terms. Contracts with the Eastern, Long Island, New York and Harlem, the Cape Cod, Cape Ann and other marine lines, quickly followed. On the purchase of the marine lines, which were then under the management of George B. Prescott, and connected all the important points on the sea coast between Cape Ann and New Bedford, including Provincetown, Highland Lights, Port Hood, Nantucket and Martha's Vineyard, Mr. Prescott was appointed manager at Boston, where he remained until 1861, when he became superintendent of the American Company's lines in Eastern New York, Connecticut and Vermont. Mr. Prescott continued to serve in this capacity until 1858, when he was called to New York to commence an important statistical service in relation to government telegraphs, in which he exhibited so much industry and ability as resulted in appointment to his present important position as electrician of the Western Union Telegraph Company.

An important lease was meanwhile made of the lines of the Western Telegraph Company, from Baltimore to Marietta, O., and of the wires of the Marietta and Cincinnati Telegraph Company. On February 2, 1861, the American Company also became possessors of valuable patent rights from George M. Phelps, of Troy, N. Y., and he himself became superintendent of the works which the Company established for the manufacture of its machinery.

It is somewhat curious to find that Mr. F. O. J. Smith, now that he had sold out all his proprietary rights and stocks, and the purchasers had originated an effort to renew the Morse patent, secretly attempted to prevent the success of the application, and through Henry O'Reilly and Marshall Lefferts protested against its issue. In a letter dated Boston, February 22, 1861, he wrote to the latter in reference to the construction of a new opposition line from Boston to Washington, which he had planned almost the moment he had deposited in the bank the money which the American Company had paid him for his telegraph interests on the same route, as follows :

"I had a conversation with Mr. Russell on Wednesday. He says he and his friends were to have control. He wants a chartered company with a capital of a million of dollars. My conclusion was, to let him keep up to the fighting point against the extension of the Morse patent by Congress, and in which he enters with a love, but in the meantime for our friends to organize a corporation, limiting it to four persons, at \$10,000 each (total \$40,000) capital, with permission to increase to \$500,000. These four to constitute themselves a board of directors, with yourself president, and make contracts for putting up the lines at once, dividing the work into two sections—one from Boston to New York, and one from New York to Washington, you to take one section and Speed the other. The *elite* of the experienced men of the New York and New England Union line men can be had for every department, and the whole line completed by the time Lincoln can get his extra session of Congress together. Now, if you and McKennay will undertake the half of the above enterprise, I will provide you two men who will shoulder the other half, and all subscriptions that can be had being for the common treasury of the Company, will relieve all alike. It is in fact too good a thing, without making a dollar out of construction, not to be kept in the hands of the smallest number of stockholders. I believe \$75,000 thus invested will pay interest on a million in spite of all the power and ostracism of the mammoth \$1,750,000.

"Yours truly,

"F. O. J. SMITH."

The entire scheme was characteristic and illustrative of the man. The project, however, failed. Meanwhile John Kendall, the general superintendent, died. Gen. Lefferts was thereupon appointed engineer of the American Telegraph Company, and the projected line was abandoned.

On January 18, 1861, the Company having now the outposts of its lines at New Orleans, Cincinnati, Pittsburgh, Albany, New York and Newfoundland, rented, in connection with the New York, Albany and Buffalo Telegraph Company, the six-story building at 145 Broadway, New York, which for many years became the executive head-quarters of the American and Western Union Telegraph Companies.

During the war the American Company's lines were taken possession of by the Southern stockholders and organized into the "Confederate Telegraph Company," of which Dr. W. S. Morris was made president,

Thomas H. Wynne treasurer, J. R. Dowell general superintendent, and J. A. Brenner assistant. Toward the close of the war, C. G. Merriweather, of Mobile, became also assistant superintendent. The labor and heroic toil of these three men during these years of peril and suffering will perhaps never be fully known. Robert M. Crenshaw and Charles Scott became members of an executive committee. The company was organized under an old charter granted before the war broke out. The property was thus held together, and was faithfully returned when peace once more came to the nation.

The last addition to the property of the American Telegraph Company was in the amalgamation of the Southwestern Telegraph Company with its valuable property in Kentucky, Tennessee, Mississippi, Louisiana and Texas, by an issue of \$1,000,000, with some minor reservations, of the stock of the American Company in exchange for its own.

Although thus united, however, the management of the Southwestern Company, which had been eminently shrewd and vigorous, remained essentially unchanged. Norvin Green, the president, George L. Douglas, treasurer, and John Van Horn, superintendent, were elected directors of the American Company, but still retained their former administrative duties and positions. They now, however, confronted, as the representatives of the American Telegraph Company, the lines of the Western Union Telegraph Company at the chief gateways of Western traffic and of commercial correspondence and activity.

The American Telegraph Company, especially after its second organization, was a success. It owed this to several causes. Chief among these was the high character, prudence and vigor of the men who conducted it. The Atlantic cable project was also, no doubt, a stimulant to its prosecution, and associated its name with elevated enterprise. Not the least of the forces by which it swept its way to empire, was the resistance of the New York Associated Press to the interference of the Morse lines under the management of F. O. J. Smith. The company, indeed, had its origin largely in a press movement, which more or less affected, during many subsequent years, its policy and success. Its chief source of power was in the massing of independent lines into a single organization, and infusing into it a vigor and harmony utterly

unattainable under a mixed or miscellaneous jurisdiction. Its success was not unmarked in another direction equally effective. It introduced an internal discipline in which neatness, order, courtesy and character were recognized and rewarded.

The American Telegraph Company for a time unnecessarily attempted to fortify itself by a scheme originating in a suggestion first officially uttered by J. H. Wade, who remarked that "as the public demanded opposition, it would be wise to provide it." A line was built on this idea from Boston and Providence to Baltimore, under the superintendence of Mr. A. A. Lovett, and was called the "People's Line," on which a show of opposition to the American Telegraph Company was maintained. But it was "too thin," and without "rising to explain," the wires were soon brought into the home offices.

At one period of its history, when James Eddy was dead, and new managers ruled its affairs, an insane contest with the Associated Press, brought the American Telegraph Company to peril. R. W. Russell in 1857 became secretary and counselor of the company. He instinctively sought to rule. He was an Englishman, able, imperious, willful and persevering. Russell and D. H. Craig, the agent of the press, read fight in each other's eyes the moment they met. The cool grey eye of the New Englander, his placid assertion of power, his merciless saxon, made all the blood of the Englishman hot. From that moment Russell commenced a scheme to make the telegraph company a purveyor of all news, the retailer of foreign and domestic markets, and to make the Associated Press a dependent on the telegraph not only for the transmission, but the matter of its news. This was assuming a mastery of the press which was repulsive to the character of the telegraph as a public agent. It was met with bitter protest, a strong public reproof and antagonism, and had to be abandoned. Backed up, however, by a few members of the Board, Russell pressed the policy of encouraging rivalry in press reporting, and was the means of the organization of a rival press association managed by Geo. W. L. Johnson, Maturin Zabriskie and James N. Ashley. Press matters, during a long period, kept the affairs of the American company in a condition of volcanic excitement.

Curiously enough, Russell became the means of his own overthrow. To secure increased weight in his methods of administration, he bought out Cyrus W. Field and Abram S. Hewitt, at considerably advanced prices, and secured the election of Col. E. S. Sanford, the well-known manager of Adam's Express, and Cambridge Livingston, Esq., as directors. But they were too wise to be blind to the peril of a telegraph company, whatever its inherent strength, maintaining a warfare with the press of the country. While the Associated Press of New York was in its earliest stages, and, as in 1851, with nine-tenths of the daily journals of the country opposed to it, a contest with it had some elements of popularity. But this had all changed. In 1853, Craig had, by immense vigor, united the press of the country in its support, and given it a power which could not be defied in a realm wherein it had the right, if it pleased, to be dominant. This led, after much excited discussion, to a reorganization of the executive committee. Russell and his friends were left out, and Sanford and Livingston installed. Peace was made with the Associated Press, and a new reign of prosperity inaugurated by the election, in 1858, of Col. Sanford to the presidency.

Aside from the able men who guided its early policy, several men contributed to give the American Telegraph Company a very high condition of vigor, wisdom and method in its internal management. First and earliest among these was James Eddy. Many of the present methods for the systematization and distribution of official labor originated with him. His mind was, like his heart, clear, pure and earnest. Succeeding him in the management of the accounts of the company, was W. H. Abel as auditor, who, also, with a high order of natural ability, a finely-organized and well-educated intellect, gave increased simplicity and efficiency to his department, and which in after years he brought to the vast accounting system of the Western Union Telegraph Company. The election of Col. Sanford as president, with his popular methods, and clear conceptions of the proper relations between the public and a great national agency like the telegraph, and the freshness and vigor he infused into telegraphic administration; the election of Cambridge Livingston as secretary, a man of typical honor and precision, of high legal

attainments, of almost excessive exactitude, and of a native kindness and courtliness which well illustrated the historic name he bore; the treasurership placed in the hands of Francis Morris, a clear headed noble gentleman who seemed born to guard the coffers and regulate the fiscal policy of the company; all these men were elements of solid power.

To General Marshall Lefferts, the active manager of the practical operations of the company, a more lengthy notice is due. He had been an active New York merchant. He had become familiar with the practical needs of the telegraph by a successful presidency of the Bain line to Boston, and had gathered experience on the short lived State line through New York to Buffalo. He had organizing abilities and administrative talent of a high order. Method was natural to him. The post to which he was called as the company's engineer, gave him scope to exercise all his best qualities. Under his direction, and after a thorough personal inspection, all the lines were thoroughly overhauled. Large sections were carefully rebuilt with heavy poles and galvanized wires of fine quality and low resistance. The instruments were superseded by others carefully constructed in the company's own works. Maps showing the direction of every wire, the character of the line, the topography of the country, and the locality of all stations, were prepared. A system of electrical tests to determine the condition of the wires was also commenced with much promise of benefit, and which was, in some measure, the beginning of scientific and methodized telegraphy in America. These added to popular methods of administration, a liberal system of promotion and advancement, the recognition of skill, character and intelligence in appointments, not only elevated the service, but made Gen. Lefferts one of the most successful of telegraph managers, and greatly strengthened the American company.

Finally came the summer's sun of 1866, with the successful landing of the Atlantic cable. With the completion of the first cable, the life of James Eddy had gone out. With the successful landing of the second, the American company itself expired, if that can be called death, which, while dropping its autonomy as a separate organization, lives again under more vitalized conditions. On July 1, 1866, the American

Telegraph Company exchanged its capital of \$4,000,000 for an issue of \$12,000,000 of the stock of the Western Union Telegraph Company and became at once merged with and a part thereof.

#### THE NORTH AMERICAN TELEGRAPH ASSOCIATION.

The American Telegraph Company, with its property covering the Atlantic seaboard, naturally assumed a prominent and commanding position in the protection and regulation of telegraph interests throughout the country, and took a prominent part in organizing an association, afterward so potential in the union of the leading American telegraph lines, known as THE NORTH AMERICAN TELEGRAPH ASSOCIATION.

With the opening of the year 1853, many sources of difficulty, almost wholly of an administrative character, had revealed themselves. As the companies multiplied, which resulted from the sale of the patent to cover numerous small territories, the first serious obstacle to the use of the telegraph between points at any considerable distance from each other, grew out of the limitation of territory, the independence and local pride of small organizations, and an unwillingness, generally a refusal, to assume the risks of transmission beyond the single line on which a message was originally received.

Immediately connected with this, also, and aggravating it, was the sturdy assertion of the right to regulate tariffs on any basis. An exception to this was the National lines, as they came to be named, which were worked for a few years under a common superintendent, who, by the discretion vested in him, accepted business for distant places under his control, on a tariff modified by distance, and under a mutually pledged responsibility. In this enlarged jurisdiction and discretion, the danger and the disadvantages of separate organizations with limited territory, were, to that extent, removed. Nor was the value of the lesson lost. Other companies, to some extent, relieved this obnoxious condition of things by similar means. But the whole system was rank with dissension, and distrust, and danger. The Morse patentees were the parties most sensitive to this condition of things, and Mr. Kendall resolved to attempt a cure. It was on his action, that what was

known as "THE AMERICAN TELEGRAPH CONVENTION," met in Washington in 1853. It met in the aldermen's room of the Washington City Hall, and had prolonged sessions on the 5th and 7th of March. Hon. B. B. French, of the Magnetic Telegraph Company, was chosen president, and Tal. P. Shaffner, Esq., of Louisville, Ky., secretary. The call read as follows :

"MORSE'S AMERICAN TELEGRAPH.

"To all lines in America :

"For the purpose of consummating a unity of action in such affairs of the telegraph system as may be deemed material to the common interest, the undersigned propose a meeting of the representatives of all the telegraph lines in America working the Morse system of telegraph, at Washington city, March 5, 1853," etc.

The delegates reported themselves as follows :

New York and New England Union Telegraph Co..	F. O. J. Smith.
New Orleans and Ohio Telegraph Co.....	{ William Tanner, D. S. Crockett.
Atlantic and Ohio Telegraph Co.....	{ J. K. Moorhead, James D. Reid.
Pittsburgh, Cincinnati and Louisville Tele. Co....	{ J. K. Moorhead, James D. Reid.
Illinois and Mississippi Telegraph Co.....	J. D. Caton.
Ohio and Mississippi Telegraph Co.....	J. N. Alvord.
St. Louis and Missouri River Telegraph Co.....	J. M. Veitch.
Magnetic Telegraph Co.....	{ Wm. M. Swain, B. B. French, Amos Kendall.
Washington and New Orleans Telegraph Co.....	{ Amos Kendall, B. B. French.
Western Telegraph Co.....	Amos Kendall.
Philadelphia and Wilkesbarre Telegraph Co.....	A. C. Goell.
Susquehanna River and N. and W. Branch Co....	A. C. Goell.
Maine Telegraph Co.....	{ H. O. Alden, James Eddy.
St. Louis and New Orleans Telegraph Co.....	Tal. P. Shaffner.
American Tele. Co. (Baltimore to Harrisburgh)...	Geo. C. Penniman.
New York, Albany and Buffalo E. M. Tel. Co.....	W. J. Bacon.

After the formal organization of the convention, the delegates were invited to present topics of practical interest, when the following subjects, in the form of resolutions, were presented for consideration :

1. The treatment of proper names and compound words.
2. The propriety of insuring, by a cash premium, the correct transmission of dispatches.
3. Rules regulating the dismissal and re-employment of operators.
4. The right of priority to official messages of inquiry.
5. The treatment of signals and abbreviations.
6. The establishment of a telegraphic newspaper.
7. The impropriety of designating lines by the names of builders.
8. The mutual responsibility of the lines to each other.
9. The composition of addresses and signatures to messages.
10. The establishment of a central fund for refunding.
11. The increase of the minimum of words to twenty.
12. Changes in some letters of the Morse alphabet.
13. The increase of rates on messages written in cypher.
14. Advertising to the public the hours for opening and closing offices.

After a general discussion on many of these topics, during which able addresses were made by Gen. J. K. Moorhead, William M. Swain, H. O. Alden, J. D. Caton, J. W. Bacon, Amos Kendall and others, it was ordered that a committee be appointed to report on the subjects presented on the following morning. The members of this committee were Amos Kendall, William M. Swain, James D. Reid, J. D. Caton, A. C. Goell and Isaac M. Veitch.

On the following morning the committee reported through Mr. Reid at considerable length. The day was spent in its discussion. A very general agreement was arrived at. The basis for a uniformity of administration was laid, and unconsciously to all, yet none the less effectually, and in which lay the chief value of the convocation, there was planted, also, the germ of ultimate organic union. Annual sessions were determined upon, and a committee of correspondence appointed. The secretary was directed to print the proceedings of the convention in *extenso*, and send copies to all telegraph companies. A visit to the President of the United States followed the close of the convention.

In this annual gathering of the companies to effect administrative agreement, an opportunity was furnished for measures much more radical and protective than were at first anticipated to be necessary. In 1856 the complications growing out of the patent proprietary disputes between Messrs. Kendall, Smith, Cornell and others, and their effect upon the value of telegraph property, first became a matter of practical consideration. In this, the American Telegraph Company took a leading part. Messrs. Cooper, Field and Hunt proposed at the annual meeting of the companies to buy out the whole of the proprietary interests held by the Morse patents, and that a joint effort should be made to secure an extension of the Morse patent. The proposition, the value of which was evident, was received with favor, and on August 10, 1857, the leading companies entered into an agreement with each other "for the union, protection and improvement of certain telegraph lines in North America," and for the purchase of "interests, stocks and property in existing telegraph lines and companies, patents, and renewals of patents," the property of Messrs. Morse and Smith, and of the Hughes patent. In this purchase the American Telegraph Company paid one-half; the New York, Albany and Buffalo E. M. Telegraph Company eight one-hundredths; the Atlantic and Ohio, and Pennsylvania Telegraph Company five one-hundredths; the Western Union Telegraph Company, one quarter; the New Orleans and Ohio Telegraph lessees, seven one-hundredths; the Illinois and Mississippi and Chicago and Mississippi Telegraph Company, five one-hundredths. The Montreal Telegraph Company became a party to the compact May 29, 1858. This was known as the six-party contract, so called because of the number of companies forming it, and which, first executed August 10, 1857, was finally consummated October 12, 1859. The purchase of patent interests at once swept out of existence an amount of litigation which seemed interminable, and left F. O. J. Smith with nothing to contest but his building contracts with Ezra Cornell.

In the proposed attempt to obtain a second renewal of the Morse patent, which expired June 20, 1861, the companies agreed to pay the costs attending the application and \$30,000 to the patentees for the renewal. These vigorous proceedings, although Congress refused to

renew the patent, everywhere inspired confidence in the future of the telegraph.

So long as the Morse patent remained operative, the boundaries of the companies organized under it were, to some extent, certain of recognition. But, on its expiration, there was reason to dread, even with all the care which had been taken for mutual protection, that these would be ignored, and that each company, under the pressure of interests which were certain of assertion, would extend its wires to whatever point a profitable trade was reasonably secure. To provide against this possibility, and in order still further to strengthen the contract which had been executed, the NORTH AMERICAN TELEGRAPH ASSOCIATION was formally organized, October 20, 1858. Its object was to secure not only a more definite uniformity of administration, but to maintain by repetitious designating acts the boundaries of proprietorship and to pledge its members to mutual recognition and protection. The parties to this organization were the American, Atlantic and Ohio, Pennsylvania, Western Union, Illinois and Mississippi, New Orleans and Ohio Lessees, New York Albany and Buffalo, and Montreal Telegraph Companies. This accomplished, the Association met annually in New York to discuss subjects of mutual interest, to cultivate mutual acquaintance, and to agree upon certain lines of action in the conduct of business.

The President of the North American Telegraph Association was Peter Cooper. Superintendent A. A. Lovett was Secretary during the first year, and was succeeded by James D. Reid. The meetings were largely attended, interesting, animated and useful. J. H. Wade, H. O. Alden, J. D. Caton and Hiram Sibley were influential members of this confederation. Not less so was Isaac R. Elwood, the Secretary of the Western Union Telegraph Company, whose fine discernment and well-trained intellect inspired at all times the utmost confidence and respect. In a certain readiness of resource and practical talent, Dr. N. Green, of Louisville, Ky., was active, conspicuous and useful. The North American Telegraph Association came into existence in season to prevent a competition which would have been disastrous, and expired when, by discreet and honorable contracts, the telegraphic

interests of the country were united and its property rendered secure. The parties most active in the origin of these movements were Peter Cooper, H. O. Alden, Cyrus W. Field, Richard M. Hoe, E. Cornell, Hiram Sibley, Isaac Butts, Wilson G. Hunt, A. S. Hewitt, E. Cooper, Francis Morris, R. W. Russell, E. M. Archibald. They led to and hastened the union of the Magnetic, American and New York and New England Union Telegraph Companies, and finally of all the important telegraph interests of the country. In all these movements the action of the American Telegraph Company was spirited, wise and effective. At the period of its absorption into the Western Union Telegraph Company it was paying an annual dividend of ten per cent, and its shares were rated at from ten to twenty per cent premium.

Before closing the record of the American Telegraph Company, two men, because of their fidelity during a period of peril and unusual toil, deserve notice.

The American Company's lines in the south during the war were placed in charge of J. R. Dowell, of Richmond, a man of the most manly qualities and punctillious honor. One of his most active and efficient aids was John Aloysius Brenner, now so well known as District Superintendent, connected with the Southern Division of the Western Union Telegraph Company. Mr. Brenner entered the service in Washington, in 1849, as operator in Barnum, Lee & Rogers' New York and Washington Bain line, where he had been learning for some time as a plug, under the ordinary promise of speedy and remunerative employment. In December of the same year he entered the service of the Magnetic Telegraph Company as operator, and, in July following, that of the Washington and New Orleans Telegraph Company at Washington. In 1852, he left the service until June, 1855, when Hon. Amos Kendall, at that time President of the Washington and New Orleans Telegraph Company, appointed him manager at Columbia, and soon after of Augusta, Ga. In the year following he was appointed district superintendent, which, with a brief hiatus during the administration of John Kendall, he has since retained. In performing his severe and protracted duties during the war, which

soon after followed, Brenner's devotion was heroic, constant and unwearied.

Mr. Brenner is one of the men who sleep with one eye open, full of energy, combining southern fire with Saxon pertinacity. He is still in the prime of life, and manages his important district with zeal and ability.

Toward the close of the war there was also added to the service of the Company, under Dowell and Morris, another of those men whose



CHARLES G. MERRIWETHER.

capacity for management has aided so much to give popularity to the telegraph. Charles G. Merriwether, a native of Petersburg, Va., became a messenger of the Washington and New Orleans Telegraph Company's office at Mobile, in 1856. Rapidly learning to operate, he was, six months thereafter, appointed to the charge of the office at Gainesville, Miss., at that time the repairing office between New Orleans and Mobile. In 1858 he was transferred to Charleston, S. C., and afterward served in August-

ta, Ga., Kingsville, S. C., and Eufaula, Ala., returning to Mobile in 1860. Here he performed all kinds of service, building and repairing lines, restoring cables and rebuilding the lines after Sherman's army, which he closely followed, had destroyed them. In 1864 Mr. Merriwether was appointed superintendent by Mr. Dowell, and this appointment was confirmed by the American Telegraph Company, when the war closed and that Company resumed its jurisdiction

in the south. He has filled every post, messenger, office boy, battery keeper, clerk, operator, manager, repairer, foreman and superintendent, and has done his work in every department well and faithfully. Mr. Merriwether's field extends from Chattanooga, Tenn., Atlanta and Macon, Ga., to the Texas State line, including New Orleans and Southern Louisiana. In this important region, he exercises a thorough and wide-awake supervision, and although bearing the burden of 230 pounds of solid bone and muscle, and of Aldermanic adiposity and breadth, is active, energetic and thoroughly up to the duties of his responsible station.

Superintendents Brenner and Meriwether were representative of a number of men in the southern States who have been marked for their skill, enthusiastic labor, and fidelity. It is difficult to enumerate them. Prominently, as having in him what may be termed the genius of the profession, stands George W. Trabue, of Nashville, Tenn. He belongs to a family of alert and somewhat humorous intellect, sagacious, ingenious, solid. The name of Trabue is as familiar in the south as Van Horn. A. E. Trabue, a brother of George W., was the author of "Short Sirkut," a lively publication not yet forgotten. James Compton, J. B. Tree, Glynn M. Baker, Lara L. Baker, Martin Barth and David Flanery have all been connected with faithful, heroic, self-sacrificing service.

Prominently in the north, as Superintendent of the American Metropolitan lines in New York, and intrusted with a vast detail of local labor, was John C. Hinchman; and in New England, during a part of its most interesting history, A. A. Lovett and Charles F. Wood. Under Mr. Hinchman, at New York, were a number of able men, still well known. M. S. Roberts was his associate. Henry H. Wood, M. V. B. Finch, Edwin F. Ludwig were managers. Alfred S. Downer was assistant manager. The chief operators were J. W. Kates, Julien Soule, J. C. Christie, P. H. Shaughness and Gerritt Smith.

## CHAPTER XXXII.

## INTERNATIONAL OCEAN TELEGRAPH COMPANY.

ON June 30, 1865, the Government of Spain granted an order for a survey of an oceanic route for a cable connecting that kingdom with Cuba and the United States. The survey was granted upon the application of Don Arturo Marcoartu, a Spaniard, who associated with his application the names of the Marquis of Marianao, the Marquis of Manzanedo, Count Estaban de Carongo, Michael Chevalier, Ferdinand Lesseps, Leopold Werner. The prestige of these names secured the prompt consent of the Government. It turned out, however, that, as in many such enterprises, the parties named had nothing to do with the project, and subsequently disowned their connection with it. Because of this misrepresentation the grant was declared void.

Without the knowledge of this Spanish movement, the project of a line to Cuba, Panama and the Bahama islands, embracing also the possible extension from South America to Africa and Spain, was started in America, by Captain James A. Scrymser, of New York, in a conversation with his friend, Alfred Pell, Jr., in the summer of the same year. These gentlemen were, at the time, meditating beneath an apple tree in the soft shadows of the evening twilight in what way they could most bless their fellow men. Cable communication was at that period enlisting everywhere the intelligent interest of society throughout the world. Encouraged by capitalists, to whom the subject was presented, and many circumstances conspiring to render the project possible, Captain Scrymser became the prime mover in the organization of the International Ocean Telegraph Company. This company promptly applied to Congress and the Legislature of Florida for recognition and

protection. The result was the grant by the State of Florida, January 2, 1866, of an exclusive right for twenty years to connect the Florida coast with Cuba by cable, and also the right to construct land lines throughout the State. By an Act of Congress, passed May 5, 1866, an exclusive grant for fourteen years was given for the like purpose, Congress reserving the right to determine the rates of toll, to have the free use of the cable when necessary, and the right to select its own operator.

There was resident in Spain at this time an active and influential American citizen named Horatio J. Perry, to whom the Spanish government had, at a former period, granted a concession to lay cables between Spain and Cuba by way of the Canary islands, but which, by lapse of time, had been revoked. Through this gentleman, and greatly aided by his influence with the authorities, the International Ocean Telegraph Company, by its President, General William F. Smith, a well-known officer of the United States Army, obtained from the Spanish government a concession, without repeal, to land cables on the Cuban coast for forty years. This grant of the Spanish Government was communicated, in the polite language of the nation, August 29, 1866, by sub-Secretary Salvator de Albacete, in the name of the Queen ("whom God guard") to "General William F. Smith ('God guard you many years') representative of the International Ocean Telegraph Company."

The "International Ocean Telegraph Company" was organized in New York under the laws of that State, December 2, 1865, with a capital of \$1,500,000. The original corporators were James A. Scrymser, Alfred Pell, Jr., Alexander Hamilton, Jr., Oliver K. King, Maturin L. Delafield, William F. Smith, James M. Digges. The act of incorporation stated the object of the Company to be "to construct, use and maintain a line or lines of magnetic or electric telegraph between the city of New York and the city of Havana, in the Island of Cuba; said line to be extended from the Island of Cuba to the Isthmus of Panama, the Spanish main and the Island of St. Thomas." At the formal organization of the Company, which soon after took place, the following appointments were made:

Gen. William F. Smith, *President*; Alexander Hamilton, Jr., *Vice-President*; Alfred Pell, Jr., *Secretary*; Maturin L. Delafield, *Treasurer*.

*Board of Directors.*—Alexander Hamilton, Jr., Charles Knap, William F. Smith, E. S. Sanford, Maturin L. Delafield, James A. Scrymser, Cambridge Livingston, Alfred Pell, Jr., William T. Blodgett, Edward M. Archibald, Albert K. King, H. C. Bull.

The survey made by the naval officers of the U. S. Coast Survey proved that no serious obstacle existed in the bed of the Gulf of Mexico to the safety of a cable. The entire distance from Sand Key to the Moro, on the Cuban coast, was 102 miles. The greatest depth was 845 fathoms. A mountain, 2,800 feet in height, occupied the center of the channel, but the slopes on each side were easy. On the northern half of the channel the bottom was of a whitish coral mud; on the Cuban side it was of an orange colored mud or sand called moro conglomerate. The officer reporting these soundings characterized all the speculations respecting "polar currents" "littoral counter-drifts," and "almost frigid substrata," so long connected with Mexican gulf theories, as learned fallacies. A report also from Cromwell Fleetwood Varley, the well-known English electrician, testifying to salt water as the best protector and preserver of gutta percha, and citing Samuel Statham, John Chatterton and Willoughby Smith, of England, as having removed one of the chief difficulties of the cable service, by discovering the means for the most exact location of faults, cleared the way for an energetic prosecution of the enterprise.

The land lines necessary to connect with the cable were projected from Lake City, Fla., to Punta Rassa on the western coast of the southern portion of the State, in all about 400 miles. These were built by W. H. Heiss and W. W. Sadler, formerly of the American Telegraph Company, the former of whom became superintendent. The connection with New York, from Lake City, was proposed to be by the wires of the Western Union Telegraph Company, although an independent line to that city, as part of a more extended project, was held in abeyance by some of the parties interested.

Two cables were necessary, one to connect Key West with the Moro, in Cuba, 102 miles in length, another of 133 miles to connect Key West with the land lines at Punta Rassa. These were made in England by the "India Rubber, Gutta Percha and Telegraph Works Construction

Company." The core of the gulf cable was of seven strands of fine copper wire, surrounded by three layers of gutta percha, a covering of hemp and an armor of wire, in all weighing one and a quarter tons per mile. The shore ends were similarly constructed, but were more heavily armored, and weighed two tons per mile. For the more interior waters north of Key West, the cable was lighter, the weight being three-quarters of a ton per mile. These cables arrived at Havana, July 26, 1867, in the steamship *Narva*, Lieutenant Dowell commanding, and under the general care of F. C. Webb, engineer for the contractors. The United States war steamer *Tahoma* and lighthouse steamer *Fountain* were detailed by the United States Secretary of the Navy to assist the *Narva*, as was also the Spanish war steamer *Francisco de Asis* by the Spanish Government. Of the party who were to accompany these vessels in their interesting work, were Gen. W. F. Smith, President of the Company; J. Nenninger, Vice-President; Senor Arantave, Inspector of Cuban Telegraphs; Mr. F. C. Webb, W. C. Everett, the Company's Engineer, and Mr. Crooks, the Operator. The signals on shore at Chorrera were in charge of Mr. Henry Donovan.

The fleet started from Chorrera, a Cuban inlet near Havana, over which the old Spanish castle of Torreón rears its historic walls, August 6, and succeeded in laying the gulf cable, the next evening, to Key West. Two mishaps, however, attended the undertaking. The first was caused by the guiding steamer *Tahoma*, which by her presence or lights was to mark the path of the cable steamer in her work, getting out of sight during the night, when her guidance was most essential, a rather extraordinary circumstance in so short a journey and with so much at stake. This was aggravated by the fact that the commander of the cable steamer *Narva*, fearing that he was out of his course, changed the direction of the steamer, and only found his mistake when the cable was exhausted. A landing was finally effected by using the Punta Rassa portion of the cable; but, as if to add to the misfortunes of the night, just as the final connection was being made, the cable broke a few miles from shore. Owing to storms, which immediately set in, eleven days were consumed before the connection was complete. It was not, indeed, until September 10th that the line was finally opened

to public use, when congratulatory messages of a very generous and friendly character were transmitted between the Captain-General Joaquin Del Manzano, of Cuba, the Spanish Ministry at Madrid, and United States Secretary of State W. H. Seward. These messages were chiefly significant in their recognition of the telegraph as an agency of mutual prosperity and peace.

Of course the connection of the Island of Cuba with the telegraph systems of the world led to extensions which had, with more or less minuteness, been foreshadowed in the articles of association of the International Ocean Telegraph Company. All the islands of the Carribean Sea had meanwhile expressed, through their governments, a desire for telegraphic connection. Jamaica and Havana also claimed attention, and subsidies from all were freely promised. This led, in 1870, under the auspices of the International Ocean Company, through its President, General Smith, to the organization of the West India and Panama Cable Company to connect by cable from Santiago, the Island of Jamaica and Panama, there to meet projected cables to Peru and Chili on the one hand, and from Jamaica to Porto Rico, St. Thomas, Guadeloupe, St. Lucia, Martinique, Barbadoes, Grenada, Trinidad, to Demerara on the Venezuelean coast, on the other. This was followed soon afterward by the organization of the Cuban Submarine Telegraph Company, with a capital of £160,000, to lay a cable, 520 miles in length from Batabano, on the southern shore of Cuba, to Santiago. The length of these cables, all of which were soon laid, were as follows:

Santiago to Jamaica.....	140 miles.
Jamaica to Porto Rico.....	582 "
Porto Rico to St. Thomas.....	110 "
St. Thomas to St. Kitts.....	133 "
St. Kitts to Antigua.....	90 "
Antigua to Demerara .....	1,028 "
Jamaica to Panama.....	660 "

Communication was still further facilitated with Trinidad and the cables of Companies beyond Demerara to Para and Pernambuco and the deep sea cables, thence to Madeira and Lisbon, by laying a

direct cable from Porto Rico via St. Croix to Trinidad, omitting the intervening islands.

The subsidies granted by the authorities of these islands amounted to £16,800 per annum. The whole sum, however, has not been regularly paid. The traffic of the four years, closing with 1875, of the WEST INDIA AND PANAMA TELEGRAPH COMPANY amounted to £120,000. The capital is £2,445,630. Its Board of Managers are C. W. Earle, Chairman; Sir James Anderson, William Andrews, C. W. Field (representing the International Ocean Company), W. Ford, Henry Holmes and Henry Weaver. Its last act of incorporation was consummated January 9, 1877.

In the spring of 1873 the Western Union Telegraph Company, deeming it unsafe to its own interests to permit the International Ocean Telegraph Company to carry out certain lines of policy which had become prominent in its management, purchased a controlling amount of its capital stock. Under a reorganization, which succeeded this purchase, William Orton was elected President; Norvin Green, Vice-President; Cambridge Livingston, Secretary; R. H. Rochester, Treasurer; J. B. Van Every, Auditor; George B. Prescott, Electrician; N. de Bree, Superintendent. Under this organization the property of the Company was thoroughly overhauled. An additional cable from Punta Rassa to Havana was purchased in England and laid. Side lines were also constructed to Jacksonville and St. Augustine. For nearly four years the earnings were devoted to the renewal and general improvement of the line. It is now doing a remunerative business, and commenced, in April, 1877, the payment of regular quarterly dividends of two per cent.

The statistics of the Company are as follows:

Capital, \$1,500,000; bonded debt, \$237,996; land line, 506 miles; two cables, each about 230 miles; number of offices, 22; employees, 37; average annual receipts, \$300,000.

The Company owns the fine cable steamer Professor Morse, which is kept in readiness for instant use.

The land lines of the International Ocean Telegraph Company pass through an unbroken wilderness of pine trees, cypress swamps and

hammocks, with the exception of what is known as Pine Prairie, a wide extent of open country, which, during the rainy season, becomes a shallow lake, the rainfall in that region being the greatest on the continent. The lines, however, are maintained with admirable uniformity, and the business sent over them is steadily growing in volume and value, as may be seen by the following enumeration of messages transmitted over it during the last four years: Messages, 1873, 51,899; 1874, 58,076; 1875, 69,059; 1876, 81,688. Of the messages of 1876, 28,661 were for or from Havana, and 20,113 for points south of that city. The basis of tariff between New York and Havana is five dollars for ten words.

The advantage of telegraphic communication is, perhaps, nowhere more felt than in some of the islands of the Carribean Sea, now connected through the lines of the International Ocean Telegraph Company with the United States. Mr. N. de Bree, the intelligent General Superintendent of the Company, writes: "On a recent visit to Cuba, I met a gentleman from St. Thomas, who said that he had seen more American goods sold in the West Indies within the past three years than for three times that period previous. He attributes this to the telegraphic facilities. Merchants receive market quotations, make easy charters, and have quicker transit of cargoes from New York than from England or France. Telegraphic communication between West India and South American ports has very sensibly increased, and the monopoly of the traffic long held by London and Paris no longer exists."

Merchant vessels leaving Europe in ballast for a cargo of sugar, cotton or deals can take the southerly course, strike the northeast trade winds and arrive at Key West in from twenty-five to thirty days, avoiding in winter the cold head winds of the northern passage. On arriving at Key West they can telegraph their correspondents in Cuba and the United States for offers, and close charters in the same way. A fine illustration of this is thus given by Mr. de Bree:

"Two years ago a ship arrived in the harbor of Key West at 4 P. M., twenty-four days out from Liverpool. The captain came ashore, telegraphed his correspondents in New York, Savannah, Mobile, New

Orleans, Galveston, Cardenas and Havana. By ten A. M. next day he had offers from all. The New Orleans offer was the best. He at once cabled the terms offered by New Orleans to the owners in Genoa, was instructed by them to accept, and by four P. M. had weighed anchor and was on his way to New Orleans, just twenty-four hours after his arrival at Key West."

The captain was so pleased that he left a basket behind him marked "contents valuable," which, however, were found volatile, and soon disappeared.

Mr. N. de Bree, now General Superintendent of the International Ocean Telegraph Company, entered the military telegraph service under Gen. Stager, in 1862, and after serving in various places during the war, was appointed, in 1866, night manager at Louisville, Ky. Later he became chief operator and was engaged by Superintendent Van Horne to do service as an electrician, for which he was well qualified. In 1873 Mr. de Bree was commissioned to take charge of the International Ocean Telegraph Company's cables between Punta Rassa and Havana, with the title of cable manager. In 1876 he was made general superintendent. Mr. de Bree is a man of fine ability and character and a skillful electrician. The active direction of the company is in the hands of Dr. Norvin Green, the Vice President, who gives to it the care and the good judgment by which, as an executive officer, he is so well and widely known.

## CHAPTER XXXIII.

### THE PACIFIC AND ATLANTIC TELEGRAPH COMPANY.

THE origin of the Pacific and Atlantic Telegraph Company was due to a man well known in Pennsylvania, named James L. Shaw. He was connected with the building of part of the "Magnetic" and of lines erected by Dr. A. C. Goell to Wilkesbarre and elsewhere in the valley of the Susquehanna. He was noted for his pushing, aggressive and somewhat arabic habits. In the course of time Shaw found himself at Monongahela City, a pleasant town on the Monongahela river, in Western Pennsylvania, and there planned a modest line of telegraph from thence to Brownsville on one hand, and to West Newton on the other. He built it with about forty stout poles per mile, opened the offices on a commission, usually of fifty per cent, and thus half of its receipts were net profits. It was called the Monongahela City Telegraph Company. Mr. Shaw soon after extended it to Pittsburgh via Elizabeth and McKeesport, and also southward to Fairmont by way of Rice's Landing, Davidson's Ferry, Greensboro, Carmichaels and Morgantown, and then named it "THE MONONGAHELA VALLEY TELEGRAPH COMPANY." It was chartered March 14, 1865, with a capital of \$25,000, to operate telegraph lines through Westmoreland, Washington, Fayette and Greene counties, Penn., and was very carefully built. Shaw knew that a weak line would soon eat itself up in repairs, and in providing against depletion of this kind, showed his good sense at a time when that article was not abundant. On the capital of this nest of lines a dividend of ten per cent was declared in quarterly payments of two and a-half per cent.

As Mr. James L. Shaw opened his Pittsburgh office and felt the comfortable dignity of proprietorship of a paying line, his thoughts were enlarged. Backed by a company with a captivating local name, of which he was chief owner, he found in his hands the convenient and promising germ of a much larger organization. The popular sympathy with opposition to established lines to Philadelphia and the west was such that in a brief period Mr. Shaw succeeded in organizing, July 30, 1866, THE PACIFIC AND ATLANTIC TELEGRAPH COMPANY, with a capital of \$3,000,000, of which James L. Shaw, A. J. Baldwin and W. H. Fairbank each subscribed 30,000 shares. Into this new organization the Monongahela Valley Telegraph Company was not long afterward merged, and the dividends which had been declared on the latter formed a splendid card for the placing of stock which, of course, became the first duty and prime concern of its Board of Directors. This Board was at first composed of George H. Thurston, James L. Shaw, A. J. Baldwin, Edwin Middleton, with A. J. Baldwin, a well-known builder of opposition lines, as President. Soon afterward, however, William Varnum, R. J. Anderson and Edward J. Allen were added to the Board, and Mr. Thurston, a well-known citizen of Pittsburgh, and at one time President of the Chamber of Commerce there, was elected President; James L. Shaw, Vice-President; Mr. Allen, Secretary and Treasurer, and Mr. Baldwin, Superintendent.

The territory named in the charter granted to the Pacific and Atlantic Telegraph Company was via Buffalo from New York to Chicago, from New York to Boston, from New York via Pittsburgh to Cleveland, St. Louis and San Francisco, and from New York to Baltimore, Washington and New Orleans. "To every point on the continent" would have expressed the territorial limits, as they arranged themselves in Mr. Shaw's mind, more tersely, and saved much laborious writing in preparing the charter.

The philanthropic character of the enterprise was apparent in the generous character of the contract for construction. It was assigned to a Mr. W. H. Fairbank, under Mr. Shaw, Mr. Baldwin and James W. Lockhart as an Executive Committee, and who, of course, had no interest in the contract, at the comfortable limit of \$550 a mile. Only this and

nothing more. Of course \$550 a mile made Mr. Fairbank active, and the lines shot out from under his hands with the most gratifying expedition.

In the spring of 1867, a new Company, with M. O. Brannin, Esq., of Louisville, Ky., as President, had been organized in Cincinnati to build an independent telegraph line from Cincinnati to Memphis and New Orleans via Louisville, Ky., and Nashville, Tenn., and had organized under the title of the SOUTHERN TELEGRAPH COMPANY. At the close of the year they had built 190 miles of two wire line, and had distributed a large number of poles on the route of its designed extension. But things were not working smoothly with them, and the Pacific and Atlantic Company, through its sharp-eyed Vice-President Shaw, who was the Sibley of the concern, saw a fine field for the rapid extension of his own lines in the perils which seemed to surround this new Company. The Southern Telegraph Company had already sold \$102,000 of its stock. It had strong local friendship and support. It was well built so far as it had been constructed. Its objective points were all valuable and necessary to be reached by any Company which aimed at successful existence. So, after a careful examination of the condition of things, it was agreed to issue to the stockholders of the Southern Telegraph Company an amount of stock of the Pacific and Atlantic Company equal in amount to their own, and receive theirs in payment therefor at 70 cents on the dollar, the balance of 30 cents to be paid in cash. No dividends were to be paid on the new issue until the line was completed to Memphis, Tenn. A majority of the parties in interest having agreed to this arrangement, the contract was closed, a majority of the stock secured, and George H. Thurston, President of the Pacific and Atlantic Company, elected President of the Southern Company, James L. Shaw and Secretary Allen becoming Directors. It was among the pledges of the union, for such it was understood to be, that the parties should each exert themselves to secure the means needed to complete the line to New Orleans at an early day. The contract was regarded as a very happy and valuable one, and was quickly confirmed by the Board.

Another important movement was made in acquiring the lines of the Mississippi Valley National Telegraph Company, projected from

St. Louis to reach Chicago, St. Paul and New Orleans, and which was accomplished by an exchange of stock, share for share, in all \$257,580. The whole action of the Company in these enterprising movements was rapid, shrewd, sharp and aggressive.

In the quest after new and profitable connections, Mr. Shaw and James W. Lockhart went to Boston to follow up the scent of a somewhat mysterious company which was sending its agents out west, called the INSULATED LINES TELEGRAPH COMPANY. It was incorporated under the General Laws of the State of New York, May 2, 1864, "at 10.55 A. M.," with a capital of \$100,000. It was already built from Boston to Washington, and the company had not only issued \$1,250,000 of stock, but had contracted large debts along the route. Its field also was the continent, and its ultimate capital \$15,000,000. J. M. Wightman, formerly Mayor of Boston, was President.

In an interview, which the Committee succeeded in obtaining with the President, Mr. Shaw and his friend were astonished, shortly after being seated in Mr. Wightman's comfortable room, to hear that gentleman remark, "Gentlemen, I am—my mouth is shut—I—," upon the utterance of which cabalistic and remarkable expression the ex-Mayor unceremoniously left the Monongahela Committee looking at each other. On recovering their surprise, and feeling that they had not added to the stock of their previous information, they called on a former officer of the Insulated Lines Company, Gen. Alfred B. Ely, to see if he could illuminate matters, and who received them most politely. After agreeing as to the condition of the weather and the general beauty of Boston as a city, Gen. Ely said: "Gentlemen, I have, figuratively speaking, \$100,000 in this thing; but for reasons I need not name, I am at present out of the directory. Let me remark, however, to you, gentlemen, that if you have obtained any subscriptions to Insulated Line stock, you had better, in the interest of your own happiness, have the name erased, or the book hidden where it may never be found." It then dawned on Mr. Shaw and, simultaneously, on Mr. Lockhart, that there did not seem to be much object in cultivating this concern. The Insulated Telegraph Company soon after disappeared and became a part of the Franklin Telegraph Company.

After having, with much spirit, successfully extended lines to many of the leading points of profit, and by a careful system of farming out of the minor offices, maintained regular dividends, it was determined to extend the lines to New Orleans, and by more rapid processes cover new territory. Subscriptions to the amount of \$50,000 was readily obtained in New Orleans, and to which the lines were finished, October 16, 1871, and were placed under the charge of F. M. Speed as Superintendent. Meantime an organization, in the interest of the Pacific and Atlantic Company, was perfected to build an independent line of six wires between Philadelphia and New York, to be known, until its mission was accomplished, as the Eastern Telegraph Company.

THE EASTERN TELEGRAPH COMPANY was pioneered by James L. Shaw, and a charter procured from the Legislature of Pennsylvania, April 5, 1866. The corporators were R. Gibbs, Q. Campbell, J. C. Duhadaway, Joseph Robinson, Jackson Duncan, John W. Taylor, C. A. Markley, John Welsh, James M. Blundin. Its capital was \$25,000, with the right to increase and the right to lease. Its route was from Philadelphia through Trenton, New Brunswick, Metuchin, Rahway and Newark to New York. James L. Shaw was President; W. S. L. Wilson, Secretary. It obtained right of way over the turnpike roads from the New Jersey Railroad Company by a payment of \$1,000 per annum. It was leased, December 30, 1869, to the Pacific and Atlantic Telegraph Company for \$105,000 paid up stock, and a nominal annual payment thereafter. It was a scheme, then quite common, by which a few managing members of a company, who could not conscientiously accept a profit on the building of their own lines, constructed, under a separate organization, an important extension like this, making, when completed, a comfortable margin by consolidation. Many a good man's tender conscience was thus appeased. The Eastern Telegraph Company provided the Pacific and Atlantic Company with five wires to New York, where it immediately opened a central office at 23 Wall street and ten auxiliary stations throughout the city.

On May 15, 1868, there had been built by the company 823 miles of line. It had also purchased 899 miles of good line, and leased 131, making in all 1,853 miles of good, substantial telegraph property. The

points reached were Baltimore via the Western Maryland Railroad, by a strong line built with forty poles to the mile via Brownsville; Philadelphia, by two wires along that mother of telegraphs, the Pennsylvania Railroad, obtained through the charter and property of the Keystone Telegraph Company, a railroad men's organization; and Nashville, Tenn., via Cincinnati and Louisville, Ky. The oil region was reached by the lease of the lines of the Merchants' Telegraph Company, of Pittsburgh, built from Pittsburgh to Petroleum Centre for the use of the oil men. It also built lines from Harrisburg to Waynesburg, Va., and from Hagerstown to Frederick, in Maryland. In all, the Pacific and Atlantic Telegraph Company rapidly became the owners of 3,244 miles of wire, and seemed on the high road to prosperity. The purchase of the rights of the Keystone Telegraph Company, of which Andrew Carnegie was the active agent and founder, was effected by an issue of \$150,000 of paid up stock. This gave not only a two-wire line from Pittsburgh to Philadelphia on the poles of the Pennsylvania Railroad Company, but the opportunity of rights of way on easy terms along all the connecting and leased lines of that company. This gave prestige and power, and the stock of the company was readily sold and firmly held. The value of the arrangement with the Keystone company in uniting the prestige and protection of railroad companies with the telegraph was so manifest that the president was authorized to "push things" with other companies on similar terms.

The KEYSTONE TELEGRAPH COMPANY was chartered by the State of Pennsylvania April 9, 1867. Its capital was \$500,000, in 1,000 shares of \$50 each. Its territory was from the Delaware river to the Ohio State line. It was organized on a right granted to the company to erect two wires on the poles of the Pennsylvania Railroad Company on the payment of an annual rent of four dollars per mile of wire. The Directors of the company were, John S. McMullen, President; H. H. Shillingford, Edmund Smith, John A. Wright, W. J. Howard, James A. Wright, H. H. Houston, George B. Roberts, Henry S. Dotterer, E. P. Cooper, George McLaughlin, Thomas M. Adams, Morris Swain. The wires were erected by W. A. Arnold, under the directions and by contract with Andrew Carnegie. The construction of the line

## THE PACIFIC AND ATLANTIC TELEGRAPH COMPANY. 449

thus created was acknowledged by the Pacific and Atlantic Telegraph Company as their own act, and 6,000 shares of the Pacific and Atlantic Telegraph Company were issued in exchange for 1,000 of the Keystone Telegraph Company, and which carried with it the franchises of the company. This was accomplished September 13, 1867.

The plan pursued by Mr. Shaw in his Monongahela nest line, of farming out the offices and keeping no office open which did not pay expenses, was continued vigorously by Mr. Thurston, and prevented the disasters which befel so many other companies, to whom death came almost as soon as life. Every office paid something into the treasury. Out of sixty-three offices worked by the company only twenty-eight were worked under salaries. Thirty-five offices worked under a commission of fifty per cent. The receipts of the company for twenty months, ending August 1, 1867, were \$90,291.08, with a residue of profit amounting to \$24,897.97. At that date the capital of the company stood as follows:

Regular stock.....	\$339,747 20
Issued to Carnegie for Keystone State Company.....	150,000 00
Issued to Southern Telegraph Company.....	52,255 00
	-----
Total issue April 1, 1868.....	\$542,002 20
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Of this \$52,255 was not entitled to dividend until the lines reached Memphis, and \$100,000 issued to the Keystone company had also its dividends delayed for a brief period. Arrangements were inaugurated to reach Chicago, St. Louis and several lake cities before winter, chiefly through Mr. Carnegie, who had facilities, in connection with railroad routes, of an unusual and valuable character. Quarterly dividends of two and one-half per cent were, somehow, still maintained.

An important step was also taken in the appointment of Mr. David McCargo as General Superintendent. He was a young man of most scrupulous honor, steadfast, earnest, a most worthy and excellent man. He had his early training in the Pittsburgh office of the Atlantic and Ohio Telegraph Company, and was held in high esteem by all who knew him.

At the annual meeting in 1869 the capital was reported at \$807,025, and the property of the company as follows: Miles of pole line, 2,146; miles of wire line, 4,183; leased wires, 264. Quarterly dividends to 1,027 stockholders were maintained regularly. The original stockholders had received in all thirty-seven and one-half per cent in dividends.

With the year 1871, however, came several weakening processes. Opposition was wide awake and active. Efforts to extend its operations in new territory greatly increased its expenses. The Western Union company, sharply contending for business, multiplied its facilities and reduced its tariff. In 1873 Mr. Thurston, tired of the contest, resigned the presidency, and Mr. W. S. Johnson was elected. Dividends became irregular, and finally ceased.

While in this condition an attempt was made to close a contract with the Automatic Telegraph Company of New York, at that time operating a line of telegraph between New York and Washington, under its president, George Harrington, having in view the introduction of the automatic system on the lines of the Pacific and Atlantic Telegraph Company. The contract was duly executed, the secretary of the Automatic Telegraph Company signing himself Josiah \* \* \*, (a specimen of official humility somewhat unique,) but it was withdrawn, apparently by mutual consent. Debts were meanwhile contracted and remained unpaid. This state of things resulted in a lease to the Western Union Telegraph Company, which went into effect January 1, 1874, the consideration of which was an annual payment of four per cent on \$2,000,000, the first payments to be applied to the liquidation of debts. This lease brought some valuable property under the new control, by which it is now largely owned, and was a desirable arrangement for both parties.

## CHAPTER XXXIV.

## THE SOUTHERN AND ATLANTIC TELEGRAPH COMPANY.

THE Southern and Atlantic Telegraph Company was organized July 14, 1869, under the Telegraph Laws of the State of New York, with a nominal capital of one million. Its route was described as beginning at New York and proceeding through Philadelphia, Baltimore, Washington and the southern States to New Orleans, Memphis and Louisville, Ky. Its real point of commencement was Washington. Its first corporators were H. A. Wendell, G. P. Baldwin and A. J. Baldwin, names sufficiently suggestive. It was started on the old familiar plea, of supplying "an increasing necessity for cheapened and more prompt telegraph facilities." Subscriptions were largely obtained by appeals to southern sentiment, and confidence in "the ability to earn at least twenty-five per cent dividends."

The first president of the Southern and Atlantic Telegraph Company was Col. William C. Patterson, of Pennsylvania. A circular, however, was issued, expressing in eloquent terms the desire "to retain the control in the hands of the business men in the southern cities, in place of leaving their interests at the mercy of strangers," and which was widely circulated. The southern heart was also fired by electing as directors James Barbour, of Virginia; William Johnston, of North Carolina; John B. Gordon, of Georgia; John B. Lafitte, of Louisiana, and Gen. Wade Hampton, of South Carolina. A director was promised to each southern city, which made a fair subscription to the stock. A statement was also carefully prepared and widely circulated, showing as the probable net earnings of the line when complete

\$446,171, or forty-four and one-half per cent on \$1,000,000 capital. The computation by which this result was ascertained was one of unique and marvelous ingenuity. It brought vividly to mind the time when grave men counted their coming fortunes on the buds of the morus multicaulis. It was, however, a part of the programme and promise of the new line that the tariff should be reduced. The following virtuous paragraph was, therefore, appended, and is quoted as evincing the high character of the enterprise: "Dividends on public enterprises exceeding twenty per cent per annum, however, being possibly considered unreliable, as tending to excite undue competition, that figure may be taken as what can be reasonably hoped for when the lines of the company are completed and in active operation." No doubt many a southern gentleman smiled at the glowing language of this eloquent northern circular, yet the movement, for some reason, was a popular one, and many subscriptions were readily obtained at all the chief southern cities. The shares were twenty-five dollars each, and it was stipulated that "the lines of the company shall not be sold, conveyed, transferred, assigned, leased, consolidated, or in any other way disposed of or made over to any other telegraph company, etc., without the written consent of three-fourths of the entire stock issued."

The circular of October 10, 1870, in which the earning of a forty-five per cent dividend was made clear, and which was based on a curious presentment of the income of the Western Union Telegraph Company, half of which the new company was certain to absorb, was a curious specimen of the eloquence of hope or the craft of speculation. It, however, secured not only a considerable subscription, but confidence was so far inspired in the undertaking that the company, in order to expedite its work, issued \$100,000 of ten-year bonds drawing seven per cent, which were sold on fair terms, and with the proceeds of which the lines were rapidly extended. In January, 1872, the capital stock sold had reached \$333,000, and the line had been extended to Macon, Ga. Col. James R. Crenshaw, of Richmond, Va., was President, W. R. Gardiner, Secretary and Treasurer. The members of the executive committee were James R. Crenshaw, Francis Morris and George Harrington. Connections north and east of Washington were maintained through the lines

of the "Franklin" and the "Atlantic and Pacific" Telegraph Companies. The year ended with a deficit of \$2,535.98. The future was nevertheless represented as full of promise! In the terse language of a new circular, "You may rely on increased profits on increased extensions."

On July 22, 1874, the directory having been largely changed, Henry Henz was elected President, Charles W. Blossom, Vice-President, and George H. Grace, General Superintendent. The President and



GEORGE H. GRACE.

Vice-President soon after changed seats, and Mr. Blossom became President. To Mr. Grace was given very ample executive powers, and under his management the lines were quickly completed, first to New Orleans, then northward to Chattanooga, and soon after to Norfolk, Charleston, Savannah, and via Fernandina to Cedar Keys, in Florida. Mr. Grace was popular with southern railroad men who gave him every facility needed in his work, and to whom he returned

the fullest courtesies of his lines. Chiefly by Mr. Grace's management and the confidence inspired in him, the Southern and Atlantic Telegraph Company secured, April, 1875, a connection with the Western Union Telegraph Company, and the independent use of two of its wires from Washington to Boston, and Rye Beach, N. H., with the right to open independent offices in all seaboard cities. With this connection, the company maintained, nevertheless, an independent and wholly untrammelled jurisdiction over its own affairs. As might have been

expected, however, it did not thereafter with any special violence oppose the Western Union Company.

At the close of 1875 the length of the Southern and Atlantic Company's lines was about 5,000 miles; the number of offices 150, and the number of employees 500.

Mr. George H. Grace, to whom the success of the Southern and Atlantic Telegraph Company was largely due, commenced as a messenger in the New York and Boston House line office, in New York, in 1851. In 1857 he connected himself with the Morris lines south, and became manager in Petersburg, Va. In 1860 he was made, through the influence of his brother, Fred. J. Grace, chief operator of the Springfield office of the American Telegraph Company, and worked successfully the Morse, House and Bain systems, then concentrated and in operation there. In 1866 he became Superintendent of the "Insulated Lines Telegraph Company," now the "Franklin," then working four wires to Washington from Boston, and soon afterward became Superintendent of the "Bankers and Brokers' Telegraph Company," and of the "National" and "Automatic" companies.

One of the means taken by Mr. Grace to "organize success" is worthy of notice. He first placed the receipts of an office upon a certain fair average. This status was communicated to the office thus averaged, and an allowance of ten per cent was pledged on all receipts over the average. He also adopted the questionable authority of appointing managers of offices as news agents, allowing them ten per cent on all collections for this service. Mr. Grace was, in fact, the originator of the American Press Association, organized early in 1867, now supplying over one hundred papers throughout the country with news. All this tended to infuse great earnestness and vigor into the line, and the business was largely increased thereby. Mr. Grace adds to thorough experience in every department, quick executive habits, which render him a most valuable executive officer.

The Southern and Atlantic Telegraph Company's lines, from Washington to Florida and New Orleans, were leased July 1, 1876, by the Western Union Telegraph Company, for ninety-nine years, at an annual rent of five per cent on \$950,000.

## CHAPTER XXXV.

## THE WESTERN UNION TELEGRAPH COMPANY.

## ITS ORIGIN.

IT is an interesting and curious fact that, from two inventions, rivals to, although widely differing from that of Professor Morse, sprang two dominating organizations, which finally became consolidated into the existing system of telegraph lines now operated by the Western Union Telegraph Company. And the fact is not the less interesting that, as the builders knock away the scaffolding of great edifices when the walls are reared, and the last stone of the coping has settled in its place, so the telegraph organizers had no sooner secured the practical control of the lines of the continent than the two inventions, by the possession of which they had been aggregated, were laid aside, and, with a few trifling exceptions, the Morse machinery, simpler even than when first conceived, became, and bids fair forever to be the chief reliance of the telegraphic communication of the continent. Nothing in the history of invention is more unique.

## THE HOUSE PRINTING TELEGRAPH.

The history of the Hughes instrument, upon which the American Telegraph Company started its career, although, chronologically, of later origin than the one now to be mentioned, has already been given.

In the winter of 1845, '46, there was presented at the Patent Office in Washington the model of an instrument for telegraph purposes which at once attracted much attention. It was the invention of Royal E. House, of Vermont, and was designed to imprint Roman characters by Telegraph. This seemed the highest product of which human skill was capable. Alfred Vail, Morse's partner, had in 1837 devised mechanism of a wholly practicable character to accomplish a similar

result, but had laid it aside, deeming the simpler instruments of Morse more certain of success.

No elaborate description of the House telegraph apparatus, so fully explained and illustrated by Mr. Prescott in his *History of the Theory and Practice of the Electric Telegraph*, need be given here. Its construction was ingenious. In general, it may be stated that the parts consisted of a composing machine or transmitter, operated upon by keys arranged as in the piano, a compound axial magnet, a reservoir of condensed air, and a motive power, manual or otherwise, by which the mechanism of the two co-operating machines were kept in motion and ready for action when placed in certain ingenious relations to each other, by the electric current. The action was what is known as the "step by step" process, and was not absolutely dependent on synchronic movement, as technically understood, between the transmitting and recording machinery. The imprint was made by mechanical action, set in motion by the cessation of electrical pulsations, by which the type-wheel was kept in constant revolution. If any desired letter on the type-wheel was placed in a certain position, and a corresponding key in the composing machine was depressed, by raising that key, and again depressing it, the circuit wheel at one station and the type-wheel at the other made a single revolution, which brought that letter to its former position. Each letter had its separate pin arranged in an elongated spiral, around a transmitting cylinder, and distant from each other one-twenty-eighth part of its circumference, thus occupying the entire circle. The electric current was used in conjunction with condensed air, simply as a detent to determine the number of steps which the distant type-wheel should advance before the type desired was reached, to be then struck or impressed by the other mechanism. This mechanical action was accomplished by cams beneath the keys, which, as the letter pins on the cylinder were met and touched, arrested the electric pulsations, and thus released the mechanism at the receiving station by which the letter designed was impressed. The whole action was effective, rapid, beautiful; and although the later printing instruments as introduced by the ingenious Kentuckian, Hughes, and now vastly improved by George M. Phelps, are greatly

superior to Mr. House's, yet the House printing instrument was regarded, in the then state of electrical knowledge and mechanism, as a most beautiful, scientific and mechanical creation, and justly challenged very wide admiration.

The patent for the House instrument was first granted April 18, 1846, and again December 28, 1852. The second patent was issued to cover important defects in the first, and changes in mechanism were also made to avoid infringement of Morse's patent.

The capacity of the House mechanism has been rated at 1,800 to 2,600 words an hour. A press report containing 3,000 words, more or less abbreviated, has been sent by it in that time. Two men were required for the reception of a message, one to give the machinery motion by turning a crank, and who was known as the grinder, and the other the receiving operator. The electrical resistance of the apparatus was about 2,500 ohms, five times that of the ordinary Morse relay.

It is a singular fact in connection with the history of this instrument that, although there is nothing in the sounds produced by its action designed or apparently capable of indicating letters, and although the sound connected with the impression of each letter is necessarily identical, the only variation possible being the time between the strokes as the letters are reached on the revolving type-wheel, yet Rufus B. Bullock, afterward Governor of Georgia, and also Theodore Fullon, now one of the printing experts of the New York office of the Western Union Telegraph Company, could, by calculating the variation of time between the strokes, read messages by the House Printer from the sounds thus created, while the type-wheel was performing at least 6,000 revolutions per hour.

Mr. Royal E. House, the inventor of the printing telegraph system bearing his name, was a man of fine mind, but of comparatively limited education. He was marked by the possession of much power of continuous thought in the adaptation and arrangement of mechanism, thinking out the various parts of an instrument and their combination much as Prescott, the historian, was accustomed mentally to compose his finely-constructed chapters before transcribing them. It was thus that, as on a mental drawing-board, and with unusual power of abstraction,

the result, perhaps, in part, as with Prescott, of impaired sight, House patiently and skillfully elaborated one of the most ingenious products of the human brain,—calculated exactly the action of each part,—the difficulties to be expected, and their solution. This he did while very poor, so much so, indeed, that he not unfrequently slept beneath his lathe for want of a better resting-place. Part of this may, indeed, have been simply the result of the devoted isolation of his mind upon his work. To men of his stamp, food, sleep, and mere bodily necessities are *impedimenta*, little valued except as they renew the power to create. Mr. House lived to be well rewarded for his toil, and now, in pleasant and comfortable retirement, resides in Binghamton, N. Y., an amiable and much-respected man. His invention, as soon as published, greatly awakened public interest in the telegraph, and strengthened the conviction that its employment would become benèficent and universal.

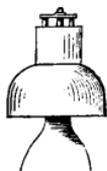
The first practical test of the House machinery was made in 1847, between Cincinnati, O., and Jeffersonville, Ind. The lines west of Pittsburgh, under the O'Reilly contract, had been built so rapidly that Morse machines could not be supplied fast enough to meet the demand. With characteristic impatience, Henry O'Reilly sent two House machines, which he procured in New York, with which to have the lines opened to Louisville, Ky. They were worked with moderate success, but were soon replaced by the Morse register.

In the year 1847, Hugh Downing, of Philadelphia, a man of fine personal presence, but of limited, and as is usual among men of his class, of very assertive judgment, became interested in telegraph constructions, in connection with the manufacture of wire cord for the O'Reilly lines through Pennsylvania and Western States. Mr. Downing caught the prevailing enthusiasm, and seeing "millions in it," eagerly secured a controlling interest in the House patent between Boston and Washington, and, with a good degree of energy, succeeded in organizing a company, March, 1849, to construct a line from New York to Philadelphia under the House patent, called the **NEW JERSEY MAGNETIC TELEGRAPH COMPANY**, and for which a charter was obtained from the legislature of New Jersey. The capital was \$100,000. At the organiza-

tion of the company Mr. Downing was elected President, and personally undertook the active management of its affairs.

The line was constructed along the turnpike between Philadelphia and Fort Lee, and crossed the Delaware, Raritan and North rivers by the use of masts. It was so well built that, with the wonderful mechanism to be used upon it, high expectations were formed of its success. Several causes, however, combined to disappoint these expectations. One of these was the employment of a three-strand cord of No. 16 unprotected iron wire, which, though at first strong, and of comparatively low resistance, rapidly deteriorated. The masts at the river crossings were also a constant source of trouble. At the Hudson river, especially, though powerfully constructed, yet because of their height and exposure, as well as on account of the width of the river, up through the channel of which the fierce winds from the sea often blew with terrific force, frequent stoppages occurred. In one of the devastating sleet storms which usually form the farewell legacy of the winter as April enters the cycle of the year, these masts, burthened with tons of clinging ice, were so shattered by a storm of wind which followed that they were forever abandoned.

The insulation of this, as of all House lines, was arranged by Prof. House, and consisted of an iron shell, so large as to be called a skillet, which was filled with molten glass, having in the center a core on which a thread was formed, into which the end of the pole, after being properly shaped therefor, was inserted. The glass at the base was umbrella-shaped, answering to the shape of the iron covering, and was corrugated on the edge to prevent, as far as possible, unbroken water connection. It was large, heavy, but, on the whole, successful, although now wholly out of use.



The most serious obstacle, however, to the success of the New Jersey Telegraph Company in its earlier history was, as with many other projects, in its administration. Mr. Downing, though industrious and active, was unfitted to lead such an enterprise, and was, especially among commercial men, eminently unpopular. He was known as an indiscreet and self-willed man. By an unwise interference with its

management in connection with duties of which he had no technical knowledge, failing also to comprehend the sacred character of the business, the line was, during his administration, essentially a failure. An accident to the wires at "Baker's Basin" so affected Mr. Downing's imagination that he ascribed every difficulty to that locality, and he became known among the craft in those irreverent times as "Baker's Basin." The total business of the line averaged a little over half a hundred messages per day, and its operations were irregular and irritating.

In 1851, new parties assumed control, and extended, under careful builders, and under the direction of Freeman M. Edson, the line to Washington. Johnston Livingston, Francis Morris and R. W. Russell, after buying out Mr. Downing's interest and reorganizing the company, became an executive committee to direct its affairs. The extensions of the line were built with much care and with improved conductors, Henry J. Rogers, well known as Superintendent on the government experimental line, was appointed Superintendent, and the company rapidly entered into a large and prosperous business. So much so was this the case that, soon after its completion to Washington, the enormous mass of press business sent during the session of Congress was taken from the Magnetic Telegraph Company and given to the Printing Company, and was admirably handled by some of the most competent operators of the country. It became, before its consolidation with the American Telegraph Company, in 1859, one of the most efficient of American telegraph lines.

It was in the Philadelphia office of this company that Mr. John C. Hinchman, now one of the able and worthy General Superintendents of the Western Union Telegraph Company, entered the service. He was, for a time, cashier, receiver, clerk, batteryman, occasional line repairer, and any thing which the service demanded. He performed these various duties with much characteristic devotion, attained much ripe experience in each, and learned the lessons he has made so fruitful in his after life. It was in this office also, and in charge of it as manager, that W. J. Phillips, now the well-known Superintendent of the Philadelphia Fire Alarm Telegraph, entered the service, and who has ever since been regarded as one of its most successful and ingenious experts.

A line under the House patent was soon after constructed from New York to Boston, under the direction of Mr. Downing, and a company organized under the name of the "BOSTON AND NEW YORK TELEGRAPH COMPANY," afterward better known as the COMMERCIAL TELEGRAPH COMPANY, and which has been already fully referred to in connection with the American Telegraph Company.

The House patent, now become valuable by the proofs of its capacity afforded by the seaboard lines, was now sought after by capitalists. It was not long before able parties, among whom were Freeman M. Edson, Samuel L. Selden, Royal Chamberlain, Cambridge Livingston, Francis Morris, William Ballard and John B. Richards, secured the title in the patent for the State of New York, and the States west thereof. Messrs. Edson, Selden and Chamberlain became the exclusive owners of the patent for the State of New York, and in 1849 organized a company with a capital of \$200,000, which was incorporated under the Telegraph Law of the State of New York as "THE NEW YORK STATE TELEGRAPH COMPANY." Its President was Hon. Levi A. Ward, a man of the highest type of personal character, one of Rochester's most worthy citizens. Anson Stager was General Superintendent; Samuel Porter, and, soon after, Henry C. Skinner, was Superintendent; Charles L. Clarke was Secretary, and was succeeded by Isaac R. Elwood. The Board of Directors were Isaac Sherman, Lyman A. Spaulding, Harvey Goodrich, Levi A. Ward, Freeman Clarke, Freeman M. Edson, Royal Chamberlain, Samuel L. Selden, James Chappell, Joseph Medbery, Stephen D. Dillaye, William W. Teal.

The line was built along the route of the old stage roads, between New York and Buffalo, by Freeman M. Edson and Royal Chamberlain, to whom the contract for construction was assigned, and who were to receive \$100,000 therefor. It was of moderate value as a structure, many of its poles being of a very perishable character. It was mounted with two wires, one of which was a plain iron wire, No. 5, borne by House insulators on the top of the pole, and a second of like character, No. 8, on a bracket similarly insulated. These wires, when finally taken down in 1857, were unfit for use, and found their way to the hands of the hop-growers of Central New York, who purchased them

for the support of their vines. The lines of the company were leased in 1856 on a rental of seven per cent on the capital, or \$14,000 per annum, by the New York, Albany and Buffalo Telegraph Company, and in 1863 passed with that company into the possession of the Western Union Telegraph Company.

The operating staff of the company was, at Buffalo, Robert Simpson, Thomas P. Scully, Ralph Whyland; Rochester, L. Starr Hoyt; Syracuse, C. M. Johnson, W. S. Moorhead; Utica, Rufus B. Bullock, Charles Simmons and — Lawrence; Albany, Joseph Penny, Thomas Penny, Jr.; New York, A. B. Talcott, Charles Phelps and Jack Selden.

One of the messenger boys of the New York State Printing Telegraph Company at Syracuse, in 1853, was named W. B. Hibbard. Exhibiting there capacity for higher duties, and having acquired at leisure hours a knowledge of the instrument and its manipulation, he was sent in the winter of the same year to Cleveland, O., as "House" operator. In 1855 he was placed in charge of the Cleveland Railroad depot office, acting, at the same time, as superintendent of the telegraph lines of the Cleveland, Columbus and Cincinnati Railroad Company. In 1860 Mr. Hibbard was appointed chief operator of the Western Union Telegraph Company at St. Louis, and in 1861 accompanied Edward Creighton as superintendent of construction of the Pacific Telegraph between Julesburg, Neb., and Salt Lake City, where he opened the first office October 12, 1861, and became there, and shortly afterward at Omaha, assistant superintendent of the Pacific lines. In 1863, on the consolidation of the Pacific with the Western Union lines, Mr. Hibbard, on the resignation of Edward Creighton, was appointed district superintendent in charge of the territory between the Missouri river and Salt Lake. Mr. Hibbard was also appointed traffic manager of inter-ocean business, a somewhat honorary title, but significant of the esteem and confidence in which he was held, and which a long and faithful service amply justified.

At the period to which these movements refer, Rochester, N. Y., had in its citizenship a number of men of exceptional energy, of quick discernment, plucky, enterprising, with the dash, tact and boldness

peculiar to pioneer character. There was also another element to be found there in large degree, which, while it shared the boldness of the former, added thereto the polish and scholarliness and delicacy of society in its best conditions. Rochester was the center of a large, populous, fertile region. The Genesee Valley was long famous for its rich harvests, and for the vivacity and intelligence of its population. George Dawson, Henry R. Selden, Samuel L. Selden, Addison Gardner, Isaac R. Elwood, Henry O'Reilly, Freeman Clarke, Hervey Ely, Hiram Sibley, Alvah Strong, Levi A. Ward, George H. Mumford and O. H. Palmer, were among its prominent citizens.

Judge Samuel L. Selden, whose name appears earliest and most prominently in the new enterprises then in progress, was a man of great excellence of character, refined, dignified, courtly, an able judge, yet with a strong and singular dash of enterprise which led him, not uneldom, and not always to his personal advantage, out of his legal orbit. He early became one of the largest owners of the House patent, and engaged with much earnest activity in its introduction.

At the time of Judge Selden's acquisition of his interest in the House patent, Hiram Sibley was Sheriff of the county of Monroe. He was a man of decided personal qualities, imperious, rugged, of ready practical discernment, self-confident, and whose early life had made him thoroughly wide-awake and earnest. To him Judge Selden went with a project to organize a telegraph company, under the House patents, to operate in the vast regions west of Buffalo, and endeavored to enlist Mr. Sibley in the scheme. These gentlemen had long and frequent interviews with each other, discussing the features of the project. Judge Selden saw in Sibley the aggressive element which insists on and compels success, and was anxious to secure his co-operation.

After a thorough investigation, Mr. Sibley saw that the control and remunerativeness of such an enterprise must be primarily in obtaining a commanding ownership in the patent. He saw also that a mere set of opposition lines, to be worked as such, gave no promise of sufficient value to induce him to risk money in them. He proposed, however, that if a company could be organized, the aim of which would be to use the House inventions, not only to cover valuable territory with new

lines, but as a means of acquiring telegraphic property then occupying part of the territory proposed to be covered, and to organize it all under a single and vigorous management; and, if he personally could obtain such a share in the ownership of the patent as would give him a fair chance in the direction of its policy, he would take hold of the project. Isaac Butts, of Rochester, agreed also to be a party in the purchase of the patent under similar conditions.

At this time the West was full of lines, chiefly under the Morse patent, cheaply and hastily built, with limited jurisdiction, in many cases working against each other, without mutual understanding, with unequal and capricious tariffs, some of them rapidly falling into ruin, and many barely self-sustaining. And yet it was evident that never had any thing been offered to society so helpful in many of the exigencies of human life, so susceptible of vast use in the wide realm of western commerce, as the electric telegraph, and that a systematic arrangement of it on a just and simple basis promised good to society and fortune to whoever should accomplish it.

Based on this idea, therefore, and to which Mr. Selden gave his hearty consent, Mr. Sibley bought out the patent interest of William Ballard, of New York, and, with a few other gentlemen in Rochester, at once proceeded to organize the "NEW YORK AND MISSISSIPPI VALLEY PRINTING TELEGRAPH COMPANY," with a capital of \$360,000. This organization was effected April 1, 1851, under an act of the legislature of the State of New York, entitled "An act to provide for the incorporation of telegraph companies; passed April 12, 1848," the organization to terminate in 1951. The route of the line was described to be through the State of New York from Buffalo to Pennsylvania, and along the south side of Lake Erie to St. Louis. Under this act of incorporation a board of directors was elected, as follows:

Henry S. Potter,	Joseph Hall,	Joseph Medbery,
Addison Gardiner,	George H. Mumford,	James Chapman,
Freeman Clarke,	E. Darwin Smith,	Rufus Keeler,
Isaac R. Elwood,	Isaac Hills,	Royal E. House,
Gideon W. Burbank,	Samuel Medary,	Freeman M. Edson,
Samuel L. Selden,	Isaac Butts,	Sanford J. Smith.
	Hiram Sibley,	



*Amos Stager*

Of course, nothing was so essential, after the glamour of organization was over, as money. Few of the parties were the possessors of great wealth, even in its then restricted sense. The subscriptions were somewhat limited, and their payment, partly because of a rising jealousy of the advantageous position seen now to be held by the owners of the patent, was not prompt, and, to some extent, doubtful. But money was absolutely necessary. To secure funds, the holders of the patent interest, who had thereby acquired a large issue of stock, very wisely determined to part with a liberal amount of their interest to induce the subscribers to pay up in full, and so to enable the company to start operations with vigor. Henry S. Potter, a rich, active, stirring citizen, had subscribed \$10,000. To him an additional \$10,000 of stock — \$20,000 in all, was issued. He was then elected president of the company. This was very adroit action, and Mr. Potter entered into his duties with much zeal. About \$83,000 of stock was thus discreetly distributed among desirable men who would give strength and character to the enterprise, and all subscriptions were promptly paid. With the sinews of war thus provided, the work became lively.

In the further organization of the company, the selection of the secretary and treasurer was most fortunate. The choice fell on Isaac R. Elwood. He was an able lawyer, highly educated, clear headed, a man of scrupulous honor, and of exceptional punctilio and exactness. The company also had within its corporate circle, some of the highest legal talent. Samuel L. Selden, Henry R. Selden, Addison Gardiner, George H. Mumford, Freeman Clarke, E. Darwin Smith and Isaac Hills, were among the foremost citizens of the State. Although Mr. Sibley was not formally elected president of the company until 1856, he was well known as the directing spirit of the enterprise, and devoted his whole time to its vigorous prosecution.

The company was re-organized January 20, 1854, under an amendatory act of the legislature of the State of New York, passed June 29, 1853. This was necessary to meet the wider scope which, even at that date, the operations of the company had taken. The following were the leading stockholders:

J. L. Allen,	Freeman Clarke,	H. S. Potter,
A. Arnold,	Dows & Cary,	W. H. Perkins,
William Alling,	F. M. Edson,	J. B. Richards,
Bacon & Co.,	I. R. Elwood,	R. W. Russell,
Isaac Butts,	A. Gardiner,	E. F. Smith,
E. P. Willis,	F. G. Jewett,	A. Sampson,
G. W. Burbank,	C. Livingston,	H. Sibley,
C. G. Brinsmaid,	G. H. Mumford,	S. L. Selden,
James Chappell,	J. Medbery,	J. B. Stillson.
	F. Morris,	

The contract for building the first section of the New York and Mississippi Valley Printing Telegraph Company from Buffalo west, was dated September 6, 1850, and was given to Isaac Butts and Sanford J. Smith, who afterward united with them C. L. Shepard, and sub-letted a part of the construction to Bernard O'Connor, one of O'Reilly's old builders, a man of great and unselfish kindness of heart, and to Edward Creighton. The cost of construction was to be \$180,000. This contract was very minute in its details. It required thirty poles per mile, well and carefully set; the number to be increased wherever the line followed curves. The poles were to be selected with reference to durability. They were to bear two wires, one of 600 pounds per mile, which was more than twice the ordinary average, and the other 450 pounds, which were to be placed four, and not less than three feet apart. The House insulator was also stipulated for, a specification entirely ignored in most of the Morse contracts. The first hundred miles of the line was to be finished by January 1, 1851. House printing machines were to be provided at all the chief cities. The building of these lines was prosecuted with much vigor. The introduction of the printing telegraph greatly awakened the public attention and interest in the telegraph generally as a means of social intercourse, and led to its enlarged employment.

One of the first acts of the newly organized company, was the lease of the lines of the "Lake Erie Telegraph Company" between Buffalo and Detroit, and between Cleveland and Pittsburgh, Pa., at that time under the excellent management of Henry S. Bishop of Cleveland, Ohio. The controlling stock was held at Rochester, and much of it by mem-

bers of the new company. The arrangement was easily effected. The terms were a share of the profits in the relation of the product of \$50,000 to that of the capital of the lines of the lessees. The lease was executed March 1, 1854. The acquisition of these lines was an important step in the aggressive policy of the company. In the purchase of the stock of the Lake Erie Telegraph Company, which was accomplished at mere nominal rates, the basis of some massive fortunes were laid. The lease of the Lake Erie lines was the first act in the funeral of the O'Reilly lines in the west. The bond which bound them was seen to be a rope of sand.

And now a most important arrangement was to be consummated. Ezra Cornell had early obtained valuable grants under the Morse patent, covering a large portion of the west. He had an extensive proprietorship and control of the lines of the Erie and Michigan Telegraph Company, the history of which has already been given. This company held an important contract of connection with the Southern Michigan Telegraph Company from Toledo to Chicago, and also with the New York, Albany and Buffalo Telegraph Company between Buffalo and New York. It had also connections with the important range of lines of the Illinois and Mississippi Telegraph Company, the Wisconsin and Minnesota State Telegraph Companies, and the Ohio, Indiana and Illinois Telegraph Company, north of, and east and west of a line through Quincy, Ill. With this "Erie and Michigan" Company, thus nominally rich in its connections, the New York and Mississippi Valley Printing Telegraph Company proposed consolidation under a united capital of \$500,000. This, after much careful negotiation, was agreed to April, 1854, and the two companies were united under an act of the legislature of the State of Wisconsin, dated March 4, 1856, and of the State of New York, passed April 4, 1856, under the name of

#### THE WESTERN UNION TELEGRAPH COMPANY.

This title Mr. Ezra Cornell in his negotiations insisted should be adopted as the name of the new company. It was part of the title which had been given by him to the line known first as the New York and Erie Telegraph Association, but which he had changed to "The

New York and Western Union Telegraph Company." In this union the trustees acting for the Erie and Michigan Telegraph Company, were Ezra Cornell, D. S. Walbridge and J. M. Howard. The trustees acting for the New York and Mississippi Printing Telegraph Company, were Hiram Sibley, Samuel L. Selden and Isaac Butts. The corporators under the act of union, were Henry S. Potter, Samuel L. Selden, Hiram Sibley, Isaac Butts, Joseph Medbery, Alvah Strong, George H. Mumford, Freeman Clarke, Isaac R. Elwood, Ezra Cornell and J. M. Howard, and who formed the first board of directors. In the organization of the new board, which followed this important arrangement, Henry S. Potter was elected President and Isaac R. Elwood Secretary and Treasurer.

The property turned over to the new organization by the Erie and Michigan Company managers virtually covered all western telegraph interests, except only the, as yet, independent O'Reilly lines. Their enumeration gave them a semblance of value which, as telegraph structures, they did not possess. Their real value was in the patent they covered, and which, in the apprehension of the men now guiding telegraphic extension, was assuming new and unexpected importance. The property passed over by the Erie and Michigan Company negotiators was as follows :

1. All Morse patent rights held by Cornell, Wade and Speed.
2. Avails of all sales of patent rights by Ezra Cornell, J. D. Caton and others, except for the "Caton lines," and the lines of the "Ohio, Indiana and Illinois Telegraph Company."
3. Stocks in the "Erie and Michigan," "New York and Erie," "Cleveland and Cincinnati," "Cincinnati and St. Louis," "Pittsburgh and Crestline," "Fort Wayne," "Mansfield and Huron," "Galleon and Union," "Cleveland and Pittsburgh" and "Cleveland and Zanesville" Companies. This embraced also a large interest held by Gen. T. T. Eckert, who was a partner of Mr. Wade in the construction of many of these lines, giving in lieu of capital, the earnest and intelligent vigor which has always characterized him.
4. All unsold rights held jointly between J. H. Wade and Ezra Cornell in Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa and Minne-

sota, and all leases. The patent interest in the O'Reilly contract was also included.

The Morse patent was the most valuable item in the entire conveyance. It gave the basis of immense control, not even then fully comprehended, in connection with a new project for railroad uses and cooperation, for which no other patent had any practical or intrinsic value. This became more and more evident in after years, and has proved the chief element in the great success which since that period has followed telegraphic extensions.

Another important gain in this transaction was purely personal, but not for that reason less valuable. Perceiving Mr. Wade's peculiar faculty for negotiation, it was stipulated that he should enter the combined service, and become the active agent of the company. This was assented to, and was a most valuable acquisition. Mr. Wade was in the prime of life, shrewd, ingenious, persevering, able, and familiar with western enterprise. He at once commenced, with sagacity and vigor, the work assigned him. He had now vast material at his command. The two great patents of the country were in his hands. He was clothed with unlimited discretionary powers. Mr. Wade also comprehended and entered into the policy of the company. It had been his own. Its idea of consolidation was the only one which gave any assurance of future value, or vigor, or success. He had so far acted on this conviction, and now entered a splendid field for its proof and accomplishment.

Mr. Wade found a valuable co-adjutor in Anson Stager, whom the company had selected in 1851 as its general superintendent, and who, prior to that period, had been the able and skillful manager of the operating department of the Pittsburgh, Cincinnati and Louisville Telegraph Company at Cincinnati, Ohio. A happier choice could not have been made. In the work now before him, in the re-arrangement of the lines, in the strengthening of the outside structure, and especially in bringing the great railroad interests into intelligent sympathy with the operations of the company, making them perceive how deeply their own interests were connected with the use of the telegraph, Mr. Stager was Mr. Wade's right hand man. Acting with Mr. Sibley, who now

accepted the presidency of the company, the sagacity, push, wisdom, practical knowledge, and discretion of these men, had much to do with the overwhelming influence which the Western Union Telegraph Company so soon after exerted in telegraphic affairs.

One of the arrangements, which afterward became part of the basis of a vast fortune, was in connection with the Southern Michigan Telegraph Company, in which Mr. Ezra Cornell had an interest. In 1854 it had fallen badly into debt. It had been poorly constructed and badly managed. On February 10, 1855, the legislature of the State of Michigan authorized the directors, as in the case of the Caton lines, to assess the stockholders for the purpose of paying its debts. This, of course, led to forfeitures and sales. By the aid of money advanced in part by the New York, Albany and Buffalo Telegraph Company, Mr. Cornell became a large owner of the property of the Michigan Southern Telegraph Company, including four hundred and eighty-eight shares of the stock. This interest Mr. Cornell sold to the Western Union Telegraph Company, July 17, 1857, payable in Western Union Company stock. The residue of the property was purchased in Providence, R. I., where it was held as security for advances. By this and other settlements with Mr. Cornell, what was in 1857 adjudged as worth about \$50,000, required in 1865 the issue to him of nearly two millions of Western Union Telegraph Company stock.

After the purchase of the Michigan Southern Telegraph Company's property, the whole line was carefully and strongly rebuilt from Cleveland to Chicago, under liberal arrangements with the Railroad company, and became one of the most important routes connecting the west and east.

A new structure was also built between Toledo, Grafton and Detroit. With the acquisition of these various properties, and especially of the Morse patent, the House machines which had been erected at Cleveland, Columbus, Cincinnati, Louisville, etc., were removed, and have never since been employed west of Buffalo. Since then the Morse machinery has been the sole reliance for electric transmission west of the Atlantic seaboard.

In this rapid sketch of the early years of these companies thus

united, many shadows have been suppressed. Both had their Gethsemane. Both had their winters of discontent, long, bitter, cold, discouraging. Wade was active, but the telegraph was still regarded as a dreamy uncertain thing, and his profits were easily carried. Cornell was industrious but poor. Stager rejoiced in a salary of \$1,500, but was glad to get half of it. In Rochester when Stager appeared at the close of each month to procure money to pay off, there was often much sad whistling around what seemed the grave-yard of buried hopes. Sibley, Butts and Elwood grew perceptibly thin over the monthly balance sheets.

Among other incidents which prefaced the morning which after a time came flushed with the rosy light of a brighter day, was one significant enough to remember. One stormy night Wade and Stager met by accident at an eating counter in Shelby, Ohio. Neither of them was in the condition of ordering a square meal. Hunger drew them together and made them communicative. Wade acknowledged over his pork and beans that he was making nothing, and told Stager to stop whistling and confess. Stager, thus appealed to, rested for a moment from his corn beef hash, and acknowledged that the balances were on the wrong side. This led to a comparison of notes, and to a pretty clear evidence that the business was enough for one, but starvation for two. Duplicate and triplicate rents, and double force, were eating up the entire income. It became a question with Wade whether to join the O'Reilly or the printing lines. It resulted in Wade's going to Rochester, a union of interests, an issue of \$100,000 of bonds at seventy for a fresh effort, a general closing of all duplicate expenses, and success.

## CHAPTER XXXVI.

## THE WESTERN UNION TELEGRAPH COMPANY.

## ITS RAPID ENLARGEMENT.

ONE of the immediate results of the purchase, lease and union of all the various interests, narrated in the preceding chapter, and their incorporation into the Western Union Telegraph Company, was the stoppage of numerous rents and the giving up of numerous choice corner offices, which had been hungrily seized upon at large prices in the contest for business. In this single direction an annual economy of over seventy thousand dollars was at once secured. It was soon felt also in a marked enlargement of business. A skillful combination of wires gave to a large class of business a promptness it had never before reached. This was soon felt by those who most needed and relied upon its employment. Where answers to dispatches of one day had been received, as a general rule, on the day following, these now came on the same day, sometimes in quick and gratifying response to the original message. Some messages were actually refused because the quickness of the response seemed incredible. It was like fresh blood to a system which, up to this time, had, in a great degree, failed to meet the expectations of the public. The well-known card over the locked door of the office, "gone to mend a break," was no longer seen. Every thing had changed. The wires were steady and full of business.

To secure, and perpetuate, and enlarge the scope of these regenerating processes, the entire receipts, beyond the most rigid economy in necessary expenses, were for seven years wholly devoted to the renewal, extension and strengthening of the lines. It was in this wise procedure

that victory speedily came. It resulted in bringing the almost worthless stocks of a set of poverty stricken and illy constructed lines to a par value, and that, too, without increasing the capital a single dollar beyond the relation which its first amount bore to its early property. Here was the secret of its remarkable success, and of the massive fortunes which have grown therefrom. In one instance the capital of one of these perishing companies, amounting to \$240,000, was bought in at less than two cents on the dollar. In a comparatively few years it represented a million of dollars.

With the completion of the combinations so far secured, the management of the company became more actively aggressive. One of its movements at this period seemed an abandonment of its policy, but was eminently shrewd and practical. The head-quarters of the Western Union Telegraph Company was at Rochester, N. Y., and the officers had to depend on the New York State Printing Telegraph Company for connection with their lines at Buffalo. The New York, Albany and Buffalo (Morse) Company had fought the State Telegraph Company so gallantly, that terms of union were offered, and a proposition of marriage formally tendered to take the place of war. It was supposed that the Western Union Company would take alarm at this love among the warriors, and would endeavor to swallow both. Instead of this, however, the union was encouraged. Not only so, but an offer of an exclusive connection with the lines of the Western Union Company at Buffalo was made, contingent on its accomplishment. The movement was sagacious. The New York, Albany and Buffalo Company was a vigorous organization, with a strong local standing, but without aggressiveness beyond its own limits. It occupied the lands of the New York Central, Hudson River and Harlem railroads, and had a strong hold on these companies, and in the public confidence. The Printing and Bain lines straggled along the pike roads, and were in advanced decay. It was seen that the acquisition of these by the New York, Albany and Buffalo Company, would ultimately lead to their combination and reconstruction along the railroad in a strong and compact structure. The exclusive connection offered by the Western Union Company at Buffalo was, in fact, a shrewd contract of connection for itself, by which it

would hold the united lines to New York. It could afford to wait. The possession of the whole property was a question of time, which this arrangement made secure. In accordance, therefore, with the propositions made, the property of the New York State Printing Telegraph Company was leased by the New York, Albany and Buffalo E. M. Telegraph Company, February 15, 1856, at an annual rent of \$14,000, or seven per cent on its capital of \$200,000. Satisfactory connection with the Atlantic seaboard thus having been secured, aggressive movements were rapidly completed elsewhere.

At that period Joshua N. Alvord was the sagacious superintendent of the O'Reilly line from Louisville to St. Louis, owned by what was then known as the Ohio and Mississippi Telegraph Company. Sanford J. Smith, the builder of the Western Printing lines, early informed Alvord of the Rochester plans, and induced him to favor a scheme of union. To prepare himself for any possible event, Alvord, probably under advice of the Western Union Company, had the lines of his company thoroughly rebuilt along the route of the Ohio and Mississippi railroad, and insulated on the plan of the House lines.

Mr. Alvord, perceiving the vigor and aggressive policy of the Rochester movement, and that St. Louis had been made an objective point, obtained from his company a personal lease of the line, and sub-leased it to the Western Union Telegraph Company. This lease was doubly valuable to the Western Union Telegraph Company, in not only breaking the unity of the O'Reilly lines, but because it secured important railroad privileges and connections. The ease with which it was accomplished, and which the associate lines of the Ohio and Mississippi Telegraph Company east of Louisville found themselves powerless to resist, proved that any "contract of union," based on simple good-will, or as Mr. O'Reilly expressed it, "independent in management, but united in mutual councils," was a rope of sand to be broken on the first strain. In purchasing Alvord's lease, the Western Union Company assumed, of course, all the responsibilities of the company to the O'Reilly lines, and in the assurances of the honorable recognition of which they were amiably particular. But it was easy to see that the bond was broken, and the recognition of its existence was a mere piece

of official politeness over the dead. It was another act of disintegration of the most successful range of lines, so far as meeting public necessities, and earning revenue was concerned, which had been erected during the first decade of telegraphic history.

Rapidly following this, and in keeping with the operations on foot, was the leasing of the Pittsburgh, Cincinnati and Louisville Company's lines. The officers of that company finding the Western Union Company in possession beyond Louisville, and well knowing that the lessees were likely to fret under inconvenient bonds; receiving also a well planned notice that their connection, by contract, with the Southwestern Telegraph Company to New Orleans was not only open to bids, but was practically gone, they eagerly listened to the terms of a lease which the Western Union Company proposed to them. It was consummated May 24, 1856, for a term of ten years. Immediately on its execution, on an offer of the Western Union Telegraph Company for an exchange of stocks, or of purchase at par, the whole capital was soon extinguished. In the terms of the lease, both parties had agreed to use their best endeavors to procure such legislation as would secure consolidation. But the exchange of stocks, with the known proclivity of Western Union Stock to double, was quicker and more effective than legislation.

All the papers executed in connection with these transactions give evidence of extreme care, and were undoubtedly the work of the clear-headed Secretary Elwood. The primary steps for executing the lease on behalf of the Pittsburgh, Cincinnati and Louisville Company, were arranged by Joshua Hanna, and executed by him, Salmon P. Chase and Jackson Duncan. As in the case of the St. Louis line, the lessees promised fidelity to the eastern allies, who, however, received no notice of these proceedings, until they demanded information. The lease was, under the circumstances, and after Alvord had broken the common bond, undoubtedly a necessity, but its concealment and final consummation without consultation with its eastern ally—the Atlantic and Ohio Company—was not noble. Soon after its consummation, the lines of the Ohio, Indiana and Illinois Telegraph Company were leased, September 22, 1856, at one per cent on their capital of \$207,000.

The Western Union Telegraph Company now held the gates of the west at Buffalo and Pittsburgh.

It was now deemed essential to the enlarging plans of the company, that the Atlantic and Ohio Company, whose property lay between Pittsburgh and Philadelphia, and which held valuable connections with Baltimore and New York, should be brought into the family circle. It was a very valuable line, occupying the entire route of the Pennsylvania railroad from Pittsburgh to Philadelphia, and also the mountain road via Bedford Springs and the Susquehanna railroad from Chambersburg to Harrisburg. Its stock was held high, and was difficult to purchase. Its stockholders were sturdy and independent. There was also an intense local pride, which gave the stock a kind of filial hold upon its possessors.

The conquest of this company was confided to Mr. Wade, and he accomplished it by a strategic movement as brilliant as it was successful. On the poles of the Pennsylvania Railroad Company, which had been recently erected for special railroad use, a right to erect two through wires was easily acquired by a pledge of the free provision of the House Printing machinery at the chief offices of the company for its private orders. It can readily be imagined how skillfully the merits of an instrument which spoke in big Roman capitals was presented. The railroad company, inspired with the advantage of such an admirable acquisition, accepted the immense apple thus offered with something like gratitude. Cars, passes and men were freely offered to erect the wires. In a few weeks, therefore, the Atlantic and Ohio Company found itself confronted by an opposition line of two wires bearing the name of the PENNSYLVANIA TELEGRAPH COMPANY, with a capital of \$500,000 — a third larger than its own. It was none the less disturbing to the officers of the Atlantic and Ohio Company, to know that the manipulators of the new line were the same paternal gentlemen, under a new name, who held the lines of their western allies, and had vowed fidelity to the articles by which they were united. The end soon became apparent. After some vigorous protests, followed with much billing and cooing, the two companies became one, with a united capital of \$650,000, which was soon after exchanged for \$833,400 worth of stock of the

Western Union Telegraph Company, which it issued for the possession of the joint property.

The Atlantic and Ohio Company having been thus bagged, and with immense profit to some of the parties concerned, one line only remained to be brought in, to make the western family complete. This was the New York, Albany and Buffalo Telegraph Company, now uniting in its property the defunct Bain line, and the leased lines of the "New York State Printing Telegraph Company." This was soon and easily accomplished. Manifest destiny was too plainly written on the door posts of the future to permit hesitation or delay. The proper terminus of a great company was at New York. After a decent period, therefore, of rejection and acceptance of offers, and a few quarrels, such as lovers delight in, the terms were all agreed upon, and the Western Union Telegraph Company, now reaching the seaboard by two routes, soon after removed its head-quarters to 145 Broadway, New York. The terms agreed upon with the New York, Albany and Buffalo Company were briefly as follows:

1. The issuance of three shares of Western Union Telegraph Company stock for two of that of the New York, Albany and Buffalo, of the same denomination.
  2. An offer of \$75 cash for each \$50 share of New York, Albany and Buffalo Company stock to parties who preferred money to stock.
- In a few weeks the transfer by purchase or exchange was complete.

The telegraph lines of the west having been secured and united, and the Morse patents, covering a large extent of territory, also in the possession of the Western Union Company, a new field of activity was opened for careful, prompt, and thorough occupation.

Charles Minot, general superintendent of the Erie railroad, had the sagacity to foresee the value of a telegraph in connection with railroad service so strongly and clearly, that he had a line built along his road before closing any contract for machinery to work it. Mr. Minot appears to have been the first railroad officer to broadly and thoroughly comprehend this use of the electric wire in railroad management. It was one of those instinctive and overpowering convictions, which, at

once, in the brain of an earnest man constitutes a necessity which hesitates at no obstacles he feels to be surmountable. Not long afterward Mr. Minot gave up the care of the Erie railroad to D. C. McCallum, a man of much natural force and ability. In his hands the telegraph became, in the administration of the road and the regulations of trains, of the first importance. In his annual report to the board of directors, he made the remarkable statement with reference to the expenses connected with the telegraph department, which some were inclined to regard as a mere ornamental branch of the service: "I would rather have a road of a single track with the electric telegraph to manage the movement of its trains, than a double track without it." This report and remark excited universal attention. Mr. McCallum was widely known as a solid and practical man. He had the management of a most important road. He was able to show by a most graphic illustration the absolute command over trains in motion which the telegraph gave, enabling the superintendent to know the location and to regulate the movement of every train. In acknowledgment of this intelligent recognition of the telegraph as an efficient factor in railroad management, the "North American Telegraph Association" passed appreciative resolutions, which were communicated in the following letter of the chairman of the committee appointed to inform him of the action it had taken:

"LOUISVILLE, KY., July 10, 1865.

"Brevet Brig.-Gen. D. C. McCALLUM,

*"General Manager U. S. Military Railroads:*

"SIR — A delay or mishap, in not receiving the published proceedings of the meeting, has postponed the performance of the agreeable duty of communicating to you the following resolution of the 'North American Telegraph Association,' adopted with most cordial unanimity at its last annual meeting in the city of New York:

"*Resolved*, That N. Green, E. S. Sanford and J. D. Reid be, and are hereby appointed a committee, instructed to communicate to Gen. D. C. McCallum, Director and General Manager of the U. S. Military Railroads, the profound and grateful acknowledgments of the 'North American Telegraph Association' of his early appreciation of the value

of telegraph lines in operating railroads, his intelligent personal influence in exhibiting their utility, and his systematic and successful demonstration during a laborious and honorable career as Railroad Superintendent, of the indispensable necessity of the telegraph.'

"Be assured, sir, now that the telegraph is more generally appreciated, that the language of the resolution was deemed impotent to express the pride and satisfaction with which the Association, long struggling against popular distrusts and misgivings, recalled to memory your sagacious and far-seeing intellect in discovering, and your valuable services in developing, its great usefulness to common understandings.

"With great respect, I subscribe, in behalf of the committee, your obedient servant,

"N. GREEN."

Of course, this employment of the telegraph was soon seen to be a power of the very first importance, and Mr. Wade was not slow in informing the railroad officials of the west that it was at their disposal.

It was now that the value of the Morse patent became evident. The House machine was, for railroad uses, valueless. It could only be thus employed at great cost. It was utterly unadapted to a simple and economical service. The Morse system, however, by its simplicity, its cheapness, its easy acquirement by persons of ordinary readiness of intellect, was in every way adapted for the new and valuable service to which it was destined thereafter to be so largely and usefully devoted.

In carrying out the system of railroad telegraph construction, which now received so vigorous a start, of course the supreme value of the arrangement to the telegraph company was in securing protected routes for its through lines. It amounted also to an exclusive grant of the right of way, and was usually so expressed whenever that could legally be done. A less, and yet very valuable advantage was secured by the opening up of a vast number of offices on the routes of railroads, the cost of sustaining which amounted only to a commission on the receipts, the operators being railroad employees. Almost all of these offices were likely to grow in importance. Here lay an immense field which required prompt occupation.

Gen. Anson Stager had now been with the company several years as its superintendent, and had become familiar with the railroad men, with all of whom he was popular, partly because of the facilities he gave them, but chiefly because of his sharp, prompt, energetic methods so notable in railroad men, especially in the west. In this new work Gen. Stager became a most important agent. He devoted his time to meeting railroad men, to whom he explained the use of the telegraph in running trains. He was himself a thorough expert, and understood the points which touched railroad administration. It was not long before the leading railroads signified their readiness to enter into contract for telegraph facilities such as had been proposed. Mr. Wade promptly met all such parties, arranged the terms — skillfully interlacing their mutual interests — and thus the marriage ceremony went on until the whole railroad system of the continent has become more or less identified with telegraph interests, and with its whole transportation service regulated by its control. And it is difficult to say on whose side the maximum benefit of this arrangement rests. To the railroad companies it is of inestimable value. Not only does it give to them an economical means of control, and a share in telegraphic revenues, but the executive officers are usually provided with such wide facilities for communication with other companies, and with their own officers at distant places, that the whole machinery of management has become sublimely prompt, consolidated and simple. To the telegraph company it is protection, economy, permanence and strength.

The terms of one of these early contracts, briefly stated, stipulated as follows :

1. The telegraph company to furnish the railroad company with a single wire of proper size and quality, and provide Morse instruments at certain specified stations on the line of their road.
2. The telegraph company to maintain main battery for working said wire day and night.
3. The telegraph company to keep the wire erected for the railroad company in order, except as otherwise provided.
4. All receipts for messages at offices opened on the line of the railroad, by either party, to belong to the telegraph company.

5. The railroad company not to send any message free except for its own agents on its own business.

6. At all stations in addition to those named, the railroad company to supply all machinery and local battery.

7. The railroad company to instruct its men to watch the line, straighten poles, re-set the same when down, mend wires, and report to the telegraph company.

8. The railroad company to convey and distribute wire and insulators and all other material free, and also furnish a hand-car for stringing wire.

9. The two companies to reciprocate the use of wires when those of either are out of order, but railroad wire never to be interrupted when sending railroad business.

10. The railroad company to transport all instruments, material for repairs, all operators, officers and agents of the telegraph company free of charge when on business of the company, and to furnish and distribute poles when line has to be renewed, the telegraph company setting and insulating the same.

11. The railroad company to pay for stringing the railroad wire and insulating the same, and for instruments, etc., thirty dollars per mile.

12. The railroad company not to allow any other telegraph company to build a telegraph line upon its property.

13. Railroad telegraph operators may accept public business at the ordinary tariffs, and shall account for the same to the telegraph company, but no messages will be accepted or sent to interfere with railroad business.

Of course the terms of these contracts varied with circumstances. But they were all liberal. They bear the evidence of two parties whose interests were mutual, cordially and liberally providing for each other's necessities. Thus the rail and the wire became indissoluble, and have carried civilization and civilizing influences wherever they have gone.

Gen. Stager's reputation among railroad men was increased very sensibly by an incident which occurred on the Fort Wayne railroad. Gen. Stager and Gen. T. T. Eckert were traveling together on business of the company, when the train became, from some cause, disabled,

and could not proceed. After waiting for a time, Gen. Stager, who was never partial to delays, became impatient, and asked the conductor if he would order an engine from the next station if he would cut the wire and send the order. Consent being given, the wire was brought down and cut. It is a curious fact that on the touch of the electric current to the protruded tongue, that useful but much abused member acts in all respects like the armature of a magnet, and, with each impulse, protrudes with a very distinct outward motion, withdrawing itself as soon as the action of the current ceases. This makes it possible to read from the tongue's motion the dots and dashes of the Morse alphabet almost as readily as from the sound. It had been common to send messages by cutting the line wire and communicating with a station in such a way as to require only the answer "yes" or "no," which were understood by very simple signs on the tongue, usually by the mere presence or absence of the current, or by the letters i. i. slowly manipulated, but no one had ever received a message by the tongue's motion under electric action, and, indeed, it is given to very few men to see their own tongue. This, however, was now to be done, Gen. Stager enjoying this unusual natural gift. Taking the end of the wire in one hand, and sending his message in the usual way, by tapping upon a short wire inserted in the ground, he now placed the line wire on his protruded tongue, holding the other in his hand, and looking down on his lingual armature, a feat often attempted by other men in vain, watched for its wiggle. And not without success, for after undergoing this curious process in the presence of a merry and amused multitude, he announced the welcome fact that the asked for engine had been ordered to be sent. After communicating this important information, however, the assembled passengers were astonished to hear the General utter a profound shout of surprised disgust, accompanied by a significant expletive, which he had probably learned of Mr. Sibley, followed by the performance of an original and very dashing minuet no one had ever before seen on any boards. It was ascertained that this was caused by an unexpected message from an electric cloud overhead, which sent the General, to use a favorite phrase, "spinning on his ear." His ability as a dancer was well known before, but this was original, unique

and vigorous. And so the fame of him, and his wondrous tongue, went over all the region round about. This feat of Gen. Stager almost suggests the lines of Burns—

“O that kind Heaven the gift would gie us,  
To see ourselves as ithers see us,  
It would from many a mischief free us,  
And foolish notion.”

It would undoubtedly be a blessing to some good men if they could be quiet observers of the wagging of their tongues.

During the civil war, which in a few years followed these important acquisitions and arrangements, the telegraph lines in Ohio, Illinois and Indiana were taken possession of by the government, and placed in Mr. Stager's control for military purposes. At Gen. McClellan's request, also, Mr. Stager accompanied him in his West Virginia campaign, establishing the first field system of telegraphs during the war. When, afterward, Gen. McClellan was transferred to Washington, Mr. Stager was called by him to organize the military telegraph at the capital. In this department he remained until November, 1861, when he was commissioned captain and assistant quartermaster, and by order of E. M. Stanton, the Secretary of War, appointed Chief of United States Military Telegraphs. He was subsequently commissioned colonel and aid-de-camp, was assigned to duty in the war department, and placed in charge of the cypher correspondence of the Secretary of War. The cryptograph used in this correspondence, and which successfully baffled the ingenuity of the enemy to translate, was the work of Mr. Stager. In September, 1865, he was breveted brigadier-general for valuable and meritorious services, and became then known, as now, as General Stager. In 1869 he removed his headquarters to Chicago, after refusing the general superintendency of the Western Union Telegraph Company, and took charge of the immense territory known as the Central Division, which now extends from New York to Salt Lake City, as well as southward to and including Texas, this latter territory being under the vigorous management of Col. R. C. Clowry of St. Louis, Gen. Stager's friend and assistant, and who stands deservedly high with the company, as one of its ablest and most reliable executive officers.

The sagacity shown in the early history of the Western Union Telegraph Company, during seven years of which its entire revenues were devoted to the enlargement and improvement of its property, began to produce results as marked as marvelous. The following are the dividends declared up to the close of 1863 :

Cash dividend,	Dec. 1, 1857,	8½	per cent,	capital	\$369,700
“	April 1, 1858,	5	“	“	369,700
“	July 6, “	8	“	“	369,700
“	July 24, “	20	“	“	379,700
Stock dividend,	Aug. 19, “	33	“	“	379,700
“	Sept. 22, “	414.40	“	“	385,700
Cash dividend,	1859,	2	“	“	2,263,300
“	1860,	5	“	“	2,329,500
“	1861,	5	“	“	2,355,000
Stock dividend,	July 16, 1862,	27.26	“	“	2,355,000
Cash dividend,	1862,	9	“	“	2,994,800
Stock dividend,	Mch. 16, 1863,	100	“	“	2,979,300
Cash dividend,	1863,	9	“	“	5,993,400
Stock dividend,	Dec. 23, 1863,	33½	“	“	5,962,600

These dividends thus following in rapid succession were the legitimate fruit of the policy pursued. The stock dividends were based on actual mileage of restored property at a fair valuation. The capital of the company now (May 1, 1864) \$10,066,900, was fairly representative of the lines of which the company had become owners. There was the same relation between capital and property as at first.

With the success, however, which had attended the operations of the company thus far, there came, in 1864, a period of dangerous excitement. So much money had been made by holders of the stock hitherto, and its value was held so great, that its possession, even in minute quantities, was regarded as conferring on its holders all the golden possibilities of Alladin's lamp. In Rochester, N. Y., which was at that time the head-quarters of the company, pianos, guitars, furniture of various kinds, mortgages, and homesteads were converted into cash to purchase Western Union stock. The stock at one time rose in value to 225. While the public mind was thus excited, the board of the company, affected by, or sympathizing therein, declared a stock divi-

dend of one hundred per cent, increasing the capital to \$21,063,400. It was clear and unmixed water. This dividend, after a few years, seriously endangered the stability of the company, and, for a time, rendered its administration obnoxious and perilous.

One of the most successful internal and economic arrangements of the Western Union Telegraph Company, and which was established early in its history, has been its supply department. It owes its origin to Mr. William Hunter, its present cautious and prudent superintendent. In 1855, Mr. Hunter was manager at Cincinnati. To aid Mr. Elwood, the treasurer and secretary of the company, the offices along the Columbus, Zanesville and other railroads sent their reports to Mr. Hunter, then manager at Cincinnati, where they were adjusted, and the balances settled. At that time



WILLIAM HUNTER.

each office bought all its own petty supplies, and, of course, paid therefor the highest retail prices. Mr. Hunter stopped this by buying more largely for himself, which he was able to do at greatly reduced rates, and from which he supplied the offices reporting to him. Secretary Elwood, who was a zealous economist, quickly saw the advantage thus gained. By a careful computation it was found that a large saving could be effected by establishing a central department for the purchase of supplies for all offices. Mr. Wade thereupon had Mr. Hunter transferred from Cincinnati to Cleveland, and charged him with this duty, which grew, even while in Cleveland, to vast proportions, and saved large sums of money. So successful, indeed, was it, that a few years after its origin, the American Telegraph Company, hearing of its success, sent Mr. Joseph Beach to Cleveland to learn the system on which it was conducted, and at

once organized a similar department of their own. At one time under a spasm of parsimony, such as sometimes afflicts a board of directors, the purchasing for stationery was partly taken from Mr. Hunter's hands, and by an economy, as ridiculous as extreme, inaugurated. But it soon defeated itself, was abandoned, and since when, no interference has, to any considerable extent, been attempted. All purchases, however, are closely watched, and supplies are only obtained under competitive bids from responsible parties in response to public advertisement.

The Supply Department head-quarters are now in New York, to which they were removed in 1865, and occupy convenient quarters in the Western Union building. Mr. William Hunter is still the efficient superintendent and purchasing agent. Mr. A. H. Watson is the courteous and popular manager, and keeper of stores. Mr. Joseph Beach, still hale, hearty and young, keeps the accounts. The purchases, which include about eight hundred distinct articles, average about \$1,000,000 per annum, about three-quarters of which pass through the hands of Mr. Watson. The number of packages sent average one hundred per day. A branch office was sustained for a time, under the admirable management of Herbert L. Melton, at Cleveland, Ohio, but was discontinued. Mr. Thomas Orton is in charge of a branch at Chicago, which was organized for facility of distribution, and for the economical purchase of a certain class of supplies. All purchases, however, except for articles for use in the Pacific Division, are paid for through Mr. Hunter, who by a long and exacting service, and by great prudence and fidelity, has established himself in the utmost confidence of the company.

The annual consumption of a few of the chief articles furnished by the Supply Department now (1877) averages as follows: Battery jars, 38,000; battery copper, 11,000 lbs.; spelter, 220,000 lbs.; blue vitriol, 850,000 lbs.; acids, 825 carboys; coal, 1,700 tons; pens, 5,000 gross; ink, 2,800 quarts; cross-arms, 40,000; folio paper, 20,000 reams; book paper, 2,400 reams; message blanks, 40,000,000; envelopes, 20,000,000; besides supplies of 240 various printed forms. The bulk of these supplies is provided on quarterly requisitions, and requires the labor of fourteen persons.

As 1863 opened upon the Company, its sun was at the meridian. Just then, however, there came a shadow over its dial which, for a time, darkened its horizon. While Sibley and Wade had been pushing the conquests of the company on every side, and their names were on every lip, a man of clear head, of untiring fidelity, of keen, scrutinizing, vigorous intellect, had sat at the central office, managed its accounts, and held control of the fiscal and legal affairs of the company. He was an exact and thorough lawyer. The perfection of the Western Union contracts show his fine and far seeing intellect, and the practical quality of his brain. He was a check on all irregularities. He held all agents to the most rigid accountability. Not a postage-stamp was suffered to be used unless on company business. Isaac R. Elwood, the secretary and treasurer of the company, was no mean factor in its growth and power. He was practically, in a special sense, its manager. On February 24, 1863, in Rochester, N. Y., on his way home, seated in a cutter, swiftly drawn over the crisp snow, the pole of a runaway sleigh coming up behind, struck him on the head, and so injured him that he died February 27th. His death cast a gloom over the Company not soon removed. He was everywhere respected. It seemed to many who knew his worth and work, as if the right hand of the Western Union Company had been broken. After a brief period, however, Judge O. H. Palmer, of Rochester, N. Y., a man of great capacity of labor, legal acumen, and steadiness of judgment was selected to fill Mr. Elwood's place. This he retained for many years, and conducted the vast business intrusted to him, with distinguished ability, fidelity and success.

## CHAPTER XXXVII.

## THE WESTERN UNION TELEGRAPH COMPANY.

## THE TELEGRAPH TO THE PACIFIC.

WHILE the work of consolidation of telegraphic interests by the Western Union Telegraph Company was being prosecuted with earnestness and success, and Mr. Wade's mission among the railroads of the west had developed a broad and hopeful basis of future strength, Mr. Sibley, with true pioneer instinct and audacity, had his eye on the Pacific. The popular conception of the intermediate territory between the civilization of the Atlantic and Pacific had invested the whole region with the character of a vast, rugged, dangerous, storm rent wilderness. The picture given by Fremont of the struggles of himself and exploring party with the terrific tempests of the Rocky mountains, were also yet fresh in the minds of men. And down in its deep ravines, and up along its water-courses, and lurking among its rocks, or dashing through its valleys, imagination peopled it with the fiercest of the Indian tribes, lit it with the gleam of the tomahawk, or purpled it with the blood of the scalping knife. And yet there had been enough knowledge obtained of the physical features and condition of this vast region to render its early domination probable, and to encourage enterprise. The quest of gold had led to a removal of many of its terrors. Danger gave fascination to its search. The very barrenness also, and vast extent of the region isolating the Pacific slope from the east, rendered certain value to an enterprise which by iron bands and tongues of fire would give the commerce of the two oceans identity and intercourse. It was one of those sublime opportunities which challenges courage, wings hope, and fires ambition. Mr. Sibley saw in it a possible suc-



*Hiram Sibley*

cess, and with true pluck scoffed at the danger and the toil. He was confirmed in the feasibility of the project of a telegraph line to California by a thorough investigation through military and other sources, of the general character of the country and its population, and he determined to endeavor to accomplish its construction.

Mr. Sibley first presented the proposition to construct a line to the Pacific capacity to his own board at Rochester, of which he was now the official, as before he had been the actual president. Its members were prudent, enterprising and intelligent. Some of them were not wanting in pioneer audacity. But they had already acquired something of the conservatism of success, and notwithstanding the eloquent fervency with which it was presented, refused their assent to the undertaking as a company venture. At this Sibley fretted. Over and over again he pressed it on them, with a warmth and power of rugged expletive characteristically his own. But he pressed it in vain. By some it was opposed because they were unequal to the conception of the possibilities of the work. By the majority, who acknowledged its importance, it was nevertheless deemed too hazardous a venture to be undertaken by a company having the care of so many interests, and which was not yet thoroughly established in some of its undertakings. It was thought that if undertaken at all, it ought to be done by an outside organization in which the company might be properly represented, whose failure would not imperil their own existence, or destroy the growing prestige of the Western Union Telegraph Company. There was solid wisdom in this. It led ultimately to a solution of the scheme and its plan of procedure. Meantime, however, Mr. Sibley fretted at the apparent timidity of his associates, and nervously told them: "Gentlemen, if you won't join hands with me in this thing, I'll go it alone!"

On August 10, 1857, Mr. Sibley brought his Pacific project before the North American Telegraph Association. This he did with great earnestness and passionate eloquence. The magnitude and value of the work was evident. Additional information had robbed it of much of its supposed difficulty and peril. It was felt, also, that if undertaken, it was desirable that it should be prosecuted so that, in

the event of success, existing companies would not be unfavorably shadowed, or their interests endangered thereby. Such a line, especially if aided by the general government, which Mr. Sibley had suggested as possibly necessary, it was readily perceived would give to any one company undertaking it, if successful, a dominating power. There was already much unuttered jealousy of "Western Union" influence, and restlessness therefrom among the companies. A resolution was, therefore, carefully framed and passed, appointing a committee consisting of Francis Morris, Charles A. Mann, Hiram Sibley, Norvin Green, J. D. Caton and J. Howells to devise measures by which the work might be prosecuted under the auspices of the Association. This action, however, bore no practical fruit. The Association had no executive functions, and on the presentation of the enterprise to the individual companies, not one of them would risk a dollar in the undertaking.

In 1860 Mr. Sibley, nothing daunted, applied to Congress. Many things united to favor an appeal to the nation. The government was already feeling the urgent need of being able to reach its distant forts. There was a growing eagerness on the part of the population of California for some quicker mode of union with the east, than by the long journey by Darien. There was, also, at that important epoch, strong political reasons affecting the autonomy of the country, which made speedy intercourse with California in the highest degree desirable. The means had not been apparent, but the necessity was real and vivid.

In proceeding to Washington, Mr. Sibley, feeling the need of personal aid, took with him Isaac Butts, a member of his board, the editor of the leading Democratic journal of western New York, for the purpose of being introduced by him to the leaders of influence and debate in the national Congress. He also induced Samuel Bowles, of Springfield, Mass., to accompany him to aid him in reaching other influential parties in furtherance of his object. Beyond the introduction to Stephen A. Douglas and one or two others, however, Mr. Butts' mission was not fruitful. Mr. Bowles was much more useful in directing Mr. Sibley's arrangements, and also in conducting him to the men who had supreme influence in national legislation. Mr. Sibley's best friends, however, in this appeal to the intelligence and needs of the nation,

were the enterprise he had come to plead, and his personal enthusiasm. He everywhere secured a courteous hearing, and much personal respect and admiration. The project, now felt to be practicable and timely, spoke for itself. The day of ridicule had passed.

Fortunately, also, for the undertaking, Hon. Howell Cobb was Secretary of the Treasury, a man of practical intelligence, of quick and broad discernment, and who gave Mr. Sibley his hearty support. Nor were there wanting other men in Washington holding the reins of legislative influence, who quickly discerned the great political value of Sibley's project, and admired the courage and faith with which he presented it.

After a brief period, during which the subject was closely scrutinized by a Congressional committee, who unanimously and warmly recommended it to Congress, an act was passed June 16, 1860, "to facilitate communication between the Atlantic and Pacific States by electric telegraph." In this act was included the payment during ten years of an annual subsidy of \$40,000. The official acceptance of Mr. Sibley's offer to construct the Pacific line was communicated by Secretary Cobb, September 22, 1860. Mr. Sibley's success thus far was complete.

In accordance with the act which had been passed, on November 1, 1861, a contract was executed by Hon. Samuel P. Chase, who had become the Secretary of the Treasury, and who warmly supported the undertaking, on the one hand, and Hiram Sibley on his own behalf on the other, for the building of the whole line. The stipulations of this contract were as follows:

1. It was to be completed within ten years following July 31, 1860.
2. Government was to have preferential use of the line between Washington, New Orleans, New York and Philadelphia, to and from San Francisco, and to pay a subsidy of \$40,000 for ten years. Should the business transmitted for the government, at ordinary rates, exceed the amount of the subsidy, the excess to be submitted to Congress for allowance.
3. The tariff between Brownsville on the Missouri river and San Francisco, not to exceed three dollars for ten words.
4. Messages to be sent free, during the payment of the subsidy, for the Smithsonian Institute, the Coast Survey, and the National Observatory.

Mr. Sibley gave as bondsmen for the due performance of this contract, Joseph Medbery, Isaac Butts, Isaac R. Elwood, Samuel L. Selden, Don Alonzo Watson, Henry S. Potter, J. H. Wade and Ezra Cornell.

Meanwhile California, learning what had been done by the United States Congress, was stirred to action. The California State Telegraph Company had for some time been successfully at work under a liberal charter, connecting the towns of the Pacific coast. An appeal was now determined to be made for aid to construct an overland line to the east, in furtherance of and in connection with Mr. Sibley's movement. The legislature promptly granted \$100,000 for this purpose. On both sides of the great central wilderness, therefore, the connection by telegraph was earnestly pressed, aided and hoped for.

After securing these important legislative arrangements, at an interview of parties from California with the Western Union Telegraph Company, it was decided that the work should be commenced without delay. It was agreed that the California State Telegraph Company and the Western Union Company should, respectively, extend their lines to Great Salt Lake City, and there connect. At the same time, January 11, 1861, the "Pacific Telegraph Company" was incorporated by the legislature of the Territory of Nebraska, with a capital of \$1,000,000, to carry out the Sibley contract on the part of the Western Union Telegraph Company, and to whom the Sibley contract was assigned. The names of the incorporators were Hiram Sibley, Isaac Butts, Jephtha H. Wade, Isaac R. Elwood, Charles M. Stebbins, Thomas R. Walker, John H. Berryhill, Edward Creighton, Samuel L. Selden, Theodore Adams, John H. Harman, Benj. F. Ficklin, Albert W. Bee, James S. Graham, and Joseph Medbery. At a later period, Orville Clarke, D. A. Watson, Geo. H. Mumford and O. H. Palmer entered the company as members of its board of directors. Of this company, Jephtha H. Wade was made President, and into the work of which he at once devoted himself with characteristic shrewdness, vigor and skill. Hiram Sibley was elected Vice-President, and Isaac R. Elwood, Secretary and Treasurer. Hiram Sibley, Isaac Butts, Samuel L. Selden and Joseph Medbery were made an executive committee.

Following, also, the example of the Western Union Telegraph Company, the OVERLAND TELEGRAPH COMPANY was organized in San Francisco to carry out the obligation of the California State Telegraph Company, with a capital of \$1,250,000. The stock was taken chiefly by members of the latter company. Under this organization the work of construction from the Golden Gate to Salt Lake City, under the compact with the Western Union Telegraph Company, was placed under the direction of Mr. James Gamble. In its prosecution James Street was made general agent, and I. M. Hubbard superintendent of construction.

The most important act in the commencement of operations was the selection of a suitable route. A false step in this might prove fatal to the enterprise. It was determined to make a thorough examination, and under various parties several routes were examined, prepared, and rejected. As early as 1859, Edward Creighton, a well-known line builder and contractor, had been ordered to examine the route by way of Fort Smith. He also examined a route by way of Memphis. Both of these were rejected. In the winter of 1860, however, Mr. Creighton surveyed the route from Omaha to Salt Lake via Fort Kearney, Laramie, South Pass, Forts Crittenden and Churchill, across the Sierra Nevada mountains to Sacramento and San Francisco. He traversed the whole route personally, riding on mules. He made his report April 12, 1861, and expressed his willingness to undertake its construction to Salt Lake City. That settled the question of route. Mr. Creighton's offer was accepted, and the route by Omaha and Laramie adopted.

Active measures were now taken to carry out the contract. To stimulate emulation in the construction, and enlist co-operation, it was agreed :

1. That Sibley, *i. e.*, The Pacific Telegraph Company should build the line from Brownsville to Great Salt Lake City, and that the California State Telegraph Company should build from San Francisco to Great Salt Lake City, the route of the line to be south of Salt Lake.

2. The party first reaching Salt Lake City was to retain the full tariff received for messages between Brownsville and San Francisco, and between St. Louis and San Francisco, except one dollar on St. Louis

messages, which was the tariff between St. Louis and Brownsville, until the line was complete.

3. The party arriving with their completed line at Great Salt Lake City four months in advance of the other, was to receive for every day thereafter from the other party, until the line was finished, fifty dollars per day.

4. Mr. Sibley was to transfer his personal contract into the hands of a company to be called the PACIFIC TELEGRAPH COMPANY, and which was incorporated under an act of the Territory of Nebraska, dated January 11, 1861, which would carry all the rights he had acquired.

The tariff and its division was equitably arranged. The patent rights under the Morse and Hughes patents, both of which had been acquired, were to be held in common. Mr. Wade went meanwhile to California, and, with great skill and wisdom, united the various telegraph interests of the State, and put them in a condition for effective development.

The objections which had been urged in the east against building the line to California, which had kept parties most deeply in interest from taking hold of it with enthusiasm, and who felt safest in letting Sibley "go it alone," were:

1. That there were no poles to be had along the route, and could be provided only at excessive cost. This was only partly true. Sometimes transportation was necessary from considerable distances. But the difficulty was not formidable, although transportation sometimes extended two hundred miles over a country without roads, mountainous and dangerous to travel.

2. That the Indians would not allow the wire to remain up, and that they could not be watched or overawed. This fear was not realized until the hostile tribes learned of its connection with army operations, when, for a time, much trouble ensued. The removal of the line to the railroad at a later period stopped all difficulty of this character. The Indians were generally friendly. Some of the Indian chiefs still send Mr. Sibley gifts of live deer and antelopes in token of their good will.

3. That the business with California could not be made profitable, because of the immense wilderness intervening in which there was no

population, and where, of course, no business could be expected. This has proved a delusion. The whole interior region, so long waste and dreaded, is now alive with a rapidly enlarging population. Every cause of apprehension fled with the presence of brave men, and well directed endeavor.

The specifications for the construction of the line were carefully prepared and minute. It required, among other particulars, that it be built with not less than twenty-five poles per mile, of durable material; that the iron wire should be of the best quality, and that the whole line should be insulated in the best manner then known. It was to be provided with repeaters either of the "Hicks" or of the "Farmer and Woodman" patent, so as to enable communication to be carried on by either party, at least as far as the junction of their respective lines, at Salt Lake City, without re-writing. The whole structure was to be finished by July 31, 1862, unless Congress should extend the time on account of any necessity which might arise. The subsidy of the United States government of \$40,000 per annum, was to be divided in the ratio of sixty per cent for the lines east of Salt Lake City, and forty per cent for the California State Telegraph Company, until the gross annual receipts should exceed \$70,000 per annum on the California State line, when their proportion was to be thirty per cent instead of forty. Balances due were to be paid in gold. The parties could select any route. The Western Union Telegraph Company agreed to convey for the purposes of this contract, the Morse and Hughes patents, so far as they possessed or might possess them.

All details having been satisfactorily arranged, large gangs of men were organized to commence the work at different points. A number of active men were started after poles. Others gathered together and distributed the material. Nearly one thousand oxen were found necessary for the transportation of the camps, food, wire and poles for the different parties who on the 4th of July, 1861, broke ground in the construction of the telegraph to the Pacific. In California, Mr. Gamble divided his forces into two, one starting from Salt Lake City, and one from Carson. The section east of Salt Lake City was also divided, Mr. W. H. Stebbins building from Salt Lake City eastward four hun-

dred miles, and Mr. Creighton the remaining seven hundred miles to Omaha via Julesburgh.

The popular conception had fixed upon two years as the shortest period for the completion of a work so difficult and extensive. The section from Omaha to Salt Lake City, commenced July 4th, was finished October 24th of the same year. Mr. Gamble's section, which had many serious difficulties to surmount, was completed October 26th, only two days later than the eastern.

The announcement, therefore, on November 15th, communicated by telegraph to the presses of both the great seaboard, that the line was complete and in operation from ocean to ocean, only **FOUR MONTHS AND ELEVEN DAYS** after its commencement, struck the public mind with amazement. It was an achievement of which the parties might well be proud. Its announcement was received with demonstrations of great joy. The papers were ablaze with congratulations and commendation of the vigor and skill which had brought the enterprise to so triumphant a close.

To Mr. Sibley it was a day of triumph. The success was complete. It was essentially his work. In an important sense he had "done it alone." No man could rob him of his well earned honor. He enjoyed it thoroughly. The triumphant result was only less ascribable to Mr. Wade, under whose masterly directions the whole work had been executed. The plan of its execution, in all its important details, were his, and he was not forgotten amid the ringing of bells, which pealed out the national joy at the union of the world's great seas by the magic belt of fire which now united them.

To the Western Union Telegraph Company the Overland Telegraph line was a vast accession of strength and prestige. Its line now extended from ocean to ocean. Its business was large, its outlook brilliant, its position impregnable, its influence immense. It stood confessedly one of the vastest and most comprehensive of the private enterprises of the world.

Contrary to the expectations of many, no line ever constructed on the continent became so immediately and largely profitable, as the line thus built. Only a fraction of the capital, in all fifteen per cent, was

raised by assessment. It was the basis of several fortunes. On March 15, 1863, the capital was increased to \$3,000,000, and the increase distributed among the stockholders. Edward Creighton, the eastern builder, who was a large subscriber to the stock, became soon after possessed of great wealth. This was derived partly from his telegraph stock, which came to be capitalized at twenty times its cost, and was afterward doubled, and largely from gold mining, and the raising of immense herds of cattle on the western plains, to which his telegraph work led him. He settled in Omaha, founded a bank there, became known throughout the west as a man of large wealth, and died November 6, 1874.

On March 17, 1864, the Pacific Telegraph Company, which had been organized to carry out the Sibley contract, was merged with that of the Western Union Company, by an issue of \$3,000,000 of Western Union Company stock in exchange for its own. In 1866 it was represented by six millions of the capital of the company which, in two years thereafter, had nothing to show for the issue but the debris of a line abandoned, because of the necessity for a new structure along the line of the Pacific railroad, which was built, under the administration of President William Orton, from the revenues of the company.

On June 12, 1866, the Western Union Company purchased a controlling amount of the stock of the California State Telegraph Company, into which the Overland Telegraph Company, after its mission had been completed, had been absorbed, thus securing control of the entire route between the Atlantic and Pacific. Under the skillful manipulation of Mr. Wade, the telegraphs of the Pacific coast were federated and became part of the general system of the Western Union Telegraph Company. Thus the entire west, with its swelling population and vast possibilities of enlargement, became the field of its future development and power, a trust broad enough and comprehensive enough to give both dignity and grandeur to its administration.

## CHAPTER XXXVIII.

## WESTERN UNION TELEGRAPH COMPAN

## CALIFORNIA.

NO territory in the Union apparently needed the telegraph more than the great States starting up into life on the Pacific coast. Nowhere, however, was it taken up with more seeming reluctance. The condition of society there at the period when the telegraph was first presented for public employment, was too chaotic to favor it, and money sought more productive channels.

The first movement to put the telegraph in operation in California, was made by Messrs. Oliver C. Allen and Clark Burnham of New York. These gentlemen obtained from the legislature of California in 1852, a franchise giving them the exclusive right to operate a line between San Francisco, San Jose, Stockton, Sacramento and Marysville, for the term of fifteen years, provided the line was completed by November 1, 1853. In the fall of 1852 the "CALIFORNIA TELEGRAPH COMPANY" was organized under this grant. Messrs. Allen and Burnham were the corporators. The officers elected were John Middleton, President, Joseph C. Palmer, Treasurer, James C. L. Wadsworth, Secretary. The directors were Franklin C. Gray, John W. Dwinelle, Sol. A. Sharp, A. J. Bowie, J. M. Estell, Lucien Hermann, John A. Reid and John C. Fall. But money at that period was worth five to ten per cent a month. The telegraph promised no such returns, and 1852 went out with nothing accomplished.

In the spring of 1853 another unsuccessful movement was made. Meanwhile, however, J. E. Strong canvassed the mining towns of Nevada, Grass Valley and Auburn, and secured funds sufficient to



*J. H. Wade*

erect a wire upon trees between these places. It went into operation in July, 1853, and was the first line of telegraph erected on the Pacific coast. The insulation was of pitch-pine blocks, with suspended hooks, which were soon found useless.

In 1853 the California Telegraph Company was re-organized and re-incorporated under the name of the "CALIFORNIA STATE TELEGRAPH COMPANY." This company purchased of Allen and Burnham their franchises and material. The officers elected were John Middleton, President, Joseph C. Palmer, Treasurer, S. A. Sharp, Secretary; directors, S. P. Dewey, Charles W. Cook, A. J. Bowie, H. W. Carpentier. Under this

organization a contract was made with Walter M. Rockwell for constructing a line from San Francisco to Marysville. The poles were of redwood, pine and willow saplings. The first section was erected between San Francisco and San Jose. Two wires were at first ordered — one for "up" and one for "down" business. But one was soon found to be enough.

The first wire of the new line was erected by James Gamble, now General Superintendent of the Pacific lines. The



JAMES GAMBLE.

first message sent over it was also sent by Mr. Gamble and received by Chas. Bulkley of the Collins expedition. It was sent from a valley twenty-five miles out from San Francisco, where the banker Ralston afterward erected his palatial home. Gamble had to use a keg of water to secure a ground connection! There was a much simpler

mode in the east for such purposes. Mr. Gamble thought the soil too dry for the eastern method, the plan of which he understood. The line was completed to Marysville, October 26, 1853. The tariff was \$2 for ten words between San Francisco, Stockton, Sacramento and Marysville, and \$1 between San Francisco and San Jose. When the line was completed, Mr. Gamble became manager at Sacramento.

The ALTA TELEGRAPH COMPANY was organized in 1853, and erected a connecting line from Sacramento to Nevada City, which was afterward extended to all the principal mining towns, and subsequently to San Francisco, when it entered into competition with the California State Telegraph Company. J. E. Strong had been superintendent and general manager of this company for three years, when it was placed under the management of Mr. Gamble, who resigned his post at Sacramento for that purpose.

In 1856 the NORTHERN TELEGRAPH COMPANY was organized to construct a line between Marysville and Yreka, and which was constructed under the management of J. E. Strong and I. M. Hubbard. Mr. Strong soon withdrew from this company and went to Oregon to attempt to build a line through the then wilderness to Portland. While he was thus occupied, Superintendent Gamble succeeded in making a through connection of the Alta California line to San Francisco via Benicia and Oakland by cables crossing the straits at Benicia and the bay between Oakland and San Francisco.

The cables, however, were of a very frail character, and the connection was not permanent. The Alta Telegraph Company's business was also small and irregular, and its lines soon afterward fell into the hands of two residents of San Francisco named J. M. and R. H. McDonald. Owing to competition and the unreliable character of the lines of the California State Telegraph Company, its business also declined, and the management was offered to Mr. Gamble, who became its Superintendent and Secretary. Meanwhile the cables of the Alta Company having wholly failed, their lines were extended round the bay via San Jose to San Francisco, thus trespassing on the franchises of the California State Telegraph Company. This was in the fall of 1857. The California State Telegraph Company immediately commenced suits to protect its

rights. A spirited competition and litigation ensued; until July, 1860, when, wearied of a ruinous warfare, the Alta Company became merged into the California State Company. C. C. Butler, who was starved out of Jackson, Miss., and who afterward became manager of the Bain line at Buffalo, N. Y., was made secretary of the California State Company in 1856.

In 1859, Charles Simmons and William Blanchard took to California two of the combination printing telegraph instruments, with the idea of introducing them into the telegraph system of the Pacific coast. To test their value, a wire was assigned to them between San Francisco and Sacramento by the California State Telegraph Company, and for a time the printing instruments were worked with more or less success. But they were not needed. The Morse mechanism was preferred. No other has since then been employed.

At one time it was attempted to introduce somewhat extensively, what is known as "American Compound Wire," that is, a steel wire of small size, covered with a skin of copper, the superior conducting power of the copper compensating for the reduced size of the other. But it was only used to a limited extent, and proved a failure. The sea fogs and rain found their way to the steel, and rapid corrosion ensued. Most of it has been removed. It is now manufactured on a new plan which may yet secure its large employment.

In the winter of 1860, Mr. J. H. Wade, the agent of the Western Union Telegraph Company, arrived in San Francisco and broached the idea of an overland telegraph between the Pacific and Atlantic States. The proposition was heartily received. In a few weeks the NORTHERN TELEGRAPH COMPANY, whose lines extended from Marysville to Yreka, under the management of I. M. Hubbard; the ATLANTIC AND PACIFIC TELEGRAPH COMPANY, whose lines extended from San Jose to Los Angeles, under the management of James Street; and the PLACERVILLE AND HUMBOLDT TELEGRAPH COMPANY, whose lines extended from Placerville to Virginia City, Nevada, under the management of Fred. A. Bee; were merged into the California State Telegraph Company, with a united capital of \$1,250,000, with the following officers: President, H. W. Carpentier; Vice-President, J. Mora Moss; Secretary, E. S. Miller;

Treasurer, R. E. Brewster; General Superintendent, James Gamble, Assistant Superintendent, George S. Ladd.

As soon as the project of a line to the eastern seaboard took form, an application was made to the legislature for aid to construct the Western section. This was regarded with favor, and April 27, 1860, one hundred thousand dollars was granted for that purpose. Acting on the plan of the eastern company, an organization was effected for the construction of the overland line, with a capital of \$1,250,000, and named the "Overland Telegraph Company." The shares were promptly taken by the shareholders of the California State Telegraph Company, and its President, Secretary and Treasurer became the officers of the new company. James Street was made general agent, I. M. Hubbard, superintendent of construction, and James Gamble, General Superintendent. Mr. Gamble was left to direct the entire work. It was a post of great responsibility, but was carried out with skill, vigor and enthusiasm to its successful completion. It was built in two sections, starting from Salt Lake City and Carson, and finished October 26th of the following year, two days after the eastern parties had arrived at Salt Lake City. On its completion, the Overland Telegraph Company was merged into the California State Telegraph Company, November 6, 1861, with a united capital of \$2,500,000. In April, 1862, George S. Ladd, who entered the service in 1857, was elected Secretary of the Company

The completion of the line between the Atlantic and Pacific caused, as already mentioned, general joy. It was an event of great political and commercial importance to California. A large and lucrative business followed its opening. The success of its construction revealed the possibility of a railroad, and was soon followed by the laying of the iron rail. They now work together in a grand mission of union and commerce.

Up to 1863 no telegraphic connection had been made with Oregon. J. E. Strong had started a line thither, but not succeeding, conveyed it to the California State Telegraph Company, who in 1864 extended it through Washington Territory to Victoria on Vancouver's Island, and also along the sound to Frazer's river as far as New Westminster, the capital of British Columbia. This work was executed under the direc-

tion of R. R. Haines, as District Superintendent, and was one of exceeding difficulty, the route being densely timbered, without roads or even trails, and much of it through swamps and marshes.

In September, 1865, the United States Telegraph Company showed its hand on the Pacific coast, and directed James Street to build a line from San Francisco to the Missouri river. Mr. Gamble resigned his position as general superintendent of the California State Telegraph Company, to take charge of this work, which was pushed with so much vigor that in January, 1866, it was completed to Virginia City, and, during the spring, was completed as far as Salt Lake City. Just then the Western Union Telegraph Company having purchased a control in the stock of the California State Telegraph Company, offered terms of consolidation with the United States Telegraph Company. These were accepted. The proposed opposition across the continent thereupon ceased.

In January, 1867, the Western Union Telegraph Company decided to take direct control of the lines on the Pacific coast. At the annual meeting of the California State Telegraph Company, January 16, 1867, George Hart Mumford was elected President; Henry Haight, Vice-President; George S. Ladd, Secretary and Treasurer; James Gamble, General Superintendent. In May, 1867, the lines of the California State Telegraph Company were formally leased to the Western Union Telegraph Company, since which all the principal lines on the Pacific coast have been worked as the Pacific Division of the Western Union Telegraph Company.

It was in connection with this work that Mr. George Hart Mumford, afterward Vice-President and Secretary of the Western Union Telegraph Company, began his telegraphic career, and whose melancholy death in Paris, July 25, 1875, broke so many hopes which had been formed respecting him. He was born in Rochester, N. Y., in 1840. His education was completed at Harvard, where he graduated with great honor. He practiced law for a brief period in the office of his uncle, Judge O. H. Palmer, in Rochester, N. Y. He was sent to California in 1864, when only twenty-three years of age, to evoke order out of the chaos in which the affairs of the Russian Extension enterprise had

become involved. By his discreet and vigorous management he saved to the Western Union Company a large amount of property, and released, with acknowledged skill, the entanglements to which the sudden termination of that great work had given rise.

In 1865 Mr. Mumford returned to California, charged with the reorganization of the California State Telegraph Company, now, under the masterly arrangements originated by Mr. Wade, in control of the telegraph lines of the Pacific coast. This was a work of extreme delicacy. It required both nerve and prudence. He was appointed General Agent of the Western Union Company on the Pacific coast. As Agent he gradually acquired possession of a majority of the stock of the various companies, and was elected President of the California State Telegraph Company. He married, in 1865, Miss Dana, the accomplished daughter of Gen. Dana, of San Francisco, and, on the leasing of the Pacific lines, was called to New York to be Secretary of the Western Union Telegraph Company.

It would have been contrary to average human nature, if California had neglected to exercise its genius in the matter of insulation. The invention of insulators was a kind of scientific measles through which all telegraph managers have had to pass with more or less danger. California seems to have not only had the disease, but, like some companies in the east, many forms of it. The first insulators used were based upon the very accurate scientific formula that wood, when dry, being a non-conductor, and gum-shellac also a non-conductor, ergo, dry pine boiled in gum shellac must be an insulator par excellence. So the pioneer wires were insulated with plugs boiled in shellac, inserted in wooden arms, and into which Mr. Kendall's iron



hook with a screw end was inserted on which to suspend the wires. It was an improvement on the cotton rags and beeswax of Lancaster, Pa. Until the winter rains came, the boiled plugs worked admirably enough, but when the clouds of the declining year burst, sorrow of an electric sort everywhere prevailed. The lines were operated throughout the winter with the utmost difficulty.

To remedy the evil, a rubber cap and iron shield (Fig. 2), the invention of J. E. Strong, was substituted. It was an improvement on the

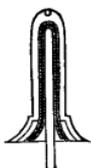


FIG. 2. but without success. They gathered dust upon their surface, easily retained moisture, and transmission

became painful and laborious. For some reason, also, an insulator made at Kenosha, Wis. (Fig. 4), which bore tokens of excellence, and



FIG. 4.

secured an apparently complete separation of the exposed parts by a large dry surface, was also found to be a failure, and had to be abandoned. The Brooks' insulator (Fig. 5) was employed on different sections, chiefly on the main line along the railroad, and for some time gave satisfaction. These two latter forms were much and often referred to as the finest examples of insulation which had yet been introduced, and are not without an excellency which

renders them useful under certain conditions. They were soon, however, superseded by simpler methods, or retained in use to a very limited extent. On a sample of the Brooks' insulator in one of the California executive archives of scientific experiment and buried hopes, there is recorded "*This will do if kept well greased.*" This was true not of Brooks' insulator only, but of various other modes of insulation, which were excellent so long as clean. "Greasing" is, indeed, a very important element, both with things and men. Experience with numerous modes finally led to the adoption of Cornell's glass and pin method of insulation, used for the copper wires of the early lines, but now enlarged, modified in form, and strengthened for bearing the iron wire. Of these, several forms were introduced, but which were all essentially alike. The Cauvet insulator, glass and pin, was introduced in 1865. Then followed



FIG. 6.

the screw glass and pin of the California Electrical Construction and Maintenance Company (Fig. 6), which is essentially the insulator now in general use. It was adopted, somewhat modified in form (Fig. 7), by the



FIG. 3.



FIG. 5.



FIG. 7.

Western Union Telegraph Company, after a thorough

examination of all other modes, and is likely to prove the standard American telegraph insulator of the future. The subject of insulation has long ago ceased to agitate the sleep of the modern superintendent.

Mr. Mumford remained as the representative of the Western Union Telegraph Company on the Pacific coast until 1871, when he was elected one of the vice-presidents, and removed to New York.

On the departure of Mr. Mumford, the general management of the Pacific coast was given to Mr. Gamble as General Superintendent, with George S. Ladd as assistant. Mr. Ladd resigned in 1873, and was succeeded by Mr. Frank Jaynes. Mr. Jaynes was for many years cashier of the company at San Francisco, and rose by force of merit and character from the ranks where he had served as operator.

A number of faithful men are still connected with the California lines. George Senf, familiarly known as "Graffey," has been for many years manager at Virginia City, and has been in the Pacific coast service twenty-three years. John Leatch, chief operator at Sacramento, is also a pioneer, having served in responsible positions, with fidelity, for over twenty years. Frank Bell, district superintendent in Nevada, has been closely identified for the last fifteen years with the construction and superintendence of the mountain lines. He has had the difficult task of maintaining them in the midst of the deep snows of the Sierras, and has never been known to flinch from duty in the face of the severest storms. Peter H. Lovell, who was always a pioneer, continually on the outskirts of civilization, who had charge of the original overland line, still follows his mules regularly every year to repair and maintain the old pioneer line, which is still kept up on that route. It is a dreary and monotonous region, with few inhabitants save the Red man, whom "Pete," as he is familiarly known, neither loves nor fears. If there is an outside line to build, or a new route to explore, Pete is called upon to do it. F. S. Vandenberg was also prominently connected with the service from 1859 until 1866, when he entered the service of the Central Pacific Railroad Company, and has ever since been superintendent of their telegraph department. This company has telegraph lines along its different railway routes which are operated in connection with the "Atlantic and Pacific" Telegraph Company.

Among others of equal prominence in their life-time, but who passed away in the fullness of their manly prime, and at a period of their greatest usefulness, was Wm. R. Yontz, who opened the first office (San Jose) that had connection with San Francisco in 1853, and after filling many responsible positions, was made assistant superintendent of the California State Company in 1865, and who was manager of the San Francisco office of the Western Union Telegraph Company at the time of his death in 1870. John M. Gamble, brother of Superintendent Gamble, who opened the Marysville office in 1853, and was connected with the company for many years, deserves grateful memory. Upon the completion of the overland line, he was appointed superintendent of the Nevada and Utah division, and died in the harness in 1869, from illness brought on by extreme exposure in the discharge of his duty.

The management of the Pacific coast and interior California lines is still in the hands of Mr. James Gamble, as General Superintendent of the Western Union Telegraph Company, than whom there is no more efficient and worthy officer. He commenced as an operator at Hannibal, Mo., in 1858, after thirty days practice in the office at St. Louis, and in six months was promoted to Quincy, Ill. He served at Chicago and Alton, and after various experiences, and much faithful labor skillfully executed, now occupies one of the most responsible posts in the telegraph service of the continent, and stands deservedly high in the estimation of the public and of the officers of the Company.

## CHAPTER XXXIX.

## THE WESTERN UNION TELEGRAPH COMPANY.

## COLLINS' OVERLAND LINE TO EUROPE.

SCARCELY had the Golden Gate returned the congratulations of the Atlantic seaboard, on the occasion of the completion of the telegraph to the Pacific, before a new project was sprung upon the public mind. This was the proposition of Perry McD. Collins, the American commercial agent to Russia, of an overland line of telegraph from the United States, *via* Behring's Strait and Asiatic Russia to Europe.

Perceiving the importance of the project, Mr. J. Cochrane, from the Committee on Commerce, reported to the House of Representatives, February 18, 1861, a bill appropriating \$50,000 for "The survey of the northern waters, coasts and islands of the Pacific Ocean and Behring's Strait, having reference to telegraphic connection with Russia," and expressing full faith of its feasibility. In the Senate of the United States, Feb 17, 1862, Mr. Latham also made an elaborate report, revealing the vast progress of telegraphs in Europe, and the enthusiastic and enlightened action of the Russian Government in the proposed extension of her telegraph system to the Pacific. In the inspiration of his theme, while contemplating the completion of the enterprises then enlisting the attention of the peoples of the globe, Mr. Latham exclaimed, "We hold the ball of the earth in our hand, and wind upon it a network of living and thinking wire, till the whole is held together and bound with the same wishes, projects and interests." A line had already been mapped out from Kazan, in Russia, through Circassia to the capital of Persia, and thence to the English Indian line at Kurachee. From Omsk a line was

traced out with the design of reaching India through the northern central gate of Asia. Still another was projected from the Amoor line to Peking, Shanghai, Amoy and Hong Kong, thus to reach the trade of China. These projects showed how thoroughly the value of the telegraph to commerce had revealed itself. Mr. Latham asked an appropriation of \$100,000, for a survey of the route from California to the Amoor, under proper officers and with vessels detailed for that purpose. Russia offered her aid, and a rebate of forty per cent on American messages when communication was established.

At the time Collins presented his enterprise, a line was in course of construction by the California State Telegraph Company, from San Francisco to Oregon and Vancouver. The distance from Vancouver to Behring's Strait, *via* Sitka, was 1,800 miles. The Strait itself was only 39 miles wide, with a maximum depth of 160 feet.

Russia had already assured the construction of the whole line, 7,000 miles, from Moscow to the Pacific. It was then actually under construction by the Russian Bureau, under the Director-in-Chief of the Public Ways from Kazan to Irkootsk, and was to be completed in 1863. The Governor-General of Eastern Siberia and the Minister of the Navy were charged with the construction of the lines from Irkootsk to the mouth of the Amoor. Every thing pointed to this as the great route to Europe. The highest northern point was 668 north latitude. Professor Morse, Nov. 29, 1861, writing to Mr. Collins, testified to the entire feasibility of the project, and that there was no serious obstacle to be apprehended from climatic or geographical considerations.

Into this international undertaking, when presented to him by Mr. Collins, Mr. Sibley entered with characteristic zeal. He had now no lack of backers for any enterprise he chose to undertake. Any amount of money could have been raised for the line to Russia.

Writing to Collins, October 16, 1861, Sibley says:

"Our men are pressing me hard to let them go on to Behring's Strait next summer, and (as you say to me) 'If I had the money,' I would go on and complete the line and talk about it afterward."

"If the Russian government will meet us at Behring's Strait, and give us the right of way through their territory on the Pacific, we will

complete the line in two years, and probably in one. The whole thing is entirely practicable. No work costing so little money was ever accomplished by man that will be so important in results. The benefit resulting to the world will pay its entire cost every year after completion, so long as it is inhabited by civilized man!"

These were brave words and were sincerely spoken.

Secretary W. H. Seward, who at once took a very deep and earnest interest in the enterprise, in a report to the Senate May 4, 1864, on the proposition of Mr. Collins, after an exhaustive statement of the facts, used the following language :

"I think it may be regarded as settled, that the United States cannot neglect to employ telegraphic communication with foreign countries, and yet expect to maintain a healthful commerce with them; that the United States cannot hope to inspire respect, confidence and good will abroad, and to secure peace with foreign States without using the magnetic telegraph when it is possible. I do not know any one object lying within the scope of our foreign relations more directly important than the preservation of peace and friendship with Great Britain and Russia. Nor can I conceive of any one measure of national policy that would more effectually tend to secure that great object than the construction of this proposed inter-continental telegraph."

The sentiments thus officially expressed by Mr. Seward were responded to by all intelligent men, and the Russian line was the most popular of the enterprises of the period.

The proposition to construct the Russian-American telegraph was first formally submitted by Mr. Collins to the Western Union Telegraph Company, September 28, 1863, and again at a meeting of the Board of that Company in Rochester, N. Y., March 16, 1864. It was in the form of a letter from Mr. Collins, requesting the acceptance of his project to connect Europe and America by way of Behring's Strait, and offering, if accepted within twenty days, to transfer his rights and privileges under certain valuable grants held by him. The terms proposed by him, after a full and careful examination by the Board of Directors, were unanimously accepted. These were briefly as follows :

1. The right of Mr. Collins to one-tenth of one million dollars of

stock, to be created for the undertaking, free from assessment as paid-up stock.

2. The right to subscribe for one-tenth more.

3. The payment of one hundred thousand dollars as compensation for eight years' service in securing the grants.

The nature of the grants was an engagement on behalf of the Russian government to construct a line from St. Petersburg to the mouth of the Amoor river, a distance of 7,000 miles, and which was already constructed as far as Irkooktsk, three-fourths of the distance. The grants and concessions by Russia to be exclusive for 33 years. This was coupled with a grant of rebate on messages during a period to be agreed upon, of 40 per cent. Liberal and honorable action by the British government, was also shown in respect to British Columbia.

The acceptance of Mr. Collins' offer was immediately followed by the creation by the Western Union Company of a special stock called extension stock, to the extent of 20,000 shares of \$100 each. Stockholders of the Western Union Telegraph Company had given to them the prior right to subscribe to the extent of fifty per cent of the stock held by them, five per cent of which was to be paid down at the time of subscribing. The whole stock was promptly taken and regarded as of great value. It was thought that not more than twenty per cent in the way of assessments would be called for to finish the work. Mean while, immediate steps were taken to start the enterprise. The following were the officers of the expedition.

Charles S. Bulkley, Engineer-in-Chief.

LAND SERVICE.

Frank N. Wicker, Chief.	John F. Lewis, Chief Draughtsman.
Henry P. Fisher, Surgeon-in-chief.	Frederick Whymper, Artist.
Scott S Chappel, Chief Quartermaster.	Eugene K. Laborou, Chief Interpreter.
Geo. M. Wright, Adjutant and Secretary.	Lawrence Conlin, Chief Carpenter.

AMERICAN DIVISION.

Edmund Conway, Chief.	F. A. A. Billings, Asst. Quartermaster.
J. W. Pitfield, Agent, B. C.	Henry Elliott, clerk.

AMERICAN DIVISION — *Continued.*

Frank L. Pope, Chief-of-Explorations in British America.	Robert Kennicott, Chief of Explorations in Russian America.
J. Trimble Rothrock, First Assistant.	W. H. Ennis, First Assistant.
James L. Butler, Second Assistant.	Thomas C. Dennison, Quartermaster.
Ralph W. Pope, Operator.	Lewis F. Green, Engineer.

## SIBERIAN DIVISION.

Serge Abasa, Chief.	Collins L. MacRae, Chief Explorations in Upper Siberia.
Geo. Kennan, Quartermaster.	A. S. Arnold, Quartermaster.
J. A. Mahood, Chief Explorations in Lower Siberia.	Alexander Harden, Interpreter.
Richard J. Bush, Secretary.	

Many of these gentlemen had been in the army of the United States. Colonel Wicker served gallantly in the battles of Winchester, Antietam, Chancellorsville and Gettysburg. Dr. Fisher, S. S. Chappel, G. M. Wright, L. Conlin, Edward Conway, J. W. Pitfield and J. T. Rothrock had all had the "baptism of fire." Colonel Bulkley when called to his new work was in charge of the Military Telegraph System under Maj.-Gen. Banks, and under the immediate orders of Gen. Anson Stager, Superintendent of Military Telegraphs. Charles Bulkley, the engineer-in-chief, was universally respected and trusted; and he entered his new appointment with the unbounded confidence of all parties.

Early in the spring of 1865, the Marine Service was organized. The vessels purchased were the flagship *Nightingale*, Capt. C. M. Scammon; steamer *George S. Wright*, Capt. W. H. Marston; bark *Clara Bell*, Capt. John R. Sands; bark *H. L. Rutgen*, Capt. M. Anderson; schooner *Milton Badger*, Capt. T. C. Harding; bark *Palmetto*, Capt. Arthur; *Golden Gate*, Lieut. Davidson; bark *Onward*. Three small steamers for river use were also built. The *Evelin*, *Wood*, *Egmont*, *Mohawk* and *Royal Tar*, carried material. The United States government detailed the United States steamer *Saginaw* and the Russian government the Royal steamer *Variag*, for the service of the expedition. In all twenty-four steamers and vessels were engaged.

According to the most careful surveys, the distance from British

Columbia to the Amoor, was 2,800 miles. Two cables, one across Behring's Sea, one hundred and seventy-eight miles, and across the bay of Anadyr, two hundred and nine miles, were the only deep sea cables to be laid. It was hoped that the line would be completed at farthest in 1867. No project was ever started under more sanguine expectations.

Of course a circular was necessary. The eloquent Secretary, charmed with his theme, wrote thus mellifluously of the value of the enterprise:

"The completion of the South American system, connected with our North American system of telegraphs, will bring the commerce of the whole world upon the 'Russian Extension Line.'"

"As to prospective earnings, a few words may naturally be expected. On a line of two wires, one thousand messages a day can very readily be dispatched, *i. e.*, twenty messages an hour day and night. The charge per message may reasonably be put at \$25. This would give nine millions of dollars a year! Reduce this to one quarter, and we still have two and a quarter millions. The support and maintenance of the line cannot exceed one-half of the latter amount."

Of course holders of Russian extension stock, as they read and re-read these glowing lines, felt themselves to be the happiest and most fortunate of mortals. To them the birds on every tree sung of gold, and to their etherealized imaginations "in the infinite meadows of heaven blossomed the lovely stars, the forget-me-nots of the angels." The stock was, for a time, held at a premium varying from thirty to sixty per cent.

The survey of the territory between Vancouver's Island and the Yukon river was confided to the well-known electrician Frank L. Pope. He was just the man for such a duty, practical, not easily alarmed at obstacles, vigorous, thorough. The first region traversed was the three hundred miles of prairie land and light forests which extends from Fort Alexandria to Fort Frazer on the lake of the same name, thence to Fort St. James, and through the chain of lakes from which the west branch of the Frazer flows. From the head of Lake Tatla, Mr. Pope, accompanied by Mr. George Blenkinsop, of Victoria, and two Indians, traversed on snow-shoes during the winter of 1865, the five hundred

miles of unexplored and unmapped mountain wilderness lying between the head-waters of the Frazer and the Stekine. This trip occupied seventy days. During most of these the party suffered untold hardships and privations. It escaped utter starvation almost by a miracle.

Mr. Pope, during these explorations, found the natives, though few in number, everywhere friendly, and no difficulties of a physical character which were not readily surmountable. In a letter addressed to Hon. W. H. Seward, Secretary of State, by Hon. William Orton, the following language, used by him, expresses the hopeful circumstances of the undertaking: "At every forward step in this great work, difficulties vanished as resolute hands approached them, and were found to be fewer than at first contemplated. Every thing conspired to render the whole scheme more and more practicable as the labor upon it progressed. With greater ease than the building of the line from Chicago to San Francisco, the wires were connected to the banks of the Simpson river. Beyond, it needed only a vigorous and intelligent commissariat to push the construction of the line to the Behring sea, and on to the terminal point at the mouth of the Amoor."

The great enterprise thus favored on every hand, was pushed ahead with great zeal. New Westminster, B. C., the terminus of the California State Telegraph Company, was the American starting point. A large body of men congregated there and began the work of construction. The point first aimed at was Fort St. James on the west branch of Frazer's river. Northward of this was supposed to be Simpson's river, laid down on the maps as a navigable stream issuing from Babine Lake, and entering the Pacific ocean at Fort Simpson. By the explorations of Mr. Pope, Simpson's river was found to be a stream of little importance. In the winter of 1865 his able and energetic assistant Butler, with snow-shoes and canoes, traced the outlet of Babine lake downward, through a gloomy and unknown wilderness, till it broadened into a noble river, hitherto unknown to geographers, and at last found himself upon the shores of the Pacific near Fort Essington. The native name of this great river was the Skeena, and it subsequently proved of great value as a means of transportation from the coast to the interior. North of this the Stekine river, which breaks through the coast range

of mountains to the Pacific, in 57° north latitude, was also navigable, and up which the auxilliary vessels easily carried supplies. The route from the Stekine was along the foothills to the north toward Fort Pelly Banks, a station of the Hudson Bay Company, and from thence along the waters of the Yukon and Kvitchpack. The line was in a very few months completed to the Skeena river. The whole work was being pushed forward with much enthusiasm and energy.

Meanwhile Mr. Serge Abasa, an educated Russian gentleman, who had entered the service of the Western Union Company, and who was held in much esteem, was dispatched to the Asiatic coast, between the mouth of the Amoor and Behring's Strait. He personally inspected the whole route from the Anadyr river to Okhotsk, the only part of the route which had been regarded as "terra incognita," and had occasioned anxiety. Mr. Abasa reported January 18, 1866:

"Inform the directors of the company that the entire extent of line between the Anadyr and Okhotsk district has not only been surveyed, but the route of the line has been determined by me in person, and, notwithstanding the scarcity of laborers in the country, I have commenced preparatory works in Anadirsk, Jijiginsk, Yamsk, Taousk and Okhotsk."

In the midst of all this enthusiasm and spirited labor, however, the Great Eastern, at the docks of an English harbor, was having coiled into her immense hold, for another and last attempt at the establishment of submarine telegraphy between America and Europe, the Atlantic cable. Few expected its successful landing, fewer still that its success, even if secured, would be permanent. But when it was announced that, at last, victory had come; that with ease and regularity, without a flaw and without a stop, the great ship had laid her burden in the deep; that even the lost cable of the previous year had been picked up and put in effective service, and that the Continents were speaking to each other with easy garrulity, the overland line was at once abandoned. It was a question of two thousand miles of cable against sixteen thousand of land line, half of which was along an unpopulated coast. The advantage to the cable was too palpable. It took but a moment to see that the contest, if the two routes were completed, must be unequal. Orders were,

therefore, issued recalling the men and fleets, and an announcement of the abandonment of the undertaking was promptly made.

When the successful working of the Atlantic cable became evident, the overland line had been built and was in operation to Skeena river, eight hundred and fifty miles from New Westminster. At a meeting of the Board of Directors it was determined to notify the government that the work was stopped, and Mr. William Orton, then vice-president of the Company, was directed to make the announcement to Secretary Seward, to whose courteous and intelligent advocacy of the enterprise its successful prosecution thus far had been so largely due. The following extract from Mr. Orton's letter, dated March 25, 1867, in which the facts were stated with amplitude and frankness, contains the gist of the communication :

"The proof that the basis of revenue had been removed, was only needed to be complete, to make the duty of at once stopping the whole work a stern and peremptory necessity. That proof we have been from month to month receiving. So clear and cumulative has that evidence been, that we have been compelled, though with great reluctance, to acknowledge its completeness and power. All doubts concerning the capacity and efficiency of the ocean cables, are now dispelled, and the work of construction on the Russian line, after an expenditure of \$3,000,000, has been discontinued." \* \*

To this communication the Secretary of State sent a most courteous reply. In his letter to Mr. Orton, on behalf of the Western Union Telegraph Company, he used the following language :

"I am not one of those who have been disappointed by the complete and magnificent success of the International Atlantic Telegraph. I regard it as tributary to an expansion of our national commerce, and, ultimately, of our political institutions, both of which are important forces in the progress of civilization. I would not have the Atlantic cable become dumb again if thereby I could immediately secure the success of the Inter-Continental Pacific Telegraph enterprise which was committed to your hands. Nevertheless, I confess to a profound disappointment in the suspension of the latter enterprise. I admit that the reasons which you have assigned for that suspension, seem to be irresistible. On the other hand I abate no jot of my former esti-

mates of the importance of the Inter-Continental Pacific Telegraph. I do not believe that the United States and Russia have given their faith to each other, and to the world, for the prosecution of that great enterprise in vain.

“WILLIAM H. SEWARD.”

The loss was, of course, great. The Western Union Telegraph Company, however, assumed it all. An offer of bonds was immediately made for the redemption of the extension stock, and \$3,170,292 of bonds was issued for that purpose. Some denounced this proceeding, but as the stockholders were almost wholly also holders of the Western Union Company stock, it was generally acquiesced in.

Although the Russian line was thus abandoned, the glory of the attempt remained. Its failure left no stigma upon the men who conceived or attempted to accomplish it. It is proof of the strength of the Western Union Company at that period, that it footed the bill of the Russian expedition without a shiver, and without at all reducing the market value of its stock.

Not the least remarkable feature of the great undertaking was the official correspondence of the Company with the Grand Duke Constantine, the Duke of Somerset, Minister Cassius M. Clay and the officers of the expedition. The letters of Judge O. H. Palmer, Secretary of the Company, are among the finest types of epistolary courtesy, directness and vigor.

## CHAPTER XL.

## THE WESTERN UNION TELEGRAPH COMPANY.

## CONSOLIDATION.

JEPHTHA H. WADE after performing a splendid service as President of the Pacific Telegraph Company, having, also, by his personal presence, united with consummate skill during 1860-1 the telegraph interests of the Pacific coast, was, at the annual meeting of the Western Union Telegraph Company in 1866, unanimously elected President. Mr. Sibley's health had compelled him to go to Europe, and, for a time, to lay aside all business cares and engagements.

It is scarcely possible to over-estimate the value of Mr. Wade's connection with the Western Union Telegraph Company at this period of its history, especially now that he had become its chief executive officer. He had not Mr. Sibley's boldness; had, perhaps, less breadth of conception; had none of his peculiar momentum and dash; but Mr. Wade had what Mr. Sibley lacked or had in subordinate degree, and which was now invaluable—the faculty of administration—the power of clear, accurate, discriminating systematization. Mr. Sibley had large, quick, broad ideas, was a splendid pioneer, had a sublime contempt of obstacles, but had an impatience, perhaps, an imperfect sense of the value of detail. Mr. Wade knew how to appreciate and to estimate the value and force of obstacles, how to carry out by careful and prudent steps, and in well arranged detail a fine conception and organize it into a vital and permanent force. When Sibley started on a crusade, like the Israelites of old, he blew his horn lustily until the walls fell, and took a complacent toot after they were down. No man ever more enjoyed a triumph. He glowed and sparkled from head to foot. Wade carried



Wm. A. Brown

no horn. He was a sapper and miner. He did his work by quiet, effective, well-planned, thoroughly thought-out methods. The walls might fall at the blast of Sibley's horn, but the city was made opulent by Wade's executive and administrative skill.

With such variance of personal characteristics it was most natural that, to a man of Wade's mind, Sibley should to some extent be an offense. Wade was a partridge hunter whose hopes for a covey depended on keeping the dogs from barking. And so it happened that, although no two men could have been better suited to each other for the great end they so effectively accomplished, and although they never hindered each other's peculiar work, they never reminded one, very distinctly, of the Biblical characters of David and Jonathan. And yet this friction, which had a certain picturesqueness about it, brought out the best points of both men and pushed forward by bold but safe and permanent methods the policy of conquest, aggregation, and final harmony and union.

As early as the year 1861, it had begun to be evident that all the limits assigned to the various companies forming the North American Telegraph Association were to be gradually obliterated by processes obviously inevitable. Two colossal interests had already largely absorbed most of the telegraph organizations of the country. The American Telegraph Company by construction, consolidation or lease, held the entire region east of the Hudson, and the Atlantic seaboard from Newfoundland to Galveston. It penetrated the West to Cincinnati. By consolidation, also, with the South Western Telegraph Company, it occupied the entire South from Louisville, Ky., to the Mexican frontier. This latter union, partly because of the value of the field, and largely on account of the personnel added to its administration, conferred much prestige and strength. Thus, with an enterprising executive, with a staff thoroughly officered and engineered, with its outposts at Albany, New York, Philadelphia, Cincinnati, Louisville, Ky., New Orleans and San Antonio, a magnificent combination of lines on the one hand, and the Western Union Telegraph Company stretching across the continent to the Pacific, and touching the Atlantic at Philadelphia,

and by the absorption of the New York, Albany and Buffalo Telegraph Company, grasping New York on the other, the telegraph interests of the entire nation confronted each other in two compacted bodies. Both were powerful and ambitious. Both had the smell of fight and the plume of victory upon them. They could be splendid friends or magnificent enemies. There came to be a common expectation that by tilt or tournament, in the field or in the cabinet, some passage at arms between these telegraphic armies would soon decide the future status of the American Telegraph.

In 1862 Mr. William Orton was collector of internal revenue for the sixth district of the city of New York. He was young, just past his thirty-sixth year, of delicate physical organization, but with an intellect unusually alert and keen, and of an industry which was earnest almost to ferocity. He was a native of Cuba, N. Y., where he was born June 14, 1826. His early advantages were restricted, yet practical and thorough. He made the most of these, and early exhibited the repugnance to superficiality which now characterizes him. In his early manhood he qualified himself for a teacher, and graduated with honor at the State Normal School at Albany, N. Y.

In June, 1865, Mr. Orton, who, in connection with his official duties as collector, had, by his assiduity and able treatment of cases involving nice legal discrimination, attracted the attention of the officials of the Treasury Department, was appointed United States Commissioner of Internal Revenue, with his head-quarters at Washington. It was a post created by the necessities of the war, and was one of immense labor, demanding prompt judgments, ready legal knowledge, tact, firmness and vigor. It was, in some respects, the most laborious, the most poorly compensated and most exacting of the public offices of the government. In this position Mr. Orton remained long enough to do a valuable public service, to secure the fast friendship of some of the foremost men of the nation, and especially of the Secretary of the Treasury, who early recognized his ability and the taxing quality of the labor connected with his official position.

On the third of August, 1864, there was formally organized under

the telegraph laws of the State of New York THE UNITED STATES TELEGRAPH COMPANY. It was pioneered by a number of men of wealth and enterprise, and was a union of three separate companies organized under the same interest, entitled the "United States Extension," "Independent," and "Inland" Telegraph Companies. So rapid and energetic had been its development, that even at the time of the organization over six thousand miles of line, leading to many important points, had been completed. Its first Board of Directors was composed as follows :

James McKaye,	John D. Taylor,	Delos De Wolfe,
Lewis Roberts,	John Hulme,	George P. Plant,
Charles J. Martin,	G. W. Burbank,	Samuel Munn,
Silas C. Hay,	Theodore Adams,	Henry Morgan,
Freeman Clarke,	Josiah King,	J. M. Schemerhorn,
Charles Macalester,	David Fleming,	Henry G. McKaye.
Thomas H. Wilson,	George F. Davis,	

The executive officers were James McKaye, President; Theodore Hay, Treasurer; Silas C. Hay, Secretary; Meritt S. Wood, General Superintendent; M. S. Roberts, John C. Hinchman, W. P. Westervelt and J. S. Bedlow, Assistant Superintendents. It had in its service some of the most energetic and practical talent of the country, and had behind it men of enterprise and large wealth.

In 1865 the United States Telegraph Company had pushed its work with so much energy that it had in operation sixteen thousand miles of wire. It had also started under an organization designated as the "UNITED STATES PACIFIC TELEGRAPH COMPANY," a line from San Francisco east under the superintendence of James Gamble, and of which Henry Morgan was President, Lewis Roberts, Treasurer. It was already finished to Salt Lake City. Abundant means were ready to carry it to Missouri. Notwithstanding all this dash and wealth, and energy, elements of weakness had already appeared. The lines had been extended into non-paying territory, and where neither the clamor for opposition was so strong, nor the wants of the community so imperfectly met by existing lines as to require them. The lines of the Western Union Telegraph Company on the other hand were in splendid

condition and discipline, and stood high in public favor. It made hot battle with its new antagonist, which it did chiefly by increasing its facilities and infusing fresh blood into its work. This it did so effectually that the United States management began to show signs of trembling. The monthly balances began to tilt heavily and persistently on the wrong side. Under such circumstances President McKay began to find the reins heavy and the driving unpleasant. He determined to resign. A strong man was needed to sit behind the dashboard and take the leathers.

It so happened that in the winter of 1864-5, Mr. Orton had occasion to employ Mr. Grosvenor P. Lowrey to conduct a suit for him before Justice Nelson of the Circuit Court of the United States at Windsor, Vermont. Justice Nelson had already given an adverse decision in the same case. It was now, however, so ably and clearly presented that Justice Nelson at once reversed his own judgment. The success was complete. The intercourse necessary to the defense of this case resulted in a profound and most affectionate friendship between the client and his lawyer, founded upon deep mutual esteem and a very high respect for each other's intellectual and moral qualities.

It was soon after this, that Mr. Orton was called to the Commissionership of internal revenue in Washington.

Mr. Lowrey, meanwhile, rapidly rose in his profession, and became recognized in New York as a lawyer of much promise and marked ability. He became the counselor of the United States Express and United States Telegraph Companies. Learning in one of his professional interviews with the President of the latter company of his desire to retire from the Presidency and remembering Mr. Orton's arduous and poorly compensated service at Washington, he pressed him upon the attention of the Directors of the United States Telegraph Company as Mr. McKaye's successor. Meanwhile he obtained Mr. Orton's consent to accept the post of President of the United States Telegraph Company if tendered him. This led, after a canvass of other names, among which the most prominent was Mr. Samuel Sloan, so well known in connection with railroad management, to the offer of the Presidency to Mr. Orton. It was, after a brief delay, accepted. Mr. Orton soon

after left Washington and entered upon his new duties November 1, 1865. Theodore Hay, a most excellent and competent man, was Treasurer. James D. Reid, was Secretary.

On Mr. Orton's retirement from the government service, the Secretary of the Treasury wrote him as follows :

"MY DEAR SIR. I regret exceedingly the necessity that impels you to resign the very important office of Commissioner of Internal Revenue, the duties of which you have discharged with so marked success. Our official intercourse has been short, but it has been exceedingly pleasant to me, and has been long enough to satisfy me of your great executive ability, your uprightness of character, and your devotion to the government. I can pay you no higher compliment than to say you have filled one of the most laborious, trying and responsible positions in the country, a position requiring great patience, industry, promptness of decision, and nice discrimination, and a thorough acquaintance with the law, in a manner highly satisfactory to the country.

I am, very truly yours,

H. McCULLOGH, *Secretary.*

It did not take Mr. Orton long to discover the condition of the United States Telegraph Company. Taking home with him, as is his custom when he has serious work on hand, the books of record, he examined patiently and exhaustively the contracts, office returns, cash accounts and official reports. He soon found that although the Company occupied valuable territory, and was doing a comparatively large business, yet that its income fell short of its expenses over \$10,000 per month. This condition of things was unknown to him when he accepted the Presidency, and the revelation was not delightful. He began to suspect that he had become the captain of a foundering ship, and there seemed evidence to sustain the suspicion.

Matters thus stood for a few months during which every effort was made to conquer success, when, from my knowledge of Western Union movements and men, I learned that Mr. Wade was expected in New York. He was in poor health, rich, and wanted to leave the service. From some circumstances which came to my knowledge, I learned that Mr. Wade had become aware of the fresh vigor which had been brought into the management of the United States Company, and that it needed

his attention. This seemed the object of his present mission. It would inevitably bring him into contact with Mr. Orton. It was at once evident to me that two such men under such circumstances could not long resist personal interest and attraction.

Revolving these matters in my mind, I said to Mr. Orton on a certain quiet night when he seemed a little disturbed at the condition of the ship he sailed.

"Mr. Orton, in two years from now, you will be President of the Western Union Telegraph Company."

Turning upon me those eyes of his, which, having once seen, no one is likely soon to forget, half amused and wholly incredulous of my remark, he said:

"That is a strange prospect to hold out to a man only three months in the service. On what do you base such an idea?"

"Mr. Orton," I replied, "the thought is somewhat intuitive, but not without reason. I know Mr. Wade well. He is broken in health. He is anxious for a suitable successor. The United States Company is annoying him, and he is compelled to notice it. You and he will meet and will agree on terms of union, chiefly because he will see in you the executive aid he needs and the energy he can no longer exert. He will, when negotiations are closed, open the way to you for the succession. Such is my conviction."

Mr. Orton laughed in a silent, comfortable way and went home. A few days after this conversation, Mr. Wade's name was among the arrivals at the Fifth Avenue Hotel. The following day an invitation came to Mr. Orton to meet him. As Mr. Orton put on his hat to obey the invitation, he cast a smile over his shoulder at me, while I mentally said as he disappeared through the door-way, "that is the first step to the Presidency." Destiny was at work.

A morning or two afterward, however, Mr. Orton came in to his office looking dangerous. He was evidently riled, a somewhat expressive term in his case, and for some time there was utter silence. The white of his eyes shone all round. Something had evidently happened. After a time, coming up to my desk with a step not remarkable for its elasticity, he said somewhat lugubriously:

"Well, I have seen Mr. Wade, and I am afraid you are a poor prophet. He has made me a proposition for union with the United States Company, which seems insulting. He proposes as a basis of negotiation, the relation of 12 1-2 United States to 87 1-2 Western Union, as the relative values of each. I cannot go before my Board with any such proposal as that."

Seeing his indignation at the seemingly strange offer presented to him, and which had certainly the appearance of the offer of a victor to a fallen foe, I requested him to give me the memoranda of the business, that I might find therefrom the true relations of the companies from actual business done. I found from a careful comparison of the gross receipts that the revenues of the United States Telegraph Company were to those of the Western Union Company as 13 7-8 to 100. Mr. Wade's offer, therefore, was not unjust. These calculations, spread out with all the clearness of which I was capable, I showed to Mr. Orton. It led to an offer of union to the Western Union Telegraph Company on the basis of their respective revenues, and which was soon after accepted and ratified by the boards of both companies. The union of the two companies was made complete by the issue by the Western Union Telegraph Company April 1, 1866, in exchange for the surrender of United States Telegraph Company stock of \$3,885,200 of its own. Thus the United States Telegraph Company ceased its separate existence.

The effect of this movement led to one still more important. The American Telegraph Company, though in splendid condition, its stock at a high premium, officered by men of ability and enterprise, backed by immense wealth, doing a large and profitable business, and commanding a vast range of territory, including the whole of the Atlantic seaboard, felt that telegraphic success to be solid and permanent, and accomplish its grandest mission must be the result of a single administration. Many circumstances tended to favor a union of the two companies. The President, Col. E. S. Sanford, a generous gentleman, one of the successful pioneers in the great express business of the country, was not tenacious of office and quickly saw the value of combination. In this he was seconded by the influential men of his Company, Cam-

bridge Livingston, Francis Morris, Wilson G. Hunt, Peter Cooper and others, and steps were speedily taken to secure amalgamation with the Western Union Company. This was greatly aided by the acquaintance soon formed between Col. Sanford and Mr. Orton, the former of whom readily saw in the new officer, though not yet in full executive authority, a probable candidate for its chief trust, and to whom he became quickly and warmly attached. And so it happened that on June 12, 1866, negotiations were closed by Mr. Wade with Col. Sanford for the union of the two great companies by an issue of \$12,000,000 Western Union Company stock, in exchange for \$4,000,000 of the American Company.

One year after these notable arrangements had been effected, and after I had again entered the service of the Western Union Company, the annual meeting of the company, July 10, 1867, took place. Mr. Wade had written from Cleveland, July 8, declining election because of ill-health. Mr. Orton was at home ill, having been suddenly prostrated the day previous. Just after the board, which had been that day chosen, had with much unanimity elected him President, Mr. Orton arrived at the office. He was weak and pale. The announcement of his election, however, sent a glimmer into his eye and shot a little carmine into the whiteness of his face. Coming up to where I stood a deeply interested spectator of the movements thus going on, with a quiet smile which was not without a gleam of triumph in it, he said to me:

"Well, Mr. Reid, your prophecy has come true at last."

There was indeed no prophecy about it.

The following notable resolution was passed after the election of the new Board was announced:

*Resolved*, That to the foresight, perseverance and tact of Mr. J. H. Wade, the former President of the Company, we believe is largely due the fact of the existence of one great Company to-day, with its thousand arms grasping the extremities of the continent, instead of a series of weak unreliable lines unsuited to public wants, and, as property, precarious and insecure.

*Resolved*, That we tender to Mr. Wade our congratulations on the great fruition of his work, signalized and cemented by this day's election

of a Board representing the now united leading telegraphic interests of the nation."

After this Mr. Wade withdrew from telegraphic administration. The telegraph had brought to him vast wealth, but it had also brought him into a state of health which periled its enjoyment. To dismiss care he sold out his entire telegraphic interests, and in travel and in the enjoyment of a magnificent home which he had erected in Cleveland, Ohio, and which he provided with every appliance of art and taste and comfort, gave himself up to needed rest and recuperation.

With restoration to health, which followed a judicious respite from labor, Mr. Wade entered into many spheres of active life. During nine years he has been President of the Citizens' Savings Bank of Cleveland. He is also Director of the Second National Bank of Cleveland, Director of the Cleveland Rolling Mills, Cleveland Iron Company, Union Steel and Screw Company, and President of the American Sheet and Boiler Plate Company, and of the Chicago and Atchison Bridge Company of Cleveland. He is also Director in three railroad companies, and President of the Kalamazoo, Allegan and Grand Rapids, and Cincinnati, Wabash and Michigan Railroads.

As if these were not enough to fully occupy his time, the citizens of Cleveland have appointed Mr. Wade Commissioner of the City Sinking Fund, Park Commissioner, and Director of the Work-house and House of Refuge.

Mr. Wade was born in Seneca county, N. Y., August 11, 1811, is now in the zenith of his powers, and one of the foremost of the citizens of the beautiful city which he has made his home, and which he has done so much to enlarge and adorn.

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Standing at the door of the room where Mr. Orton's election has just been announced, and declining for the present, at least, to be the recorder of his subsequent career, to one feature of his prospective work allusion seems pertinent and just.

Up to the close of 1863, the capital of the Western Union Telegraph Company had been based upon a more or less just estimate of the value

of its property. At that period the capital was about \$11,000,000. The Company was on a tidal wave of success, and with the abundance of money which war had brought as one of its insidious corrupters, the shares of its stock sold freely at two hundred, or twice its par value. At one period they rose to two hundred and twenty-five. The price mounted with every smile which rippled over Mr. Sibley's face. It was a period of the insanity of success. Under such circumstances the Board of Directors met, and, not without some sturdy opposition, declared a stock dividend of one hundred per cent. It seemed a splendid achievement thus, by a breath, to create \$11,000,000. It was a red-letter day in Rochester as the duplicated stock was carried home by its happy recipients and locked up in vaults, or was carefully folded and deposited in elegant tin boxes with smoothly fitting keys, with a smile of exultation as if the battle of life had been fought and won.

It was not long, however, before the added millions became a millstone, the full weight and drag of which was not felt until after years. It was first fully realized when, at the period of which we now write, the leading Telegraph Companies came to form, with the Western Union, a great compacted Company. It was then found that to settle the representation of capital on a just basis, many millions of stock, in excess of what would have been necessary had that hundred per cent dividend not been declared, had to be issued. The water in the capital of one company had to be equated with water in all the rest. And thus it came that instead of an easily handled capital of, at most, \$25,000,000, a swiftly coming era of shrinkage and broken values had to be confronted with one of \$41,000,000. It was just at this period, when the amalgamation of the leading lines of the country piled up this immense capital, that Mr. Orton was called to sit down in the chair of official direction, to face its manifest labor, and assume its multiplied responsibilities. It was less the acceptance of an honor than of a task so grave as to embarrass congratulation.

The first duty staring the new executive head of the Western Union, Telegraph Company in the face, as the multitude which thronged the executive rooms on the occasion of the annual meeting passed away

was great and evident. He had by some process so to enlarge the sources of revenue and the capacity of the lines as to make the capital legitimate. To accomplish this, it was at once clear that dividends must, for a time, cease. Vast quantities of wire had to be erected. Old and fragile structures had to be renewed to stop the enormous depletion caused by the cost of repairs and the interruptions to business, of which they were the prolific source. New lines had to be built to reach points where new communities were rapidly clustering into centers of civilization, and where a vast railroad system, stimulated by the plenteousness of money, was pushing its way from the Atlantic to the Pacific, and along the highways of every State, all of which demanded the aid of the communicating wire. Millions of dollars were needed for this work. The mere statement of the case shows the courage it required to face its demands. The Company had become, by the force of circumstances, national. It had now national duties. Happily the new President was able to see, in the yet infancy of the nation and the vastness of its yet outlying territory, the opportunity he needed to establish the capital of the Company on just foundations.

It is, of course, easy to generalize in writing of such circumstances. Let one item illustrate the general condition. The line to the Pacific was built in 1861. It was planted along the wagon-roads and trails which led from Omaha through Julesburg, Fort Laramie and South Pass to Salt Lake. For this work \$3,000,000 stock was created. Two years later that stock was doubled. Five years more had scarcely passed away before the steel rail of the Pacific Railroad gleamed over the mountain paths of Montana and Nevada. The old telegraph lines along which Creighton and Wade and Gamble had made their triumphant march between the oceans had to be abandoned, and a new structure, capable of bearing many wires, had to be erected along the whole route. Within a single year there had to be found in the construction of a new first-class structure of two thousand miles, from Omaha to Sacramento, built from the current revenue of the Company, an heir to a perished property, represented by a capital of \$6,000,000! And this was but a sample of the general condition. How all these demands were met

some other hand will write. The same hand will tell how far the new officer, in this redemptive process, was sustained by the men who were selected to be his counselors.

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At the period of Mr. Orton's entrance into the management of the Western Union Telegraph Company, a new era in telegraphic history had arrived. Four classes of men had already performed their work. These were, first, the patient pioneers in scientific discovery, who gave methodized interpretation to phenomena, and uncovered the foundations of natural law. Of these were Arago, Oersted, Ohm, Volta, Faraday, Franklin and Henry. Second, were the inventors, who took up the discoveries of the savans, gave them form and made them servants to human industry and companions of human toil. Of these, Morse, Wheatstone, House, Hughes and others spring to the thought as representative. Third, were the men like O'Reilly, Cornell and others, who, with a somewhat methodless enthusiasm, webbed the face of the country with the early telegraphic lines. Still a fourth appeared, of whom Sibley, Wade, Alden, Field and others were examples, who took up the scattered and weak forces of the telegraph throughout the country, netted them into systems, brought out the conditions of their strength, made telegraph property a great public value, and its employment a national success. The work of all these men had now largely been accomplished. It had resulted in a vast organization, with its wires extended to the extremities of civilization in every direction, and able to transmit, under a single administration from Newfoundland to Vancouver, the messages of the people. A vast work had been accomplished.

There now came what may be termed the era of administration. The telegraph inter-threading itself into all social and public interests and industries, demanded the highest and purest and broadest administrative talent to protect, regulate and assimilate all its yet outlying forces, and give them unity, coherence and control. The management of such a vast interest was a trust which demanded not alone a fine brain, but great power of labor. No reflecting man could accept such a responsibility without a consciousness of its greatness and its perils.

In the management of the affairs of the Western Union Telegraph Company, with its now national area, and with the rapid enlargement of the volume of its business, the conditions of its existence as a purely private enterprise and yet that of a fully recognized national means of intercourse, evidently depended on the establishment of such fundamental principles as would everywhere challenge popular approval. The very first step to be taken was in some respects the most difficult. The making of dividends had, in a very distinct sense, to be subordinated to the claims of public duty. A year or two before, a demand had been made to reverse this principle, and by a high tariff, even at the cost of a reduced volume of business, increase the revenues. That was the policy of rapacity, narrow, selfish, impossible. It was necessary now that a nicely drawn line be found, on one side of which property would find adequate protection, and on the other, the public receive free from oppressive exactions, the benefits of a system not unnaturally regarded as above the ordinary level of human enterprises, and having a mission sacred to the highest sense of public honor. This elevated telegraphic administration from the ledger to principle; from questions of simple profit and loss to considerations of citizenship. One of the first contests of the new era now dawning on telegraphic development in America was against a movement to make the telegraph part of the enginery of political power. Year after year it was attempted to take from private enterprise the result of one of its finest achievements, and place it in the harness of partisanship and politics, by adding it to the national civil service. These movements Mr. Orton, by the masterly presentation of the statistics of the telegraph under governmental control as collated from the archives of Europe, and by the earnest representation of the hostility of intelligent American society to the severance of the telegraph from the private industries of the nation, energetically and successfully resisted. Every such attempt was not only successfully beaten back, but public opinion so educated into the danger of permitting the telegraph to fall into political control, that the effort seems not likely soon to be renewed. The telegraph will only gravitate into the hands of government by a restricting and suspicious legislation, such as shall prevent private management from giving to it the broad

and liberal development which its character demands, or when it falls by the tricks of speculation into the management of men heedless of its character and reckless of its use.

Aside from this exceptional contest, which had but just begun before Mr. Orton's entrance upon his great office, the history of the occupation of which must be written by other hands, there were many elements requiring administrative care. Labor had to be classified and compensated on the basis of actual merit. Departments had to be organized with carefully limited responsibilities and authority. The property had to be made permanent, so that its revenues could be trusted, and the lowest tariff compatible with due regard to capital, be reached. The application of all effective devices for detecting faults, for quickening intercourse, for enlarging the capacity of the wires, for simplifying all processes of labor, were to be sought for and procured. A searching and rigorous and yet just economy had to be established. Permeating all there was needed a just recognition of the rights of labor, the quick perception of and guard against sources of danger, the appreciation of faithful service, the vigor that is born of justice.

In a limited sphere, and yet with wonderful prevision and sagacity, William M. Swain had laid down some of the basilar elements of such an administration with characteristic lucidity. Mr. Wade had taken important steps in that direction. Marshall Lefferts and others had aided in its introduction. But the field was now changed and vast. And as Mr. Orton on his election arose from his sick-bed, and, with unsteady step entered the executive room, where for ten years he has since then devoted himself with a zeal only too intense, it was not surprising that the men who had just elected him, asked each other, "Is this thin pale man, with his delicate health and active brain, equal to the trust?" The answer will be written by other hands. It will be the record of a labor which, while crowned with ample success, has more than once brought its executor face to face with death, but which, as this is being written, has brought him just beyond the fiftieth mark in the dial of his life, in rugged health, and foremost among the administrators of the great industries of the world.

In entering upon his executive work as President of the Western

Union Telegraph Company, Mr. Orton was surrounded by men of marked ability. The Board of Directors who had with so much unanimity elected him President, was composed as follows :

D. N. Barney,	B. R. McAlpine,	D. A. Watson,
Roswell S. Burrows,	E. D. Morgan,	Legrand Lockwood,
John J. Cisco,	Francis Morris,	J. D. Caton,
Ezra Cornell,	Geo. H. Mumford,	Z. C. Simmons,
W. E. Dodge,	O. H. Palmer,	R. A. Lancaster,
Alfred Gaither,	E. S. Sanford,	A. B. Cornell,
Norvin Green,	Hiram Sibley,	Marshall Lefferts,
Wilson G. Hunt,	Moses Taylor,	Edward Creighton,
George Jones,	J. H. Wade,	George Walker.
	Cambridge Livingston,	

The other executive officers were : Vice-Presidents — Hiram Sibley, Norvin Green, B. R. McAlpine; Secretary and Treasurer — O. H. Palmer; Assistant Treasurer — R. Hart Rochester; Auditor — W. H. Abel; General Superintendents — Pacific Division, James Gamble; Central Division, Anson Stager; Eastern Division, Thomas T. Eckert; Southern Division, John Van Horne.

Without attempting to enter into the history of Mr. Orton's administration, it is permissible to note a circumstance connected with its initial year which greatly aided its development and success.

Up to this period little attention had been given to electricity as a science, and the character of most of the improvements which had been proposed in connection with telegraphic appliances, except in the matter of repeating apparatus, of which various admirable methods had been introduced, were of a comparatively trifling and unscientific character. Marshall Lefferts had done much to show the value of statistics, and had laid down important ground-work for systematized and scientific telegraphy. He had even introduced some of the electric tests by which the telegraph wires afterward became so potential. But no sharply-defined methods of quantitative investigation had been introduced. The batteryman still multiplied his cells, emptied his carboys of nitric and sulphuric acid, and bathed his zincs in mercury to raise

telegraphic steam. The patient operator's left hand turned and re-turned during the long hours of the weary nights the spring of his relay to catch the erratic movements of his armature as it vibrated before the changing currents of the line.

Fortunately there arrived in New York, early in Mr. Orton's administration, Cromwell Fleetwood Varley, a well-known English electrician, whose accomplishments as a gentleman of education as well as scientist had preceded him in the frequent appearance of his name in the records of European scientific investigation. Soon after his arrival Mr. Varley naturally found his way to the executive rooms of the Western Union Telegraph Company, where he was warmly welcomed, and where he became a frequent visitor. In these visits the condition of the telegraph in Europe, the methods employed, the tests of wires to determine their conductivity, or, as now expressed, their measure of resistance, the purity of the wire on the relay and its standard resistance, and the electro-motive force and resistance in batteries, formed the groundwork of animated conversation.

It became soon evident to Mr. Orton's mind that into this broad field of important and fundamental inquiry American telegraphic management had not yet entered. He was, at the same time, thoroughly aware of the existence of such embarrassment in the current working of American wires, their irregular action, their frequent incapacity of transmission, as to give Mr. Varley's information, now communicated to him, the utmost interest and value. It resulted in the employment of Mr. Varley to investigate, in the most thorough manner, the condition of the lines of the Western Union Telegraph Company. Nothing could have been more opportune. In that appointment lay the seed of future triumph.

The report of Mr. Varley, which followed this investigation, was marvellously minute and exhaustive. It was a revelation startling enough to lead to the most vigorous efforts to reform the service. Half the wires of the American Continent were found to be practically unavailable. The best wires in the service showed a resistance above a proper standard. A popular relay was found to have a resistance equal to one hundred miles of No. 8 wire, the use of which was everywhere

choking the most important circuits. The chief value of Mr. Varley's report was, perhaps, in giving practical value to electrical knowledge. The electrician now came to estimation, and to be an important factor in American telegraphic administration.

To this report, also, may be fairly traced the beginning of a series of developments which have made the last ten years illustrious in the annals of invention. By removing the obstructions to the electric current, and reducing resistances in wires, magnets and batteries to a minimum, the possibilities of the wires were revealed in accomplishments which are still astonishing the world. The Duplex and Quadruplex machinery are great advances on old conditions, but perhaps only prophetic of more wonderful revelations yet to be made.

The visit of Mr. Varley had another valuable result. The consolidation of so many important organizations under a single administration had, unavoidably, brought together more or less discordant elements. Each Company had had its peculiar methods, ideas of management, limitations of authority, rules of order, as well as of tariffs and compensation. It was of the utmost importance that, in order to unity of administration, distinct and clearly-defined ideas of duty should be made to permeate the entire working force, so as to make conflict impossible, and work quick, certain, harmonious. It was scarcely less desirable, also, now that the value of electrical knowledge had been demonstrated, that, by some means, its attainment might be rendered easy and general, and a stimulus given to its acquisition. In the numerous executive instructions incident to such a condition, there seemed an absolute necessity for some method by which these could be placed in the hands of every man in the service, so that routine orders, conjoined to enlarged and accurate knowledge, might give sinew and unity to authority.

Under such circumstances Mr. Orton established *The Journal of the Telegraph*, with James D. Reid as editor. The first number was issued December 1, 1867, a sheet of eight pages, a copy of which was mailed to every office of the Company. Its usefulness soon became so appa-

rent that it had to be enlarged, and, as it for some time published the monthly receipts and expenses of the Company, came to have a very general circulation among the stockholders. Its clippings from the scientific journals of Europe and home papers on electric art, which soon came to be the theme of almost universal interest and attention, rendered the *Journal* widely known, and, to a certain extent, influential. Thrown open, also, as it was, to correspondence, it became not only a vehicle for executive orders, for the announcement of the opening of new offices, and of changes in the tariff, but, imperceptibly, yet markedly, the means of infusing a corps d' esprit and sense of companionship throughout the entire service.

Of this journal Frederick J. Grace, a man of fine mental and moral qualities, became editor May 1, 1872, under whom it became more markedly scientific, and published, in almost every number, illustrated articles descriptive of home and foreign invention. Among its prominent correspondents were George B. Prescott, Frank L. Pope, C. H. Haskins, A. S. Brown, T. A. Edison and F. W. Jones. The result of this popular presentation of electrical knowledge has been such that whereas in 1868 the galvanometer as a telegraphic appliance was almost wholly unknown, no office of any note is now without several of them; and the knowledge of electrical resistances, the detection of faults, the measure of electro-motive forces and cognate electric knowledge, is not only general, but of a high order. The American Electrical Society, of which Gen. Anson Stager is President, is a legitimate outgrowth of this advanced knowledge.

It is, perhaps, not too much to say, also, that, as a social and moral power, *The Journal of the Telegraph* has had much to do with the growth of the Telegraphers' Mutual Benefit Association, which was organized November, 1867, under the active agency of Mr. David R. Downer of New York, and which has, during an existence of ten years, paid over to the heirs of its deceased members nearly \$100,000, thus mitigating and illuminating the darkness which follows death. The present editor of the *Journal* is Mr. James N. Ashley, well known as for many years the able editor of *The Telegrapher*, and who, by his experience as a journalist, readiness and tact as a writer, as well as practical

knowledge of, and connection with the telegraphic service, is still more developing its capabilities for enlarged usefulness. No act of Mr. Orton has more completely justified itself than the establishment of *The Journal of the Telegraph*.

In closing a chapter necessarily so personal, and without any fear that the historian of the past ten years will fail to recognize the character of the work accomplished, to one result only of Mr. Orton's administration thus far justice seems to demand a present reference.

During the ten years which ended June 30, 1877, a little more than \$16,000,000 have been appropriated out of the earnings of the Company and invested in new property. During the same period, at least \$4,000,000 have been expended by railway companies, which have contributed a portion of the cost of new lines, the remaining cost of which constitutes a part of the \$16,000,000 before mentioned. Thus it appears that more than \$20,000,000 have been added to whatever was the value of the property of the Western Union Company ten years ago, while its bonded debt, although it has undergone some changes, stands at about the same figure now as then.

In addition to this vast contribution of new property, nearly every mile of telegraph line owned by the Western Union Company ten years ago, has since been thoroughly reconstructed, and in all cases made better than when it was first erected. The entire cost of all of this class of work has been charged to profit and loss, as a part of the current expenses of the Company. The record is as brilliant as extraordinary.

In his official capacity Mr. Orton is accessible to, and encourages intercourse with his subordinates. The sense of his utter justice is universal. He is a member of the Telegraphers' Mutual Benevolent Association, and has established, throughout the entire realm of his administration, the conviction of his sympathy with every movement to elevate the telegraphic service of the country.

Mr. Orton's policy as a telegraphic manager may be thus formulated:

1. The most rigid assertion of the confidential character of every message intrusted to the telegraph for transmission.
2. That a tariff to be just, must be just to capital as well as unexact-

ing to the public, and that its standards should be few and thoroughly known and well defined.

3. That the acceptability of the telegraphic service depends more on its reliability and promptitude than its cost.

4. That the substantial character and perfection of all outside structures is a prime necessity for securing a steady revenue, a low tariff, and an acceptable service.

5. That all mechanism which reduces labor, simplifies processes, or enlarges the capacity of a wire without complication or embarrassing machinery, is to be preferred.

6. That the power of a company depends, financially, on an ample reserve, and that dividends should be largely within the capacity to earn them.

7. That governmental assumption of the telegraph as a part of the national civil service would be an evil to government and people.

Of Mr. Orton personally, it is not competent nor is it permissible to speak with the freedom with which he will be analyzed when his work is ended. Yet when a public man chooses to illustrate himself, however unconsciously, the picture may be at least, looked at, and, to a certain extent, handed around. Standing one day in the presence of a good lady whose motherly observation detected the drag of labor in his eye, she remonstrated with him against his excessive devotion to business.

"Well," replied Mr. Orton, "what am I to do, when you fire off a cannon-ball, you know, it has to go."

Mr. Orton in that answer, and especially in the explosive emphasis put into the terminal word, has saved all difficulty in describing him, if, indeed, his likeness had not sufficiently done so. His leading quality is force, which, like a cannon-ball, sometimes demonstrates itself not only by hitting the bull's eye, but by the splinters at the target. Yet, as years accumulate, the splinters are fewer, the forcefulness less volcanic, the power more effective by its conservatism and reserve. This shows itself in increased capacity of labor, and the growth of a kind of gothic humor which irradiates his work and indicates increasing restfulness and health.

On July 13, 1869, Mr. Sibley and Mr. McAlpine resigned their positions as Vice-Presidents, when Mr. A. B. Cornell, so well known in early telegraphic history, and Mr. George Walker, well known in the literature of finance, were unanimously elected to their places. Mr. Cornell brought to his new post the practical experience of a long and able service, and was perhaps the first practical operator who had been so honored, except as officers of lines comparatively obscure. Mr. Walker brought to his executive work much public experience, scholarly erudition, and the finest personal qualities. He had practiced law in Springfield for fifteen years, had served in both branches of the Massachusetts State Legislature, had served as Bank Commissioner, and had been president of one of the largest and most influential of the Massachusetts State banks. At this time, also, Sir Hugh Allan, of Montreal, so well known in connection with Canadian enterprise, entered the Board of Directors.

On the receipt of Mr. Sibley's resignation, July 14, 1869, the following resolution was unanimously adopted :

*“ Resolved, That in accepting the resignation of Mr. Sibley, we do so with profound regret That his long, useful and arduous services as one of the Executive officers of the Company, and his permanent and honorable identification with its early organization and history, his energy and ability and foresight in the promotion of its interests, deepens the regret we all feel that impaired health and the absolute need of cessation from active business, require this action on his part. That he justly deserves and we heartily and cheerfully tender to him our most sincere good wishes for his future happiness and welfare.”*

This practically terminated Mr. Sibley's connection with the telegraph, in which, so far, he had occupied so conspicuous a place. His health was apparently broken. He needed removal from all excitement, and sought rest amid the quietness and repose of a protracted European residence. This he could afford to do. He had amassed great wealth and had carved for himself a name among America's most active, successful, and enterprising citizens. Like Mr. Wade, however, he had overtaken nature, and had to bear her revenge. Wisely, therefore, cutting himself aloof from all his ordinary engagements, and giving up

the management of his large estate to a son-in-law in whom he greatly trusted, he set sail for Europe, abandoned himself to the enjoyment of Swiss and Italian scenery, interested himself in European industries, and, by a thorough diversion of his mind from all former associations, secured slow but steadily returning convalescence.

On his return, with rejuvenated health, he speedily interested himself in the educational institutions of the State of New York. Attracted by the work of his old friend, Ezra Cornell, he erected and endowed the Sibley College of Mechanic Arts, which forms one of the prominent features of Cornell University. This college he stocked with the finest tools of all kinds known to mechanic art from all parts of the world, and provided for it the most competent teachers. Young men are taught therein the drawing, in perspective, of tools to be made; the making of patterns; forging, casting, grinding, polishing, and all the processes by which the finest mechanical work is executed. It has already been the parent of seven similar institutions. Mr. Sibley has also erected on the grounds of the Rochester University, at a cost of \$117,000, a noble building called Sibley Hall, for the University Library and Museum. In these institutions he has left permanent monuments of a citizen consecrating his wealth to the benefit of his adopted State. Mr. Sibley is the owner of nineteen farms in New York, Michigan and Illinois, and personally directs the largest farm in the State of New York, situated in Cayuga county, and comprising 3,000 acres. In Illinois a farm of 40,000 acres absorbs quarter of a million of dollars in its improvement and cultivation. Enumeration of industries under his direction would be endless. Few lives are more crowded with labor.

Mr. Sibley was born at North Adams, Berkshire county, Mass., February 6, 1807, and, hale and hearty, full of life and energy, enjoys the activity which his immense estate demands. His residence is in Rochester, N. Y., where in a home of great comfort and amplitude, full of the souvenirs of European art, and surrounded with grounds of great beauty, he has prepared a resting place for his maturer years.



*O. H. Palmer*

## CHAPTER XLI.

## THE WESTERN UNION TELEGRAPH COMPANY.

## THE OPERATORS' STRIKE.

ON December 8, 1869, Mr. Orton, in company with Cyrus W. Field, left New York on the Cunard steamer Scotia for Europe. Exhausted by the pressure of service, at that period peculiarly exacting, and with interests abroad which required attention, his trip was both executive and sanitary. In his absence the management of the Company officially devolved on the recently-elected Vice-Presidents A. B. Cornell and George Walker. It was, however, on Judge O. H. Palmer, the Secretary and Treasurer, who by reason of long connection with the executive department, and because of whose intimate knowledge of the Company's affairs, that, with the cordial assent and at the request of Messrs. Cornell and Walker, a large share of the responsibilities of executive administration fell. The affairs of the Company were prosperous and assuring. Up to the dawn of 1870, labor in all departments had been performed not only without murmur, but with devotion and often with heroism.

With the light of the New Year's morning, however, came the muttering of a storm. Like all great tempests in America, it had its origin in the west. The curling dust that introduced the telegraph strike of 1870, rose in San Francisco. It rapidly swept eastward through Chicago and New York and exhausted itself in Boston. It was sufficiently desolating and dangerous to be memorable.

In 1866 a number of operators in New York organized themselves into an association styled THE TELEGRAPHERS' PROTECTIVE LEAGUE. It was the outgrowth of no existing grievance. Labor organizations were

then popular. They had their charm to many minds, chiefly in the idea of fellowship into which entered as an element more or less dimly seen, the protection of labor. The self assertion in the presence of capital which it implied was attractive. It was the claim of manliness — the consciousness of and the assertion of rights. In all this there was fascination. The spirit of the times in this direction was eminently stimulating and expressive. At the close of the year 1869, the League embraced within its membership a large number of the effective force in the chief offices of the Western Union Telegraph Company. The head-quarters of the League was at New York, with branches in other large cities. In becoming a member of the League, the following oath was required to be taken.

*Oath of the Telegraphic Protective League.*

You do solemnly swear, in the presence of Almighty God and these witnesses, that you will make common cause with the members of the League, that forsaking your allegiance to corporations and individuals, you will, if necessity requires it, place your time and services at the disposal of the officers of the Telegraphic League, and reveal neither the names of officers nor members, nor the purposes of this society, so help you God.

The following pledge was required after taking the oath :

I, A. B., do hereby acknowledge that having become a voluntary member of the Telegraphic Protective League, and being made cognizant with its objects and intentions, I have bound myself by a solemn oath to bear true allegiance to said League; and I do hereby pledge my sacred honor that I will aid in whatever manner may be required, the advancement and protection of its members, etc.

SECTION 3, Article 9 of the Constitution to which consenting signatures were required, provides :

“ It shall be the duty of every member of the League to perform his whole duty to his employer, *provided he does not thereby conflict with a duly authorized order from the chief operator of the circuit to which he belongs.*”

SECTION 5. No member shall be at liberty to leave his regular duties to operate in any other town or city under orders from any telegraph company, without having first received permission from the chief operator.”

The language and the assumption of this oath were sufficiently startling. As the Hon. Ezra Cornell remarked in a terse letter on the subject to the *New York Tribune*, "Here are obligations, oaths and pledges which conflict with an operator's faithful performance of his duty, and which cannot be complied with by the operators of any telegraphic company without destroying all the legal and legitimate authority of such a company over its business."

For several months prior to the opening of the year 1870, it was known that means had been employed to foment discontent in the telegraphic operating ranks. The League was numerous and strong. It was only natural that some of the restless spirits which controlled it should desire an opportunity to test its power. Its existence, however, was very faithfully concealed from those whom it was chiefly to affect. Even to those to whom some knowledge of its organization came, no distinct apprehensions were aroused of the possibility of a resort to extreme measures. It was regarded in the main as one of the ordinary features of the times, springing out of a community of labor stimulated by active opposition. The possibility of trouble from such a source had been, it seems, hinted at to President Orton during a visit to the Pacific coast a few weeks prior to his departure for England, and which probably grew out of the report of the strike on the Franklin lines. Yet he knew nothing which impressed him with the sense of immediate danger, or of the actual extent of a combination which, under more competent leadership, might have been, if not irresistible, at least widely destructive to the interests of the Company.

One of the active stimulants of the strike of 1870, was, undoubtedly, the success of one on the line of the Franklin Telegraph Company a few months previous. It was of a mild character but gave encouragement to attempt one on a larger scale. For this all arrangements were duly made, and, with the train carefully laid, it only waited friction to kindle the lighting match. This was accomplished among the compliments of the New Year's morning at San Francisco, and an announcement made by a cypher message to the eastern cities that because of the inauguration of a general reduction of salaries on the Pacific coast, the members of the League in San Francisco and Sacramento had stopped

work. To the executive officers at New York it was like the burst of thunder in a cloudless sky, and at once awakened the gravest apprehensions.

Incorrect, so far as the designs of the Company were concerned, as the announcement proved to be, it spread through the offices from ocean to ocean amid the wildest excitement. With characteristic impetuosity, the members of the League at Omaha, Chicago, St. Louis and Cincinnati, including a very large proportion of the effective force, left the service on the following day. A number of other offices followed the example. No explanations were asked. None were given. No attempt was made to inform the Company or to give opportunity for the redress of any real or fancied wrong.

On the morning of January 3d, the action of the Western offices was communicated to the Head-center of the League at New York. It caused intense excitement. A meeting was at once called. It was held the same evening at 290 Grand street, at the hall of the Knights of Pythias, which was crowded by an excited and anxious auditory. After a statement of the circumstances and the delivery of some animated addresses, a committee was appointed, who were instructed to wait on the officers of the Western Union Telegraph Company and present the following demands :

1. That no reduction of salaries be made at San Francisco, and that any operators dismissed there be at once re-instated.
2. That in case of refusal the Grand Chief Operator order all members of the organization to aid the brethren in San Francisco in the only way possible, by immediately suspending work.

The committee thus appointed and instructed, were W. W. Burhans, C. J. Ryan and J. M. Peters. These gentlemen waited the following morning on the officers of the Company, who received them with politeness and respect. The action of the League was then stated, and the Company's answer requested.

Meanwhile upon a request for ample and exact information from San Francisco, the following statement was received from Mr. George H. Mumford, the agent of the Company on the Pacific coast, and which Judge Palmer, who had been requested by Vice-Presidents Walker and

Cornell to assume the direction of matters in the emergency which had thus burst upon them, read to the committee :

“About the middle of December, 1869, Superintendent Gamble determined to adjust the compensation of the employees in the office at San Francisco according to the value of their services. This had been his usual practice as the year approached its close. In doing this his design was to favor and encourage fidelity. To two operators whose services were not essential, but whom he desired to retain, he gave notice that their salaries would, on January 1, be reduced from \$120 to \$115 per month. To a third, he gave notice that because of industry and fidelity, his salary would be raised, January 1, from \$100 to \$120 per month. On learning of these notices the operating force of the San Francisco office held a meeting, at which it was agreed to prepare a schedule of salaries for the entire staff of the office, and demand its adoption. This schedule was submitted to Mr. Gamble, who referred it to Mr. Mumford. Mr. Mumford so far yielded to the demand thus made, as to give assurance that no salaries would be reduced, and that a portion of the increase proposed by the schedule, would be allowed. He, however, notified the operators that as it was well known to them that the business was very light, and that the staff of the office was in excess of the work to be done, two men would have to be dropped from the pay-roll, which was accordingly done. One operator who took umbrage because he had been allowed an increase of \$10 a month instead of \$20 which he desired, resigned. No general reduction of salaries had, at any time, been contemplated.”

This statement showed that, after the strike had been actually begun, and had gone too far to be readily retracted, Mr. Mumford had, upon the very application of the originators, sagaciously removed all grounds on which it could secure intelligent public sympathy, or which could give power of cohesion among the strikers themselves.

Judge Palmer, having read this statement to the committee, assured them that the design charged upon the Company of a general reduction of salaries was a fiction, and that in reference to Mr. Mumford's action in reducing the office force, it was an act of prudent official duty which the Company approved. To the demand to restore the men whose services had been discontinued, he assured them that the Company would not permit any man or combination of men to dictate who or how many persons should be employed for the transaction of its bus-

iness, and that none of the officers of the Company would surrender the administration of its affairs upon any such demand. This closed the interview

The following day the committee, having reported the evening previous to another large assembly, presented a written demand for the restoration of the man who had been dismissed, and that all men who had, at other places left duty, be reinstated at the same salaries, lost time alone deducted. This done, it was announced by the committee that the difficulty could at once be settled. An immediate reply was demanded.

To this Judge Palmer replied that he had already stated that he knew of no grievances which called for his attention or required redress. As for the operators who had voluntarily left the Company's employ, he was without proper information, and declined to act without it. He assured them that when such questions were presented in the usual way they would be considered in the same just and liberal spirit which the Company had always manifested in its dealings with its employees.

"I am satisfied," he added, "that you have been grossly imposed upon, that your alleged grievance is without foundation, and I am surprised that after the positive assurance given by me, that your organization did not at once concede the fact and resent the imposition practiced upon you."

On the return of the committee, the Grand Chief Operator immediately issued his manifesto ordering resistance. "We accept the challenge," he said, "cheerfully." "We control all the important points in the United States. We only ask of our brother operators outside of the organization, not to come in to fill our places. We are determined that we will be men even while working for a gigantic corporation."

Meanwhile the movement greatly agitated the country. The activity and loyalty of the Company's managers, however, prevented, with a single exception, the complete stoppage of business at any point. The exception was at Troy, N. Y. There the manager joined his staff, and closed the office. It was re-opened and re-manned the same day. As the facts meanwhile became known to the public through an admirable document addressed to them by the officers of the Company, universal

indignation was aroused. In charity some were willing to charge the movement to young blood, and to fidelity to an oath, the full significance of which had not been appreciated. The movement itself had no basis. Instead of a contest against a definite wrong, it took the form of a distinct demand to invest labor with the rights of control and administration. Mad, however, as the proposition was, its assertion was full of danger. Practically the intercourse of the continent by telegraph, on which innumerable interests had already learned to depend, was put in peril, without a single justifying act.

In an address to the public, in which the whole case was fully stated and signed by the officers of the Company, the following excerpt exhibits the judicial kindness of the Company's attitude, and the temperate language it employed in reference thereto:

"The action of the operators has been caused by mistake, and they have permitted themselves to be imposed upon by undeserving men, who had no real grievances to complain of. The Company can only account for such actions on the part of an intelligent body of men, and many of whom have been for years in its service under the most cordial relations, by the fact that they seem to have surrendered their individual liberty and the right of private judgment, to become the fractional instruments of an irresponsible body. Of the existence and purposes of the Telegraphers' Protective League, the officers of the Company had no knowledge previous to the present disturbance. Fortunately for all concerned, enough loyal men remain to command the situation, and the numbers are increasing. Things will speedily right themselves, and the justice of the Company's position will be vindicated."

O. H. PALMER, *Treasurer.*

ALONZO B. CORNELL, }  
GEORGE WALKER, } *Vice-Presidents.*

The morning of January 5th was very cold. A keen north wind sharpened upon a thermometer which marked ten below zero, shrieked round the central office of the Western Union Telegraph Company at the corner of Liberty street and Broadway. A patrol of strikers had collected there, who had been appointed to meet any operators coming to work and to induce them to join the strike. It was a trial of manly courage to face that bitter air, which, like that of Moscow,

"cut like razors into the blood." But these brave young fellows, and no better men than most of them ever served a Company, smote their bosoms to stir the laggard blood, and attacked their comrades with something of the vigor of the blast. There was no sham with them, although it was thought that now and then, as the wind gave an extra howl, they looked wistfully through the big glass doors at the warm stove which glowed within and wished "the cruel war was over." At other corners similar patrols were stationed.

At New York, on the afternoon of January 4th, sixty-four operators, including seven lady operators, quitted their posts. Almost the entire force at Philadelphia, Baltimore, Washington, Pittsburgh, Albany, Troy, Boston, Poughkeepsie, and other places had followed suit. A strong feeling of comrade fidelity and fellowship so easily and naturally cultivated in large cities, made the movement therein general. The offices were only prevented from stoppage by the loyalty of the managers. In New York, Managers Downer, Dolan and Applebaugh, eight printing operators, and four others who had not joined the League, and a new and full lady force, which Miss Lizzie H. Snow, Manager of the ladies' department, in a few hours gathered around her, constituted the office force. Some of these remained on duty forty-eight hours without sleep. Gen. Eckert, the General Superintendent, remained throughout, and energetically and rapidly organized a new force. Captain Macintosh, with accustomed fidelity, stood by and provided all hands with food day and night, until the service was restored. The Commercial News Department had its whole service performed by Superintendent E. F. Ludwig and his assistant D. J. Ludwig, without other help. Such was the energy shown, that by midnight every file was cleared and even the newspapers had received their ordinary supply of news. Many messages offered by the public, had, however, been declined.

At other places equal loyalty was shown. S. C. Jones, at Albany; Tinker, at Washington; Wilson, at Baltimore; Gilson, at Pittsburgh; Armstrong, at Cincinnati; Nat. Hucker, at Buffalo; Milliken, at Boston; Merrihew, at Philadelphia; Superintendents Wilson, Hibbard, Wallack, Wright, Williams, Rowe, Bates, Brenner, Meriwether, Compton,

Clinch, Chandler, Gifford, Wood, Dowell, Trabue, Baker, Shepard, Compton, Flanery, all stood faithfully by the Company. The south, generally remained with its ranks unbroken. In Col. Clowry's district, outside of St. Louis, only one man left his post.

At the very height of the excitement, the League committee, dizzy probably with the storm which had been created, issued a circular so imprudent and weak as at once to cause the withdrawal of all outside sympathy. It was an acrid and narrow criticism of the policy of the Western Union Company in the matter of tariffs, dividends, watered stock, and treatment of opposing lines, utterly uncalled for, and damaging to the issuers. It caused the whole movement to be regarded as one carried on to aid opposing Companies and no longer one to redress a wrong. Under such circumstances public sympathy soon disappeared.

Just at this juncture Judge Palmer issued an address of which the following is a condensation.

*"To all Officers and Operators of the Western Union Telegraph Company :*

"We are happy to announce that the most inexcusable and unjustifiable conspiracy ever attempted upon an extensive public business has failed, that the crisis is passed, and business is resuming its accustomed course. We sincerely regret to learn that some of our trusted employees have assumed secret obligations under which they have considered themselves bound to violate their obligations with us, and to aid in measures aimed at the prosperity of this Company, with which they have so long maintained relations of mutual respect, good will and confidence. That such men should have taken upon themselves obligations of such bad faith, is only to be explained by the supposition that their full purpose was not appreciated.

"It is now well known that the alleged design of a general reduction of wages on which this *emeute* was based, was entirely unfounded. The salaries at San Francisco were graded partly as suggested by the operators themselves, on a new scale, by which some were increased, but none reduced. The force of the office at San Francisco being too large for the business, two men were relieved. One of these it afterward appeared, was Secretary of the Telegraphers' Protective League, an organization at the time unknown, and whose misrepresentations seem to have furnished the occasion for the strike.

"The officers desire to express their hearty gratitude to those who have remained loyal to duty, and to assure them that their manly and

honorable conduct will not be forgotten. To those who have been misled it is asked 'Do you consider yourselves irrevocably bound by obligations which, by the common sense of mankind are everywhere pronounced as without binding force either in honor or in conscience! Such of you as are ready to renounce them, and return to the employment you have left, will be received with the same feeling which has always hitherto been entertained for you, and be protected in the quiet and peaceable performance of your duties.'

"O. H. PALMER, *Treasurer.*"

Thus firmly and yet kindly, did Judge Palmer and the officers of the Company meet this great emergency, and in which they were sustained by public sentiment and the unanimous voice of the public press.

In ten days every gap was filled, and a large number abjured further allegiance to the League and returned to duty. That there was great and manifest peril in the treatment of this telegraphic *emeute* was evident. The Company could not yield an inch without dishonor. That it did not yield, but met the challenge with dignity, resolution, kindness and utter frankness and respect, contributed vastly to its reputation throughout the nation. It is not detracting from the merit of any officer to say that Judge Palmer's management of the Company in these trying circumstances was, by its courage, dignity, patience and discretion, worthy of everlasting remembrance. Nor is there less credit due to General Superintendents General Thomas T. Eckert, at New York; General Stager, at Chicago; John Van Horne, at Louisville, Ky., and James Gamble, at San Francisco, who by their energy and discretion speedily restored the lines to their normal condition.

Judge Palmer had the advantage, during this perilous period, of the cautious and wise advice of the counselor of the Company, Grosvenor P. Lowrey, Esq., under whose careful scrutiny the various papers emanating from the Company, which proved so powerful in arresting public sympathy, were issued. Vice-Presidents Cornell and Walker, also, although deferring to the discretion and ability of Judge Palmer to hold the helm and pilot the Company through the storm, did much by their presence and support to sustain and give vigor to the measures which were adopted.



WESTERN UNION TELEGRAPH CO.

NEW YORK.

## CHAPTER XLII.

## THE WESTERN UNION TELEGRAPH COMPANY.

## HEAD-QUARTERS.

JUDGE PALMER, after an able service of several years, resigned his post as Secretary and Treasurer October, 1871, to enter upon the more executive duties of Vice-President, to which he had been elected. The Assistant Treasurer, R. Hart Rochester, who had been appointed to that position July 1, 1866, and had shown, in connection with its exacting work, much ability, executive quickness and capacity of labor, was chosen his successor. Six years of able service have amply confirmed the wisdom of the appointment.

Mr. Rochester belongs to the pioneer family from whom Rochester, N. Y., derives its name. He was born in Gates, Monroe Co., N. Y., August 17, 1839, and entered the service of the Western Union Telegraph Company April 1, 1865. He is a man of liberal, though partly self-acquired education, of clear and rapid thought, of somewhat brusque directness, of unquestioned integrity, and of prompt, decisive and able judgment.

In the management of the treasury department Mr. Rochester has six assistants. Thirty years ago the post was one of mild honor, requiring the occasional service of a member of the Board, who glowed benignantly over a deposit of a thousand dollars per month, and who sometimes was called to supply a treasury deficit by a draft from his private purse. Now the monthly receipts average \$1,000,000, and the number of daily remittances, by express and mail, an average of one hundred. Of this large income about one-sixth is the product of fifteen offices in the chief cities of the Union, whose managers make daily

deposits to the credit of the Treasurer in accredited local banks, which are announced by telegraph and confirmed by postal card from the officers of the bank. These deposits average \$6,000 per day. The remittances by express and mail from the smaller telegraph stations exceed \$20,000 per day, the packages containing them averaging



R. H. ROCHESTER.

2,700 per month. Besides these, remittances from railroad and transportation companies in settlement of current accounts, dues for rents, amounts received from superintendents for the sale of old material, payments for the United States Signal Service, the monthly dues of the various Press associations, which alone aggregate \$350,000 per an-

num, and from dividends on stock owned by the Company, swell the total receipts to a monthly average of \$1,000,000. In addition to these, also, is to be added the large and growing business of the Money Transfer Service, which, during 1876-7, amounted to \$2,464,172.82, the number of transfers having been 38,669. The system upon which all this transfer of money from the 7,500 offices of the Company is accomplished, is so exact that losses are exceedingly exceptional and rare. Defalcation is prevented by a close and watchful limitation of the amount on hand and the prompt audit of accounts. The losses by defalcation during the past ten years have been about one-twentieth of one per cent. Bonds are required from all persons holding fiduciary trusts.

The disbursements, except for local executive salaries and dividends, are made upon the order of the President, or by resolution of the Board of Directors or Executive Committee, or by warrant of the Auditor. The dividends of sixteen companies, whose lines have been leased at certain fixed percentages on capital stock, are paid to 1,966 stockholders. Quarterly dividends are also paid to about 1,200 stockholders of the Western Union, and to 200 of the Gold and Stock Telegraph Companies, of both of which Mr. Rochester is Treasurer. On the 15th of each month, also, requisitions from the General Superintendents for the means of prosecuting their work are paid, after careful examination and approval, by the President, and on the audit of the electrician and auditor. The whole system of finances is under the supervision of a committee, appointed annually by the Board of Directors.

The Money Transfer Service of the Western Union Telegraph Company, under the direction of the Treasurer, is increasing rapidly in volume and efficiency. The amounts accepted for transfer, that is, deposited at one office to be paid at another, range from one to one thousand dollars. On sums less than twenty-five dollars the charge is twenty-five cents; above that amount, one per cent. A charge is also made for two service messages. The directions for identifying payees are clear and strict. This service, which meets a vast demand from parties caught in unexpected conditions of loss, or embarrassment, or suffering, in the numerous exigencies of a people so much "on wing," is one of the greatest boons of our modern civilization.

One of the men at one time most widely known in connection with the fiscal affairs of the New York office of the Western Union Telegraph Company was John Horner, the local cashier. He commenced his telegraph career in the Philadelphia office of the Magnetic Telegraph Company in 1847, with a salary of \$500 per annum. He was a man of fine presence, methodical, careful, courteous, at his post early and late. It was a rare thing to enter the office door at any hour without seeing his bald head shining above his courteous, watchful and welcoming face. His punctuality and good sense made him the convenient agent for many purposes. He became a general clearing-house

for telegraph men all over the country, who kept private cash accounts with him. Before telegraph stocks were placed on the lists of the Stock Exchange, Mr. Horner bought and sold large amounts of Western Union stock on commission. By fortunate ventures of his own he became rich. He was a useful, careful and faithful officer. He died September 10, 1872. The cashier of the New York office is now Mr. Henry H. Ward, formerly Secretary and Treasurer of the Gold and Stock Telegraph Company, whose long experience and high character eminently fit him for his responsible position.

#### THE AUDITOR.

In some important respects the department of audit is the one on which the executive management of the telegraph has largely depended for the cue of its administration. Nothing has been so safe a guide as the log of statistics. When, therefore, the business in 1866 began to assume national dimensions, the office of auditor became one of prime importance.

The auditing department of the Western Union Telegraph Company was first fully organized as an independent bureau under William H. Abel, in 1867. Isaac R. Elwood had, indeed, a system of accounts which suited a period in which, to a large extent, he was the actual manager and responsible head of the Company's affairs. His successor, Judge O. H. Palmer, as the service enlarged under his hands, carried this still farther, and began the important work of carefully classified labor. In accomplishing this he secured the appointment of Mr. Edward Chapman, who was an accomplished accountant, as Auditor, with a clerical force under him, as a branch of his own department and under his orders. The attention, also, of Director B. R. McAlpine and Assistant General Superintendent George W. Balch, both of whom were men of acumen and ability, was directed to the more careful examination of office reports. The result of the inquiries of these gentlemen led to instructions issued to District Superintendents to examine and have corrected all reports from offices within their jurisdiction, and to forward them thus audited and corrected to the Auditor. This greatly reduced the labor and increased the usefulness of the Auditor's depart-

ment, secured the promptitude of settlements, and stimulated and enforced fidelity. About the same time, also, George H. Smith, now General Superintendent of the Lake Superior and Mississippi Railroad Company, was made superintendent of an independent department for the examination of free messages and message checks, in which a vigorous and thorough comparison of check reports, and the extent of the free service first showed an effective audit. This involved vast labor. Every message, whether paid, collect or free, was followed from its reception to its delivery. This service was performed by a corps of assistants, chiefly young women, selected for their fidelity, skill and industry, and by whom the service is still maintained.

In 1868 Mr. Chapman, whose advanced age unfitted him for the increasingly exacting nature of the service, retired, and Mr. William H. Abel, who succeeded James Eddy as Secretary and Treasurer of the American Telegraph Company, was appointed his successor. The Auditor and his department were thereupon made distinct and independent. Mr. Abel was entitled to this confidence. He was familiar with the service, had a clear, discriminating judgment, was exact, methodical, energetic. After an able service, however, of several years he was compelled to seek by foreign travel restoration of his broken health, when John B. Van Every, his chief assistant, on June 17, 1874, was appointed Auditor in his stead.

Mr. John B. Van Every, the present Auditor, was born in Rochester, N. Y., July 30, 1839, and entered the service of the Western Union Telegraph Company June 1, 1864, as assistant to Mr. Chapman. Many of the methods by which, both under Mr. Chapman and Mr. Abel, the keeping of the records were simplified, are traceable to him, and, as early as 1871, much of the statistical labor of the department demanded by the officers of the Company devolved on him. He became practically Auditor in October, 1872, when Mr. Abel first felt compelled to suspend his work, although he was not officially recognized until June 17, 1874. During the intervening period he underwent a test of his quality which rendered his appointment not only a mark of honor, but an acknowledgment of his capacity.

Of the same age as Treasurer Rochester, Mr. Van Every possesses

many qualities in common with his able confrere, has more of the suaviter in modo, is, perhaps, more cautious and deliberative in his judgments, but has infused into a department numbering fifty-two persons an order, a division of labor, a certain smoothness and vigor of routine which has made it one of the finest and most effective specimens of the accounting bureaus of the country. When it is stated that it requires only a single month to collate, audit and settle the reports of over 7,500 offices, situate between Cape Breton and Vancouver's Island, and from Cuba to Canada, the truth of the assertion finds its ample vindication.

The staff of the Auditor's department consists of fifty-two persons, twenty-five of whom are ladies. These ladies, who occupy commodious and agreeable apartments, devote themselves exclusively to the examination of what are styled "check reports." These are the records sent monthly by each office, stating how many messages were received, sent, and where paid, and how much, during the previous month. To be correct, the "received" of all offices should compare with the combined "sent," and the charge or check of all offices should correspond with the receipts. The free messages are under the inspection of ten clerks, who make a careful return of the use made of all free privileges, and their amount at ordinary tariff rates. The cable service with Europe is under the audit of five clerks. The general bookkeeping with superintendents, railroad companies, leased lines, numerous contracts and the general accounts of the Company are under the care of thirteen clerks, some of whom are men of much ability and experience. Benjamin F. Ely, William Ferguson, Thomas P. Bladen and other well-known names are to be found serving in this important department.

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On January 12, 1875, General Thomas T. Eckert, General Superintendent of the Eastern Division of the Western Union Telegraph Company's lines, accepted a tender of the presidency of the Atlantic and Pacific Telegraph Company, and at once resigned. His duties were assigned to George H. Mumford, who was called in from the Pacific coast to be one of the Vice-Presidents of the Company, and

who thus united in himself the offices of Vice-President, Secretary and General Superintendent. Mr. Mumford was young, able, ambitious, fond of power, and yet of quiet, graceful, and apparently unassertive manners. He was capable of much and varied labor, was a man of fine literary capacity and taste, of excellent judgment, and of a clear, patient and practical understanding. He was regarded by his friends as a man of high promise. But death soon checked his work. He died in Paris July 25, 1875.

Mr. Mumford's death was the occasion of much surprise and regret. He was especially helpful to the President, comprehending easily, and carrying out exactly, and with refined discreetness, his orders and policy.

On the announcement of the event a memorial meeting was called to be held in the room his death had made vacant. It was held August 10, was largely attended, and was presided over by President Orton.



GEORGE H. MUMFORD.

In his introductory remarks on that occasion Mr. Orton said with much evident emotion :

"I have had occasion many times in my life both in business and in social circles to mourn the loss of near and dear friends. Excepting only in the case of my brothers I have had no loss that came nearer to my heart than this. Mr. Mumford had been to me all that a son could be, all that a brother could be, all that any friend could

be, in addition to being, in his official position, a most faithful, attentive and devoted assistant.

"Outside also, of the family circle and of friends and relatives,

outside of the circle around me, all of whom have sustained business relations with Mr. Mumford, there is a very large constituency of thinking, intelligent men whose business intercourse with him had taught them to appreciate his qualities and become warmly attached to him for his many private virtues.

"It is, therefore, especially gratifying to me that this meeting has been convened to make some fitting expression of the common sorrow we feel on the occasion of our common loss."

HON. A. B. CORNELL, after a few well chosen words, offered a series of resolutions felicitously expressive of Mr. Mumford's worth and the sorrow occasioned by his death. The following touching his telegraphic relations is taken from the series :

WHEREAS, It has pleased our Heavenly Father, in His infinite wisdom, to remove from this life, suddenly, in a foreign land, our late cherished colleague, George Hart Mumford, one of the Vice-Presidents of the Western Union Telegraph Company, who, by his manly qualities, had won the sincere respect and affectionate regard of his official associates

*Resolved*, That by Mr. Mumford's death our company has lost an officer of inestimable value; one whose superb intelligence, improved by a careful and thorough education, and an enthusiastic devotion to the business in all of its varied details, and supplemented by an unimpeachable integrity, genial courtesy, and rare dignity of character, fitted him to discharge all official duties with wisdom and discretion remarkable for one of his age."

The resolutions which were lengthy and eloquent having been read

JUDGE O. H. PALMER said : \* \* \*

Mr. Mumford was to me and my family as a son. I have known him from his birth nearly as well as I know my own children, and only to love him as I love them. I speak, of course, with partiality, but with the experience of years and an intimate knowledge of the subject, and I am sincere in saying that in all my experience I never knew a more perfect character in all the relations of life. His untimely death is a great loss to the business in which he was engaged, and in which he labored with so much pride and zeal. Society also suffers when a man in the prime of life, so well educated, with a mind so well balanced, so supported by moral and religious character, without stain and without reproach, is thus suddenly stricken down.

DR. NORVIN GREEN said :

I must bear testimony to the great loss this company has sustained in Mr. Mumford's death. We feel, however, most keenly, and most mourn his loss as an associate and companion. He was a man of pure and guileless life, who never disappointed the just expectations of friendship. In business Mr. Mumford had more and varied capacities than any man with whom I have ever been brought in contact. Calm, self-possessed, clear headed, discriminating, his conclusions were always thoughtful and his action deliberate.

With a wide range of education, with a good knowledge of the law, he combined an excellent judgment and a creditable knowledge of practical telegraphy. Though modest and unassuming, he had self-reliance enough to take responsibility when necessary, and force enough to carry his conclusions into execution.

Mr. Mumford had strong attachments, and it is as a friend that we most deeply mourn his loss, and which has brought us together to-day to pay the sad tribute which death has left to friendship.

HON. GEORGE WALKER said :

I do not think there can be many persons outside of the circles of his relations and official associates, to whom his death is more truly a personal loss than to me. When I came into the service of this company, Mr. Mumford was in California, in charge of the large and onerous share of our business pertaining to the Pacific coast. I was greatly impressed in his correspondence with his sagacity, courage, prudence and executive talent, and with another quality most important in the head of a distant post — the power of clear, succinct and forcible statement, which was shown in all his letters. I recall, in this connection, some of these, partly official, from Oregon and British Columbia, on the occasion of an official visit there, which were admirable in description and of high literary merit. His thorough education and scholarly habits showed themselves, by stamping with clearness, method, and precision whatever he did.

In conclusion permit me to say, that it is to the selection of such men as Mr. Mumford, highly trained, intelligent, devoted to the interests entrusted to them, that the Western Union Telegraph Company owes much of the high place which it holds in the estimation of business men.

Mr. GROSVENOR P. LOWREY then addressed the meeting as follows :

MR. CHAIRMAN — I have listened with great satisfaction to the words of praise of the character of Mr. Mumford. Mr. Mumford was all that

has been said of him; a man of unqualified merits, to whom unqualified praise might be conscientiously applied. His capacity is proved by the greatness of the affairs which he successfully conducted. He had great natural powers, greatly enhanced by judicious culture. But most happy in all this rare conjunction of high qualities he was a man without guile. His interior nature was sweet and fresh as the innocence of youth, a constant charm to whoever was capable to perceive such excellencies: while his intellect had the expansion, the depth and the strength which belongs to great experience of the world.

With the death of Mr. Mumford important changes were made in the arrangement of executive labor. It had been too concentrated. Mr. Mumford's early decease was, in part, the penalty of undue assumption of the details of a range of authority, which, not without ambition, he had concentrated in himself. The strain, which was not confined to the room where the dead had served, was painfully apparent. It had its apology, perhaps, in the gravity of existing circumstances — and the privilege due to cannon balls — to travel alone.

No appointment, however, to Mr. Mumford's vacant chair followed his death. A wiser course was adopted. The Secretaryship was separated from the vice-presidency, and made a distinct service. The General Superintendence of the Eastern Division was, as previous to Mr. Mumford's assumption of it, assigned to a distinct officer. To Vice-President Dr. Norvin Green, whose long experience and excellent judgment qualified him for the duty, was assigned the direction, with suitable skilled aid, of a large class of routine administrative service. These he gradually and carefully arranged into bureaus severally known as the "Claim and Legal Bureau" under Mr. Clarence Cary, a man of fine legal attainments; the Bureau of Railroad Telegraph Service and Franks under Dr. J. O. Green; and the Record Bureau of Cable Correspondence and Claims under Mr. William Arnoux. The direction of these departments, aid to the President in his administrative work, attendance on numerous committees, and the conduct of a large correspondence respecting the Municipal, County and State taxes with their numerous and often capricious claims, with other incidental service, were to be his own work. Few men perform so large a service with so little apparent attrition. Not easily disturbed, of ready humor,

naturally methodical, of clear judgment, of a mental organization facile, unexcitable, and naturally keen and judicial, Dr. Green is the right hand of the administration of the Western Union Telegraph Company.

Of the scope of the department under Dr. J. O. Green, some idea may be gathered from the fact that rights of way generally including free transportation of men and material, covering over 60,000 miles of railroad route, are held by carefully discriminating contracts with over 270 railroad companies. These have involved during the last thirty years the execution of 700 contracts, many of which only exist now as the evidence of property. With a certain general resemblance these contracts have been variously framed to meet special circumstances. A majority have an equitable basis. Some are unequal and oppressive.

The telegraphic service performed in exchange for rights thus acquired exceeds at ordinary tariff rates half a million of dollars annually, besides the preferential or exclusive use of a wire or wires for railroad administrative business. This service is regulated by franks to officials, on which are expressed the territorial or other limits within which they may be used, any excess being usually chargeable at "night" or half rates and collected at appointed periods. The issue of franks is under the care of Mr. Emory H. Falls, who has the honor of having been the first messenger of the Western Union Executive rooms.

The only other vice-president actively connected with the administration of the company, and whose election to that office occurred at a comparatively recent date, is Gen. Anson Stager who unites the Vice-presidency with that of General Superintendent over a region extending from New York to Salt Lake and from Lake Superior to the Gulf of Mexico. His head-quarters are at Chicago, where his chief aids are Col. J. J. S. Wilson, Superintendent; Col. S. G. Lynch, Secretary; C. H. Summers, Electrician; and Merritt C. Bristol, Superintendent of Construction. With large discretionary powers; with a temperament naturally vivacious; full of the aggressive western genius of "pushing things," and a strong belief in the value of the first blow in a fight; with an experience, practical and intimate, covering more than thirty years; a rapid and skillful operator, to say nothing of his accomplishments as an electric *linguist*, General Stager is, pre-eminently, the

representative American operator. The scope of his authority is large and, in a high degree, independent. He was born in Chapinville, Ontario county, N. Y., April 20, 1825, entered the service of the Atlantic and Ohio Telegraph Company, October, 1846, with a salary of \$350 a year, became manager at Cincinnati in 1848, and accepted, in 1851 the post of superintendent of the Mississippi Valley Printing Telegraph Company, which, November 1, 1855, became what it now is, the Western Union Telegraph Company.

With Mr. Mumford's death, the Eastern Division embracing New England and the eastern British provinces, the management of which, as Superintendent, Mr. Mumford had assumed, was promptly assigned to John C. Hinchman, Superintendent of the Metropolitan district, who thus became General Superintendent Eastern Division. It was an honor earned by the fidelity of a quarter of a century. Charles F. Wood, of Boston, was, at the same time, made Assistant General Superintendent of the same division.

At the same time with the advancement of Mr. Hinchman, a deserved honor was paid to Mr. A. R. Brewer, formerly Mr. Mumford's assistant, by his appointment to the vacant Secretaryship. His ability as a practical operator, his skill as stenographer under General Eckert and Mr. Mumford, his experience and familiarity with the papers of the Company, his correct and methodical habits, and personal courteousness, rendered the selection fitting and admirable.

Of a class of men throughout the country filling the important position of District Superintendent of which A. S. Brown of the Metropolitan and Hudson River District, is the New York representative, it is impossible to give the ample reference they merit. They are the men who do the toil, maintain the efficiency, and direct the machinery of the practical telegraphic labor of the continent. They are the fingers of the executive authority of the Company. They have, all of them come to their trusts, by meritorious record and fidelity.

STAFF OF DISTRICT SUPERINTENDENTS. 1877.

ALFRED S. BROWN.....New York.	GEORGE W. GATES..White River Junction, Vt.
ROBERT T. CLINCH.....St John, N. B.	J. W. KATES.....Richmond, Va.
JAMES S. BEDLOW.....Portland, Me.	

SUPERINTENDENTS.

GEO. W. TRABUE.....Nashville, Tenn.	E. P. WRIGHT.....Cleveland, O.
J. A. BRENNER.....Augusta, Ga.	JOHN F. WALLICK...Indianapolis, Ind.
C. G. MERIWETHER.....Mobile, Ala.	GEO. T. WILLIAMS.....Cincinnati, O.
JAMES COMPTON.....Jackson, Miss.	S. B. GIFFORD.....Syracuse, N. Y.
JAMES MERRIHEW....Philadelphia, Pa.	W. J. HOLMES.....New York.
J. J. S. WILSON.....Chicago, Ill.	FRANK BELL.....Reno, Nevada.
W. B. HIBBARD.....Salt Lake City.	F. H. LAMB.....Portland, Oregon.
C. O. ROWE.....Pittsburgh, Pa.	R. R. HAINES.....Los Angeles, Cal.
CHAS. F. WOOD, Ass't General Sup't.....Boston, Mass.	
R. C. CLOWRY, Ass't General Sup't.....St. Louis, Mo.	
FRANK JAYNES, Ass't General Sup't.....San Francisco, Cal.	

Nearly all of these have already figured, more or less conspicuously, in early telegraphic history. One of the exceptions is Charles O. Rowe who, in 1869, succeeded T. B. A. David as superintendent of the Fourth District, Central Division, at Pittsburg, Pa. He is a native of Harpers Ferry, Va., entered the service in 1857 with the Western Telegraph Company at Rowlesburg, and who during the war became Assistant Superintendent of Military Telegraphs under Gen. Stager in the Department of Western Virginia, serving for a time on the staff of Gen. Banks. It is sufficient to say of him that he is the peer of his comrades in office, earnest, conscientious, devoted.

James Compton of Jackson, Miss., entered the service as messenger at Wheeling, Va., in 1848, became operator at Louisville, Ky., in 1850, relieved S. K. Zook at Tusculumbia the same year, was appointed manager at Jackson, Miss., in 1852, and superintendent of the Fifth District Southern Division in 1865. The company has no nobler man in its service.

THE ELECTRICIAN.

One of the most fruitful appointments made by Mr. Orton has been in the assignment of Mr. George B. Prescott to the post of Electrician. He was first called in 1869 to the special work of obtaining testimony and arranging the statistics of European Governmental telegraphs to meet a movement, under formidable auspices, to place the telegraphs of the United States under government control. In this service which involved great labor, Mr. Prescott was untiring, able and successful. He provided such logic from the figures of the telegraphic bureaus of Europe that, under their able presentation, and the proofs of an Ameri-

can service not only superior, but more economic than the average European telegraphs, the voice of the nation left the telegraph with the people.

As an electrician Mr. Prescott may properly be said to have made his own appointment. He has had to act as a barrier to a flood of capricious inventions which have swarmed upon and demanded attention. Perceiving the advantage of the foundation work accomplished by the Morse machinery, he has wisely sought development thereby. Hence all the grand advances made during recent years in telegraphy by the introduction of the duplex and quadruplex processes which have so startled society and amazed even the scientists of the world, have been based on the Morse methods. Thus growth has been powerful, rapid, and assured.

Mr. Prescott is also the statistician of the Company. Maps showing the location of all lines, the number of wires thereon and their quality corrected and added thereto from semi-annual reports from the general superintendents, are prepared by a skillful draughtsman under his direction. All construction and reconstruction work is performed under estimates approved by a committee on expenditures and placed under the direction of the Electrician. Statistics under his directions, are also procured of all expenses, salaries, supplies, machinery, cables, the number of messages sent and received, all facts connected with the decay and restoration of the outside structure, every detail in short which executive officers require to form a correct judgment, and to secure intelligent administration. By the aid of Dr. William J. H. Bok, a skilled linguist, all records of foreign inventions are translated and collated. An inventory is also kept of the entire property of the company, carefully grouped and arranged so as to meet instant inquiry, under the care of assistant Mr. L. Eugene Lefferts.

Mr. Prescott has for assistants Gerritt Smith, and George A. Hamilton, two men as remarkable for their modesty as for their ability, acquirements, and personal character.

Mr. George A. Hamilton, although comparatively unknown, stands almost without a rival in America as an electrician, combining a high degree of knowledge and skill with that exquisite delicacy in manipu-

lating tests so essential in the refined investigations which the rapid advance of the telegraphic art is making a matter of more and more frequently recurring necessity. To him are assigned the determining of the relative value of different kinds of wire, insulating materials, metals, chemicals, etc., matters which greatly affect the capacity of telegraphic lines for earning money.

To Mr. Gerritt Smith, the assistant electrician, falls the important practical work of adjusting and adapting the instruments and machinery to their actual service upon the lines, a duty for which his long experience as a practical operator renders him especially well qualified. Mr. Smith has made a number of improvements of great value upon the apparatus for double and quadruple transmission. In fact, the practical success with which these systems are now used is perhaps more largely owing to his labors than to any other man.

Connected with the electrical department of the Western Union and Gold and Stock Telegraph Companies also, is Frank L. Pope, a name



FRANK L. POPE.

identified with the literature and practical growth of the telegraph in America. To him is assigned the consideration of questions relating to patents and patent law, infringements, priority of invention, novelty, etc., which are constantly arising. In the decision of questions of this kind Mr. Pope's thorough familiarity with the history, theory and practice of

telegraphy and telegraphic inventions, as well as his knowledge of patent law, and patent practice, render his services as a counselor and

expert of great and increasing value. Mr. Pope has been long well known throughout the United States as a writer of ability and the author of Pope's Manual of Electricity.

Mr. Pope is of New England origin, born December 2, 1840, at Great Barrington, Mass. He early developed a fondness for scientific studies, and in 1857 was appointed manager of the office of his native town, without solicitation. Becoming a skillful printing operator he was transferred to Springfield, Mass. In 1860, becoming known as a writer, he accepted an appointment on the staff of the New York *Scientific American*, and in 1862 was appointed assistant engineer of the American Telegraph Company, under Marshall Lefferts. In 1864, ill health induced him to join in the Collins overland telegraph expedition, as one of the chiefs of which he explored successfully, after almost incredible hardships, several hundred miles of wilderness north of the Fraser river basin.

In 1866, after a brief experience as editor of the *Telegrapher*, Mr. Pope became superintendent of the Laws Reporting Telegraph, until, in 1870, he became interested in electric railroad signals, with which he remained occupied until appointed to his present post on the staff of the Western Union and Gold and Stock Telegraph Companies.

Mr. Pope is a clear and terse writer, and a frequent contributor to scientific journals. His treatise on practical telegraphy is one of the best of its kind extant. He is also author of several valuable inventions connected with printing telegraphy and electric railroad signals.

#### THE TARIFF BUREAU.

No department connected with the telegraphic administration of the country has involved more devoted toil than that known as the "Tariff Bureau." For many years the tariffs of the country were generally alike yet capriciously various. To reduce these to a system has at different times occupied many minds. Mr. J. H. Wade at one time devoted to it much thought and labor. General Marshall Lefferts and Col. William L. Gross also gave to it much patient attention. We believe it however due to Mr. William Holmes the present head of that depart-

ment, that the rapid progress which has been made in its systematization, the simplicity to which its application has been reduced and the origination of much which has rendered it practically effective has been accomplished. His patience, skill and lucid methods have proved him one of the most useful as he is one of the most modest arms of the executive service.

Mr. Holmes entered the service of the Western Union Company in 1860. The tariff was then based on actual wire distances. The plan of air line tariffs originated on the Caton lines the offices of which were



WILLIAM HOLMES.

furnished with a map and a measuring tape by which the tariff between offices was ascertained by measuring their distances across the map from each other. Although the process of thus determining and ascertaining the tariff was simple and just, it was deemed impracticable when extensive ranges of lines came to be united.

The present method of fixing the rates by intersecting the face of a map into squares was proposed by Mr. Holmes in 1866 when

the general union of lines was accomplished. It was not, however, until 1869 that it found favor, and that chiefly under the influence of Gen. Stager, it was decided that the rates from square to square should be determined at a central bureau, from whence all offices might be supplied with a tariff sheet containing a list of squares with the rates to each. This at once greatly assisted the service. There can be no doubt that as the violence and destructive measures of active rivalry cease, a simple and well-defined tariff, low, uniform, and of few

denominations, easy to the public and remunerative to the company, will be established. Such, at least, seems true policy and public expectation.

A new bureau has been created for the supervision of requisitions for office supplies. This is an economic department which requires managers to report the number of messages sent and received, and the number of persons employed in connection with their demand for supplies. Experience has fixed an approximate standard of consumption based on the number of persons employed and the amount of business done, and this standard is rigidly pressed on all officials. This department is new, involves much labor, but cannot fail to secure uniform consumption and economy. It is in charge of William Orton, Jr.

The Company's Superintendent of construction in New York is Captain William Macintosh. He entered the service of the House Printing Telegraph Company at Providence, R. I., in 1848, and remained connected therewith until 1857. In 1861 he entered the service of the Quarter-Master's department at Washington under Gen. Eckert, and took charge of the repair of the military telegraph lines between Alexandria and Washington. In this service he was twice taken prisoner and lodged at Richmond. At the close of the war he became superintendent of repairs first at Philadelphia and then at New York. He is a man noted for his excellent judgment, thoroughness and fidelity, all of which are constantly tested in the care of the lines in the Metropolitan streets of New York and the numerous cables which connect New York with Long Island and New Jersey.

#### THE WESTERN UNION BUILDING.

Nothing so well illustrates the progress and spread of the telegraph in America as the massive building of ten stories and tower erected in New York by the Western Union Telegraph Company for its central offices. It is located on the northwest corner of Dey street and Broadway in near proximity to the General Post-Office. The site cost \$900,000 and comprises three lots 25x100 feet on Broadway, and two lots 25x78 on the rear on Dey street. The work of excavation commenced September, 1872. The building was ready for occupation February 1,

1875, and the transfer from 145 Broadway was made at that time. The total cost was \$2,200,000. Thirty years ago a basement room at a rent of \$500 was deemed adequate to all necessities.

The style of the building may be called, with some latitude, the French Renaissance. The outer wall is 140 feet in height. The distance from the pavement to the top of the tower is 230 feet. It is fire proof throughout. The walls of the two first floors are of granite, from Quincy, Mass., and Richmond, Va. The walls above are of Baltimore brick with occasional belts of Richmond granite. The roof, embracing three floors, is of iron, so constructed as to require support only from the outer walls, thus leaving the seventh floor, which is the operating department, an unbroken area of 145x70, with a height from floor to ceiling of 23 feet. This is accomplished by the use of iron-truss beams of great strength which span the walls. The tower, also of iron, derives support from four massive columns which rest on the east end of the seventh floor. The floors throughout are of iron beams arched with brick and over-laid with artificial stone known as the Beton Coignet flooring. The borders of the rooms and the whole of the main halls are laid with encaustic tile

On the cellar floor are six forty-horse power steam tubular boilers with furnaces. Three of these are for heating purposes. Three others supply power to the machinery which operate the elevators, pneumatic tubes, and hoisters. On this floor are 18 wells having a united yielding capacity of 300 gallons per minute, and which are united by a common pipe to a Worthington Duplex pump capable of pumping 1,000 gallons per minute to tanks of great capacity built on the northwestern angle of the eighth floor and which are connected by large iron pipes with all the halls, where they are pierced by fire plugs and supplied with abundant hose ready for instant use in case of fire. These wells terminate in a water stratum below a hard pan which excludes all surface water, and is pure and unfailing.

In the space between the engine floor and the ground floor is the packing room of the Supply department. Here all packing is done. Sidewalk hoisters receive and discharge material. From this room are sent, at regular intervals, supplies for the offices in response to requi-

sitions approved by the superintendents. These packages exceed 30,000 per annum.

The ground floor is occupied by the public message reception rooms, the Money Transfer department, the delivery and enveloping staff, the Treasurer, and keeper of stores. The treasurer's office has an independent entrance from Broadway, and has attached thereto a large vault encased with massive iron plate, beneath the main entrance. The receiving department is elegant and spacious. The main entrance is from the southeast corner of Broadway and Dey street. Double doors protect from cold. The floor is laid with encaustic tile in mosaic. A space 80x19 is assigned to the public, and convenient desks for the preparation of messages are amply provided. A man is constantly occupied keeping the apartment clean and properly provided with writing material. A floor-walker preserves order and gives information. In a neatly enclosed barrier at the entrance is the office of cashier Henry H. Ward and his assistant H. C. Fardon, and I. C. Hendrickson, Money Transfer Agent. Between this and the general receiving desks is a wide passage leading to a neatly arranged lady's waiting-room, and to three elevators which run continuously to and from the floors above and which carry on an average about 5,000 persons per day. In a continuous counter of much elegance are the Cable, General message, City, and Delivery departments, in which may be seen men such as Edmund Clasback and John B. Oltman, who have been in the service almost since the wires entered Gotham. Four pneumatic tubes one from the cashier's, and three from the general delivery and receiving departments, connect with the operating room. A staff of about 100 messengers occupy a space in the rear of the delivery department, having an independent exit on Dey street. The rear rooms are occupied by Mr. A. H. Watson, keeper of stores, and the Supply department.

The first and second floors are occupied by tenants. The exception to this is a single room occupied by the editor of *The Journal of The Telegraph*, the official paper of the Western Union Telegraph Company.

The third, fourth and fifth floors are occupied by the Executive officers of the Company, with their assistants and subordinates, and also

by the Electrician, Auditor, Tariff bureau, General Superintendents and the Gold and Stock Telegraph Company. The sixth floor contains the batteries, averaging 15,000 cells. The wardrobe of the operators occupy apartments at each end of the sixth floor.

The operating room is the chief feature of the building. Its dimensions have been given. It receives light from every side from 42 windows, and at night from 181 gas burners, lighted by electricity, 80 of which are from ten chandeliers. The gas fixtures are in the style known as verdé antique. The room is warmed by 15 steam radiators, and 20 ventilators carry off the foul air. The outlook from the windows, which overtop all adjacent buildings, is magnificent.

The operating tables number 84. These are of cherry frames with mahogany tops, flat, and intersected by plates of glass 12 inches wide encased in light mahogany frames, which bisect the table at right angles, separating the sounds, and accommodate four sets of machinery. The tables are 5 feet 8 inches long by 3 feet 8 inches wide. The machinery at present employed is as follows :

Morse Instruments.....	144	Milliken's Automatic Repeaters,	
Phelps Motor Printers.....	3	sets.....	3
Duplex Machinery, sets.....	23	Button Repeaters, sets.....	4
Quadruplex Machinery, sets.....	21		

Pneumatic tubes enter the center of the room, and connect with the receiving department, the Corn and Produce Exchanges, and with the auxiliary office on Pearl street from and to which messages are rapidly conveyed by circular boxes driven by atmospheric suction or pressure. A fine switch board, tastefully arranged, and of capacity for the distribution of over 300 wires, occupies a conspicuous place in the center of the north side of the room. On this, giving a fine view to visitors, is arranged a convenient platform approached by a private staircase entering from the sixth floor.

The manager of the operating department is Mr. Alfred S. Downer. After a faithful service of twenty-two years, commencing in 1855 at Montrose, Pa., and in later years with the New York and New England Union Company in New York, under Charles T. Smith, manager, and with A. S. Brown, D. F. Marks, W. D. Schram and others as associates,

he became successively chief operator of the American Telegraph Company in 1861 — of the Western Union Company in 1866 — assistant manager under A. S. Brown in 1875, and was assigned to his present responsible post, the duties of which he performs with great skill and discretion, January 1, 1876.

The office force under Mr. Downer numbers 317 persons, of whom 219 are young men and 98 young women. His assistants are David R. Downer, senior chief assistant; J. H. Dwight, first chief operator; S. S. Bogart, S. L. Griffin, E. A. Leslie, chief operators, and F. W. Gregory assistant. In the ladies' department the chief operator under Mr. Downer is Miss F. Letitia Daly, a lady of fine executive talent, who learned the art in 1868 under her predecessor Miss Lizzie H. Snow.

The night service, numbering about 100 persons, is under the management of Mr. Thomas Dolan, a telegrapher of long standing, ability and fidelity, assisted by Thomas Brennan and T. G. Kennedy, chief operators, and A. E. Sink, assistant.

The average time of day service is nine and a-half hours, and of night service seven and one-half hours. Relays of the staff come on duty at 8 A. M., 5½ P. M., and at midnight. The work never ceases. The average monthly compensation of male service is \$70.21, and of female service, which is limited to day duty, \$43.37. The labor performed averages 35,000 messages handled per day. In 1872 the average daily number was 3,500.

On the eighth floor is the Book-keeping department under Mr. M. S. Roberts and a staff of thirty assistants. In this is included the department of check errors under H. F. Makepeace. On this floor also are lunch rooms for the operating and other departments. They are light, cheerful, and convenient. The food is provided and served by the company at the actual cost of the articles as purchased at the market, the company paying for cooks, cooking, and attendance. A similar arrangement is made on the third and fifth floors for officers of the company. The bill of fare ordinarily embraces a variety of meats, milk, fruit, coffee and tea. By these lunch rooms a vast amount of time is saved to the company, and the lunch-rooms of the officers are utilized for exchange of views on questions of administration. A part of the

eighth floor is occupied by the agents of the Associated Press from whence dispatches for the press received by telegraph are distributed to the various papers.

On the ninth floor are the kitchen, washing and drying rooms, refrigerators, and a number of small sleeping apartments for the use of the janitor and his aids.

The tenth floor is occupied as a store room for messages, where they are assorted and filed.

On the ridge of the roof and around the tower, well protected by iron railings, is an ample walk from which perhaps the finest view of New York and its surroundings can be seen.

The tower is ascended by an easy flight of stairs. An electric clock with four faces is being made for the clock spaces. A time ball is dropped daily at noon, on the iron flag staff. The time is regulated by the observatory at Washington.

The messenger department is in some respects the most interesting in the building. It occupies the rear of the ground floor and has ample and well ventilated accommodations. It is in charge of Mr. John Dauler who, in 1860, was a messenger of the New York, Albany and Buffalo Telegraph Company, and, afterward, office boy in the operating room of that company under Charles L. Whiting and A. S. Brown. He was made night delivery manager in 1863, and on the death of W. H. Hill in 1872, entered upon his present duties. He conducts this important branch of the service with discretion, minuteness, kindness, and devotion. He knows every boy, visits his home, and knows whence he comes. It is a department requiring the closest care, the effectiveness of the whole telegraph service depending largely on the messenger. This responsibility the boys are made to feel. The consciousness of this trust develops character. Some of the best men in the service were once messengers.

In New York city at twenty-eight delivery stations there is an average of 350 boys and men engaged in delivering telegraphic messages.

One hundred of these are at the central office. These latter are uniformed in Navy blue. They are paid  $2\frac{1}{2}$  cents a message for delivery and three cents for an answer. They earn from \$5 to \$10 a

week. The daily delivery at the central office averages 3,000, one-third of which are night messages delivered on the following morning. The



MESSENGER BOY.

night messengers are men, usually heads of families, some of whom have seen better days, who are paid \$6 per week. The average time for delivery, including the return to the office, is nine minutes five seconds. Every message and the boy delivering it is recorded and the time watched. An average delay beyond the standard time occurring five times, subjects to dismissal. Delivery to the public over the whole extent of Manhattan Island is free.

Mr. Dauler has twenty-four assistants for preparing and enveloping messages for delivery.

Almost all of these were messengers. His chief clerk is Mr. Geo. Chivvis. The night manager is Mr. John Dunnegan,

formerly of the American Telegraph Company, a faithful and capable man.

In the New York messenger service there is much talent. They have several associations. One is the Enterprise Dramatic Association. Jumbo Gum in their hands is no second-class production. They give occasional performances. They have also the "Electric Dramatic Association" and the "Electric Glee Club," and are now forming a brass and string band. In all this they find relaxation from their hard duties.

The statistics of the Western Union Telegraph Company are (1877) as follows: Capital, \$41,073,410, of which the company owns \$7,255,-

335. Bonded debt, \$6,239,038.22. Dividends, quarterly, one and a half per cent, or six per cent per annum. Length of line operated 76,955 miles; length of wire 194,323; number of offices, 7,500. Gross earnings 1877, \$9,812,352.61. Relation of wire to capital and debt, \$206.14 per mile.

INSTRUMENTS IN USE.

Morse Sounders.....	10,306
Morse Recorders.....	1,639
Phelps Motor Printers.....	9
Repeaters.....	220
Duplex Instruments.....	183
Quadruplex Instruments.....	113
Cells of main and local battery.....	120,554

Employees: Male, 9,200; females, 750. Messages transmitted in 1877, 21,158,941. Average tolls per message, 43.6 cents; average cost, 29.8 cents; average profit, 13.8 cents. The average decrease of tolls per annum during ten years preceding 1878 was 8.3 per cent. The number of money transfers during 1877 were 38,669. Amount transferred, \$2,464,172.82. Profit therefrom, \$92,364.93.

During ten years the number of offices have increased from 2,565 to 7,500: the miles of wire from 85,291 to 194,323; and the number of messages from 5,879,282 to 21,158,941. The decrease in tolls in 1877 as compared with 1867 was 61.6 per cent.

Since the close of the year an arrangement has been concluded with the ATLANTIC AND PACIFIC TELEGRAPH COMPANY for pooling the gross receipts of the business of the two companies, and dividing them on the basis of 87.5 per cent of the combined receipts to the Western Union, and 12.5 per cent to the ATLANTIC AND PACIFIC COMPANY. The outstanding capital of the ATLANTIC AND PACIFIC COMPANY is \$14,000,000, of which the Western Union Telegraph Company has purchased \$7,250,200. A common interest will govern the management of both companies.

The dividends since 1864 have been as follows:

Cash Dividend,	1865,	6	per cent.	Capital.....	\$21,355,000
Scrip Dividend,	1866.	2.50	do	do .....	21,484,400
Cash do	1866,	2	do	do .....	25,480,100
do do	1867,	4	do	do .....	40,977,200

Cash dividend,	1868,	2	per cent	Capital .....	\$41,027,000
do do	1869,	4	do	do .....	41,063,100
do do	1874,	6	do	do .....	41,073,410
do do	1875,	8	do	do .....	41,073,410
do do	1876,	4 $\frac{1}{2}$	do	do .....	41,073,410
do do	1877,	6	do	do .....	41,073,410

NUMBER OF STOCKHOLDERS RECEIVING DIVIDENDS FROM WESTERN UNION TELEGRAPH COMPANY.

Western Union.....	1,200	St. Louis and Missouri River...	9
Southern and Atlantic .....	423	Missouri and Western.....	15
Pacific and Atlantic.....	640	New York State Printing.....	5
American .....	31	International.....	217
Vermont and Boston.....	115	Western Telegraph Company...	94
Atlantic and Ohio.....	5	Washington and New Orleans..	155
Ohio and Mississippi.....	49	Lynchburg and Abingdon.....	57
East Tennessee.....	36	Cleveland and Cincinnati.....	110
Total.....			1,966



Engraved by A. W. GILMAN

*Thos. T. Eckert.*

## CHAPTER XLIII.

### THE ATLANTIC AND PACIFIC TELEGRAPH COMPANY.

IN one of the sketches which Jane Eyre handed to Rochester on the night of his arrival at Thornley Hall, was one representing a condor seated on a broken spar, mid ocean, a jeweled locket in his talons, and a dead face on which a gleam of light which struggled through the clouds rested as it rocked in the dark waters of the seething sea. The setting was sublime, the parts natural and striking, the dead face and the royal bird were well companioned.

Something like this was seen as the Morse patent expired. It is the attestation of scripture that "wheresoever the carcase is, there will the eagles be gathered together." True to nature, therefore, there came with the sundown of June 20, 1861, the shadow of the wing of many a royal bird. But the jewelled locket was gone. There was no booty round the corpse. The sagacity of a few far-seeing men had secured it against spoliage, by the unification of the telegraph interests of the country by federation. But for this, incomplete though the work of consolidation then was, a large proportion of the telegraph interests of the country would have been destroyed, and the condors would have had both the corpse and the jewels.

Henry O'Reilly was one of the first in the field. He had been assiduous in preventing the renewal of the patent, in which he was aided by Freeman M. Edson, Robert W. Russell, David W. Baldwin, Marshall Lefferts, and, secretly, by F. O. J. Smith. In the construction of his early lines he had named those erected from Philadelphia to St. Louis and Chicago as "the first link of the ATLANTIC AND PACIFIC TELEGRAPH." Now, unshackled by patents, a clear field before him, he commenced, with characteristic impetuosity, the organization of

Companies to carry out his various undertakings. His plans, though somewhat vague and general, were such as to inspire much of the old enthusiasm under which his early projects had been accomplished. He was aglow with all the energy of his sanguine character, and his elastic sunny nature won again, as in other days, many friends. But Mr. O'Reilly had not learned by experience, and commenced again districting the face of the map with independent, or co-operating lines. He seems never to have fully conceived the grandeur of the telegraph as a unit. This may have been the result of an innate hatred of monopolies. He had more patriotism than prudence.

Mr. O'Reilly's head-quarters were at 23 Pine street, N. Y. No one could pass it without knowing that there was a live man on the premises. Large placards in black letter capitals filled the windows and walls, announcing the "TELEGRAPH TO THE PACIFIC." His love of types kept the mail warm with circulars of marvelous amplitude announcing his designs. They were long, repetitious, egotistic, but spirited and inspiring. His letters were coronated with the following title in good, clear type :

ATLANTIC AND PACIFIC TELEGRAPH,  
TELEGRAPH CONSTRUCTION OFFICE,  
"Home and Foreign" and "Southern Telegraph" Divisions,  
23 Pine Street, N. Y.

Various events, however, had prevented active measures to carry out these extensive projects, which included a line to the Pacific coast until the year 1865. In that year Mr. O'Reilly organized the "Home and Foreign Telegraph Company" over which Hon. Lorenzo Sherwood of New York, was made president. In the same year he organized "The Southern Telegraph Company" over which Charles W. Noble, Esq., was made president. Mr. O'Reilly never failed to attach men of high standing to his fortunes. He knew the value of a good name.

In the early spring of 1866, while Mr. O'Reilly was busy endeavoring to obtain subscriptions in New York for carrying out these projects, he became greatly excited and indignant on learning that a Company bearing the title of the ATLANTIC AND PACIFIC TELEGRAPH COMPANY, had been organized, and that some of the influential parties who

had signed his own subscription book were its chief promoters. This was an unexpected blow. He protested against it loudly and lustily as a piracy and a fraud. In one of the flashing circulars which he distributed through New York with vigorous prodigality, the epithets "ring," "dastardly," "dishonorable," "fraudulent," "counterfeit and burglar," "utterly extortionate," "complicated scheme of trickery" expressed his opinion of the new Company. His passionate assertion of injustice showed how mortal was his wound. The truth was that Mr. O'Reilly's telegraphic mission was ended. He had built and organized lines with acknowledged vigor, industry and success. But he had left the smell of battle upon them, and he himself was poor. So, although Mr. O'Reilly always merited and never failed to secure respect, he ceased to be intrusted with the conduct of public enterprises. Men confide their money with those only who show ability to take care of themselves. Perhaps, also, he was too honest for his times. The Capitals he proposed for his companies had no margins for friends.

The ATLANTIC AND PACIFIC TELEGRAPH COMPANY was regularly organized December 2, 1865, under the telegraph laws of the State of New York, with a capital of \$5,000,000. The first officers were, Arthur F. Willmarth, President; William H. Guion, Vice-President; Richard J. Thorn, Treasurer; C. A. Harper, Secretary. The Board of Trustees were A. F. Willmarth, Richard J. Thorn, Henry Hogeboom, William D. Snow, Samuel Odell, Henry A. Smythe, H. F. Spaulding, Charles M. Connoly, John H. Mortimer, William H. Guion, Rufus R. Graves, Elisha Brooks, John W. Masury, Henry M. Taber, Norman S. Bentley, John Armstrong, Louis Jay, Abijah Chapin of Springfield; Charles T. Shepard, Albany, N. Y.; Allen Munroe, Syracuse; George W. Cuyler, Palmyra; James A. Mathews and N. C. Simons, Buffalo; Horace S. Walbridge, Toledo, O.; T. J. S. Flint, Chicago; most of whom were men of high character. The first superintendent appointed was Charles E. Perry of Albany, who had seen service on the Panama and Canadian lines.

The construction from New York to Cleveland, O., was assigned to E. H. Van Kleek, a man of some energy, who sublet a part of the work to Robert Brown, a well-known builder. The contract required thirty-

eight poles per mile, mounted with glass insulators and two number nine galvanized wires. The route selected was along the highway east of the Hudson river, and westward along the old stage route *via* Albany, Utica, Syracuse, Rochester and Lockport to Buffalo.

The lines thus constructed were first opened for public employment between New York and Buffalo in October, 1867, and were extended from year to year as sales of stock permitted their construction. In 1874 they had reached Omaha, Neb., by the Chicago, Rock Island and Pacific Railroad, and Ogden in Utah, by the Union Pacific Railroad. Connections with the Pacific coast were secured by contract with the Central Pacific Railroad Company which had constructed a line of telegraph of its own between Ogden and San Francisco. Connection with the Dominion Telegraph Company of Canada, the Franklin, Pacific and Atlantic and Southern Atlantic Telegraph Companies was also rapidly consummated.

By these various extensions and alliances the lines of the company embraced, in 1874, 5,097 miles of poles and 12,039 miles of wire. It had an authorized capital of \$10,000,000 with an actual issue of \$9,578,100.

During this formative period of the Atlantic and Pacific Company the supervision of its lines was intrusted, during 1868, to Mr. Merritt L. Wood, a name well and favorably known in early telegraphic history. In 1869 Mr. E. D. L. Sweet was appointed General Superintendent and Executive Manager, and who, during six subsequent years, conducted the development of the company's business with much caution and shrewdness. New parties, however, came knocking at the doors of the executive rooms demanding entrance. Jay Gould, Oliver Ames, Sidney Dillon, Josiah Snow, James Brooks, names familiarly historic, became directors. These men determined to "push things." On their entrance the management became vigorously aggressive.

On January 14, 1875, General Thomas T. Eckert, well known as the energetic General Superintendent of the eastern division of the Western Union Telegraph Company, was elected President; W. J. Syms, Vice-President; E. D. L. Sweet, Second Vice-President; Alfred Nelson, Secretary and Treasurer. Thomas T. Eckert, Jay Gould, Sidney Dil-

lon, John H. Mortimer and W. J. Syms were elected an Executive Committee. This election indicated the approach of lively times, and the storm signal soon fluttered from the sky scraper of the new ship.

Thomas Thompson Eckert who thus entered so prominent a position in American telegraphy was born in St. Clairsville, O., April 23, 1825. In 1849 he was appointed postmaster at Wooster, O. The year previous he had learned to operate the telegraph, and the wires were brought into the post-office under his charge. In 1852 he was offered the superintendency of the "Union Telegraph lines" which had been constructed under his supervision from Pittsburgh by the route of the Fort Wayne and Chicago Railroad to Chicago. These lines were chiefly projected by J. H. Wade, and, when finished, were operated in connection with the Wade, Speed, and Cornell lines then extensively in operation throughout the west.

With the formation of the Western Union Telegraph Company of whose property the lines under his management came to form a part, Gen. Eckert's jurisdiction was largely extended and he became widely known as a man of enterprise, tact, and energy. In 1859, however, he left the service of the telegraph to superintend the affairs of a Gold Mining Company in Montgomery county, North Carolina, where he remained until the breaking out of the war in 1861, when he removed to Cincinnati. A few months thereafter he was called to Washington by Col. Thomas A. Scott, Assistant Secretary of War, where he was placed in charge of the military telegraph office at the head-quarters of General McClellan, and, in 1862, accompanied that officer to "the Peninsula" as Superintendent of the Military Telegraph Department of the Potomac with the rank of Captain and A. Q. M. In September of the same year he was recalled to Washington to establish the Military Telegraph Head-Quarters in the War Department Buildings, and was promoted to be Major and A. Q. M. From this time to the close of the war he was under the most intimate relations with President Lincoln and Secretary of War Stanton, by both of whom he was very highly trusted and esteemed. One of the public evidences of this con-

fidence was his appointment, at a very delicate stage of the war, to meet the commissioners of the Southern Confederacy at City Point in January, 1865, a mission which he performed with great discretion, intelligence, and fidelity.

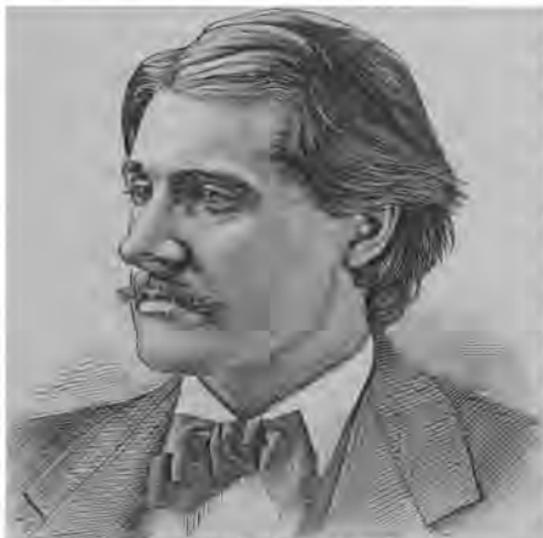
In 1864 Gen. Eckert was brevetted Lieut. Colonel, and, soon after, Brigadier-General. The same year also he was appointed Assistant Secretary of War, which position he held until August, 1866, when he resigned to accept the General Superintendence of the Eastern Division of the lines of the Western Union Telegraph Company, embracing the territory between Washington and Cape Breton, including all the New England States, the State of New York east of Buffalo, and Eastern Pennsylvania. This position became at once one of unusual importance on account of the opening up of the transatlantic correspondence which followed the successful laying of the Atlantic cable, and required, during a long period, the utmost devotion in placing the route to the connecting point with the British lines in condition for a prompt and vigorous service. He enjoyed throughout his occupation of this important post the fullest confidence of the executive officers of the Western Union Company and carried into his work much of the discipline, vim and thoroughness, which characterized him in the war department as assistant to his great chief, Edwin M. Stanton.

As a man, General Eckert has personal qualities which greatly endear him to his friends. His physique is powerful, well formed, and indicative of self-reliance and capacity of resistance. His feelings are strong, alert, sensitive. As an officer he is punctilious, insists on recognition, on complete and prompt obedience and respect. He has, however, beneath the official vigor, a wealth of consideration and kindness, which renders him gentle and approachable, and which secures for himself a very large circle of very devoted friends. With these qualities General Eckert, on his entrance upon his new duties, drew around him many members of his former staff. They had become attached to him partly because of his magnetic qualities as a man, and partly by the peculiarities of the service during the war in which they were first united. It was just the character of labor in which the fellowship of men becomes strong, fraternal, affectionate. It

was full of responsibility. It often challenged heroic devotion. It was not without those periods of personal danger which awaken the profoundest sentiments of sympathy, respect and love.

Among the men who thus again connected themselves with General Eckert's personal fortunes were Albert B. Chandler, D. H. Bates, and C. A. Tinker. Mr. Chandler was immediately made Assistant General Manager with head-quarters at New York. Mr. Bates, who had shown much executive ability in connection with his former duties, was appointed, April 10, 1875, General Superintendent of the Atlantic Division of the company with head-quarters at Philadelphia. Mr. Tinker, a man of fine sense, of popular manners and culture, formerly manager at Washington, was appointed General Superintendent of the Central Division, with head-quarters at Chicago.

Mr. Albert Brown Chandler who has filled so important a position in the recent history of the Atlantic and Pacific Company, was



A. B. CHANDLER.

born in West Randolph, Vt., August 20, 1840. In 1857 he was employed there in a printing office and book store with which the Vermont and Boston Bain lines were connected and which he speedily learned to operate. In Aug., 1858, Mr. Chandler went to Cleveland, O., and entered the service of the Western Union Telegraph

Company, under Superintendent Thomas T. Eckert, September 27, 1858. In the following month he was appointed manager at Bellaire, O., from whence he was transferred to Pittsburgh as Manager of the Cleveland and Pittsburgh Railroad office. On May 1, 1859, he became Agent at Manchester, Pa., of the Cleveland and Pittsburgh Railway Company, where he remained until May 31, 1863.

On June 1, 1863, Mr. Chandler was appointed telegraph cipher, and disbursing clerk in the War Department at Washington, D. C., in connection with the army of the Potomac. In this responsible post he continued until the close of the war when, August 8, 1866, he entered the service of the Western Union Telegraph Company, and had assigned to him in connection with other executive duties under the General Superintendent, the direction of the Anglo-American and Cuba cable traffic. He was appointed also, June 1, 1869, Superintendent of the Sixth District of the Eastern Division of the Western Union Telegraph Company. Mr. Chandler remained in this position until January 16, 1875, and was much esteemed for the excellence of his judgment, the courteousness of his manners, and the fidelity and skill with which he performed his duties.

On January 17, 1875, Mr. Chandler entered the service of the Atlantic and Pacific Telegraph Company. He was soon after appointed Assistant General Manager, and in June of the same year, was elected Secretary. In May, 1876, Mr. Chandler was elected a member of the Board of Trustees and Second Vice-President. In May, 1877, he was re-elected a member of the Board and became Secretary and Treasurer.

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Gen. Eckert's resignation and election to the Presidency of the Atlantic and Pacific Telegraph Company was sudden and unexpected. It was at once instinctively regarded as a sign of battle with the Western Union Telegraph Company, whose service he had left. This was verified by the prompt announcement of the new officer that his appointment meant cheap telegraphy. Within a month this was confirmed by a public announcement that throughout a large territorial circuit the 40 cent rate was reduced to 25.

THE ATLANTIC AND PACIFIC TELEGRAPH COMPANY. 585

The reduction of tariffs, thus inaugurated, was belligerent and aggressive, but necessary. The Atlantic and Pacific Company had a small business, had been under very cautious and unaggressive management, and, although out of debt, and showing an annual balance, had a low exchequer and a somewhat languid life. Some vigorous measure was necessary to arouse public popularity and secure business. A low tariff provided the rowels for the new rider as he blew his inaugural horn and entered the field of contest.

For some time the reduction of rates by a gradual and careful process had been one of the well defined plans of the Western Union Company. But the process had to be gradual to prevent injury to capital and interruption to dividends. Unfettered by any such necessity the Atlantic and Pacific Telegraph Company precipitated action, and won the credit of a sharp and general reduction. This secured for it much public favor. The benefit financially was, however, not large, and was about equally shared by both companies. During the prolonged illness of President Eckert which soon after followed, the old tariff was restored, but a decided impetus had been given to the general employment of the wires.

At the close of Gen. Eckert's first year as president, during the greater part of which he had been disabled, he reported as follows :

"During the year we have constructed new lines from Chicago to Milwaukee, Chicago to St. Louis, Buffalo to Suspension Bridge, Philadelphia to Pittsburg, Cincinnati and Oil City, Pa., besides cable crossings at the North River and city connecting lines.

We have also purchased the Cheyenne, Boulder and Denver line, giving us connection with Denver and other important points in Colorado, making in all, additions to our lines during the year of 471 5-6 miles of poles, and 1,466½ miles of wire, at a cost of \$101,119.87.

The receipts from messages transmitted for the year were.....	\$386,826 97
The operating expenses, including supplies, and line material for repairs.....	396,399 75
Deficit... ..	\$9,572 78

The gain in receipts, over 1874, was \$24,545.73."

The connecting companies of the Atlantic and Pacific Company,

were the Franklin, Atlantic and Southern, Dominion Telegraph Company of Canada, the American Telegraph Company of Michigan, the Central Pacific Railroad Company's Telegraphs, and the telegraph system of the Reading Railroad of Pennsylvania.

During the second year of Gen. Eckert's administration much marked activity was apparent. On May 1, 1876, the lines of the Franklin Telegraph Company between Boston and Washington were leased. This gave a commanding position on the seaboard. Fifty thousand dollars were expended to place the leased lines in efficient working order. No one knew better than General Eckert how much success depended on these outward conditions. New wires were at the same time erected to Albany, Boston, Chicago and other places increasing the mileage of pole line 1,087 miles, and 2,678 miles of wire. By the first of January, 1877, the pole line of the company, including its connections, was 17,759 miles bearing 36,044 miles of wire. The pole line of the company proper was about 8,000 miles. The whole number of offices inclusive of connecting lines was 1,757.

Much activity prevailed during 1876 in securing connections with Railroad Companies. Contracts were executed with the Baltimore and Ohio, Pennsylvania, Northern Central, Philadelphia and Erie, and Grand Rapids and Indiana Railroad Companies; and with the Hawkeye Telegraph Company of Iowa and Western Telegraph Company of Illinois, by which the volume of business was much enlarged. The general conduct of the business was also very visibly improved.

At a meeting of the stockholders held May 6, 1876, the capital of the company, in order to carry out the policy of extension, was increased to \$15,000,000. Four millions of this increase was taken by existing shareholders at \$20 per share. The remainder was not issued. The business of the year was reported to have been

Gross earnings of the consolidated companies.....	\$870,570 28
Gross expenses.....	831,341 83
Residue.....	\$39,228 45

No dividend had so far been declared.

At this period the management of the company became sharply aggressive and reductions of the tariff over wide regions followed in

quick succession. The Western Union Company had meanwhile secured some of the Atlantic and Pacific Company's most valuable connections. The Southern and Atlantic Telegraph Company with its lines between Washington and New Orleans; the lines of the American Telegraph Company of Michigan; the Rocky Mountain line from Denver; the Delaware and Hudson Canal Company's lines, had, one by one, been captured. These were heavy blows and made the contest lively. At last, on January 1, 1877, the announcement was made that a general tariff of twenty-five cents for ten words had been established over all territory east of Omaha. This was a bold step. It seemed, and was, suicidal. The Atlantic and Pacific Company had not wires enough to transmit with promptness the increased business which such a reduction required to keep up its average receipts. By means, however, of the duplex and automatic systems and under very expert handling, a large business was done. But the low tariff was the beginning of the end. It was not long before the contesting companies began to approach each other with schemes of union, for which, perhaps, the reduction was primarily designed. It led to conferences which resulted in the purchase by the Western Union Company of 72,502 shares of Atlantic and Pacific stock at \$25 per share, paying therefor 12,500 shares of Western Union stock and \$912,550 in cash. The mutual receipts were at the same time agreed to be pooled in the ratio of 12.5 to 87.5, the two companies to retain their autonomies but to conduct their affairs upon a mutually agreed basis.

The Atlantic and Pacific Telegraph Company has at no time declared a dividend.

The following statement shows its traffic during the last few years :

1871.	Receipts....	\$272,423	57	Expenses....	\$245,055	92	Profits....	\$27,367	65
1872.	do ....	336,895	34	do ....	292,740	01	do ....	44,155	83
1873.	do ....	372,627	81	do ....	333,351	85	do ....	39,275	96
1874.	do ....	450,534	01	do ....	399,101	97	do ....	51,422	04
1875.	do ....	386,826	97	do ....	396,399	75	Loss.....	9,572	78
1876.	do ....	870,570	28	do ....	831,341	83	Profit.....	39,228	45

The ATLANTIC AND PACIFIC TELEGRAPH COMPANY has been prominently identified with automatic telegraphy which it still employs in the transaction of its business. The instruments used are those known

as EDISON'S AMERICAN AUTOMATIC TELEGRAPH of which Sir William Thompson used the following language :

"It gives on land telegraph lines of all lengths, insulated on poles in the air, speeds of practical working which are from two-fold to ten-fold the speeds attained by the best of the other systems hitherto in use in America or any other part of the world. I have, myself, in the general telegraph office of the Centennial exhibition, Philadelphia, witnessed the receiving in fifty-seven seconds, of one thousand and fifteen words from New York. I am informed that the speeds actually obtained for satisfactory practical working through different lengths of telegraph lines are as follows :

200 miles.....	1,000 words per minute.
300 do .....	500 do do do
400 do .....	250 do do do
600 do .....	150 do do do
1,000 do .....	100 do do do

These important results are obtained by the simplest and surest of apparatus and with remarkable economy of skill and labor." Yet with this high eulogy from such a source the automatic method is useful only as an auxiliary, and has nowhere shown itself practicable as a separate system. The machinery employed has some noteworthy features,

1. The perforating machine is simple yet remarkably effective. It has a key for each letter and stop. A skilled operator can punch sixty words per minute.
2. The sending contacts are effectively secured by a double spring with nickle rollers instead of the old plan of a stylus of fine iron wire.
3. An electro-magnetic shunt with soft iron core to utilize Faraday's discovery of electro-magnetic induction to produce a momentary reversal of the line current at the instant the battery is thrown off and thus cut off the chemical marks sharply when formed. This fine device of Mr. Edison, made great speed, by automatic machinery, possible.
4. The use of ferrid-cyanide of potassium to secure a permanent record under rapid manipulation.

These devices of Mr. Edison apparently gave to automatic telegraphy its highest possibilities.

The Atlantic and Pacific Company which has been practically alone in the test of the automatic system under which the telegraphs of England have been more or less successfully operated, had, in 1876, twenty-two automatic stations. The chief of these were New York, Philadelphia, Baltimore, Washington, Pittsburgh, Boston, Albany, Buffalo, Cincinnati, Chicago, Omaha. From January, 1875, to July, 1876, the through business of the company to these and more distant points was transmitted almost solely by the automatic process. On the New York and Washington circuit (250 miles) press matter was transmitted at an average rate of 250 words per minute and dropped at the chief intermediate stations. On this circuit the system is still employed. The circuit from New York to Pittsburgh (500 miles) is worked at an average of 100 words per minute, although, on a test, 900 words have been transmitted. Between New York and Boston a speed of over 2,000 words per minute has been reached. On other circuits, because of inferior conductors, the speed did not exceed seventy-five words per minute. The preparatory perforation of the paper strips is done at an average of twenty words per minute. But for this capacity of transmission the lines of the Atlantic and Pacific Company would have been thoroughly choked, and the press business, for which it was largely employed, lost.

One of the most complete tests of the automatic system was on the occasion of the transmission of the President's message, December 5, 1876. It was composed of 12,600 words. Of this message 9,000 words were received, automatically, in forty-five minutes. The message was filed in Washington at 1.05. The whole message was delivered in New York at 2.07. The perforators averaged thirty-one words per minute. Ten persons were thus employed, of whom three were ladies, whose averages per minute were: Miss Hazard, 39½; Mrs. Bugbee, 39; Miss Winstead, 32 4-5. The perforation occupied thirty minutes. The message was written out by nine copyists.

The automatic system is still employed on the Atlantic and Pacific wires, but more subordinately. It is adapted to be, what it has always been, an auxiliary. As such, under certain circumstances, it has a capacity which may yet secure for it larger employment.

One of the agencies by which the Atlantic and Pacific Telegraph

Company has been able to meet the demands of a large addition to its ordinary business without the multiplication of its wires has been the duplex invention of Mr. George d'Infreville, a French expert, connected with the company as electrician. It has been employed on twenty-eight distinct circuits and is in use between all large offices. Between New York and Buffalo, Baltimore and Cincinnati, Buffalo and Chicago, it is used constantly with one intermediate repeater on each circuit. Transmission on various circuits using the d'Infreville duplex average as follows: New York and Boston — one wire — 100 messages per hour; New York and Buffalo, 80; Buffalo and Chicago, 80; Chicago and Milwaukee, 70.

A record kept of the business of a day with the use of the d'Infreville duplex and one wire, showed an average of 139 messages per hour, or 1550 messages during the entire day. Of course this result implies a highly qualified service. The operators were M. J. Doran, M. J. Landy, E. J. Davin, E. W. H. Copley, J. A. McDonald, F. J. Owen.

Another of the important appliances introduced into the Atlantic and Pacific lines is an invention of J. K. Knight, an English operator from Stoke-upon-Trent, now in the executive rooms of the Atlantic and Pacific Company, New York. This is a repeater composed of two sets of apparatus, which can be readily separated and used as terminal instruments. The sounds on both sides are heard when acting as a repeater, no extra locals are required, and the adjustment is easy. These repeaters have been in use for two years, and are highly spoken of by experts.

#### THE FRANKLIN TELEGRAPH COMPANY.

THE FRANKLIN TELEGRAPH COMPANY, the longest lived, and, in some respects, the most energetically conducted of the opposition lines erected between Boston and Washington, had its origin in an invention of Charles H. Burd, with which he hoped to accomplish important changes in American Telegraphy. He succeeded in organizing a Company to which he gave a very felicitous title, and was successful also in obtaining, in 1865, a charter therefor, from the Commonwealth of Massachusetts. But the machine of Mr. Burd, which was simply an attempt

to use the permanent and electro-magnet in combination, did not accomplish what was expected of it, and the corporators wisely determined to delay active outside operations until it did.

Cotemporaneous with Mr. Burd's enterprise, John W. Lane of Portland, Me., in concert with F. O. J. Smith, who had sold out all his stock in the existing lines, started an independent line from Boston to New York, without organization and minus a charter. This they pushed somewhat vigorously until Springfield, Mass., was reached. Here they were refused a passage through the city and the work was stopped. Thus foiled, Lane entered into negotiations with Mr. Burd and his corporators, with whom terms of union were agreed upon, and under the charter of the Franklin Telegraph Company Lane's men started again for New York. On the 23d of November the company thus chartered was duly organized, and James W. Brown, F. W. Pelton, J. W. Lane, J. W. Browning and F. B. Smith were elected Trustees. The capital of the company was fixed at \$500,000 in 5,000 shares of \$100 each. John W. Lane was elected President.

In 1863 an inventor of insulators, named Van Choate, devised a wooden insulator with a rubber-coated iron shank with which he, too, was to revolutionize the telegraphs of Christendom. On this insulator for a basis, Van Choate succeeded in securing a charter from the commonwealth of Massachusetts and organizing a company named THE INSULATED LINES TELEGRAPH COMPANY, to build a line of telegraph from Boston to Washington with a capital of \$2,500,000, with Mayor Weightman of Boston as President. Under this organization a line of four wires was rapidly erected, and, according to the testimony of the period, "no line ever worked better." This honeymoon state, however, did not last long, for after a few rains and frosty nights the verdict changed. It soon came to be reported that "no line ever worked so bad." The wood of the insulator cracked, the rubber upon the iron stem cracked, and the cracking went on so industriously that the line soon, through all its length, "gave signs of woe."

Meanwhile a new difficulty in obtaining admission through the streets of New York induced the Franklin Telegraph Company to offer terms of union to the Van Choate or Insulated Lines Company whose four

wires penetrated the city. This was accomplished without much difficulty, and the Insulated Lines Company surrendered its line, capital and franchises for an issue of \$400,000, Franklin Company stock, the Franklin stockholders at the same time surrendering half of their own stock for cancellation and reorganizing under a capital of \$1,000,000 with an issue of \$650,000 and a reserve of \$350,000. This reserve was designed to meet the floating debt of the Franklin, and the bonded and floating debt of the Insulated Lines Company, the latter of which amounted to \$160,000. This union removed all municipal difficulties and the re-organized company with its re-arranged capital started business with six wires by two routes to Boston, and with four wires to Washington. Horatio G. Parker and James G. Smith were added to the Board of Trustees. The number of directors was increased to nine, and on November 26, 1867, Joseph B. Stearns, James W. Brown, Weston Lewis, John S. Roberts, Henry E. Grannis, James M. Shaw, E. Baker Welch, Samuel L. French, and Edwin F. Waters were elected Directors. The lines were put in good working order, glass insulators substituted for the Van Choate wooden failures, and a number of skillful operators engaged. The company entered upon what appeared to be a vigorous and successful contest for the public business. John W. Lane and F. O. J. Smith had sold out. Joseph B. Stearns, James W. Brown, Charles H. Burd, and James G. Smith had purchased seven-eighths of Franklin stock. Joseph B. Stearns was elected President and James G. Smith Superintendent. Mr. Stearns remained President until 1870 when he dropped his official ermine on George H. Ellery, who held office until 1871.

One of the earliest arrangements made by the Franklin Company was a grant to the house of Harrison Brothers & Co. of Philadelphia, to erect a wire on the company's poles between New York and Philadelphia for the business of their house and of such parties as the lessees chose to give licenses. This was a new feature. The motive of such a contract, for no consideration beyond the use of the wire when not needed by the lessees was stipulated, is not evident, and it was found "oppressive." A wire was also leased to the War Department from Washington to Long Branch which was not compensating.

It is a curious revelation of the condition of the telegraph at that period to find a committee appointed to examine the affairs of the Franklin Telegraph Company reporting that "of the six wires owned by the company between New York and Boston the average number available was three, and of the four wires to Washington the average use was of two only." The number of offices in 1870 were at the same time reported as thirty-four, out of which only eight paid expenses. The expenses for the year were reported as having exceeded the earnings \$18,893, and that the total indebtedness was \$142,183.

In 1872 the condition had changed. J. W. Brown was President, James G. Smith Superintendent; C. H. Burd General Manager; George R. Williamson Secretary. The reserved stock had been sold and the floating and bonded debt removed. A contract with Government for signal service had been secured which yielded over \$50,000 per annum. Leased lines from New London to Norwich, Meriden to Hartford, Newport to Providence, Bristol to Boston, added to the receipts. The receipts for the year were reported at \$219,954.94. Expenses \$175,558.55. This left a comfortable balance of \$44,396.39, out of which two dividends of two per cent were paid. The year following the reported profit was \$31,792.75. The profit for the four years ending with 1875 amounted to \$108,563.42. The tariff had been reduced from sixty and fifty to forty cents on the minimum message charge, and from forty and thirty to twenty-five.

The position of the Franklin Telegraph Company in 1874 was one of apparently healthy activity and promise. W. J. Syms was President and George R. Williamson Treasurer. It had established connections south of Washington with the Southern and Atlantic Telegraph Company, with the Pacific and Atlantic at Philadelphia, and with the Atlantic and Pacific Company at New York. It also entered into an important agreement with the manager of the United States Direct Cable Company for interchange of European business at Rye Beach, N. H., and subsequently leased to the Cable Company two wires from Rye Beach to New York, the consideration of which was \$7 per mile or \$21,670.74 per annum in gold.

With the close of the year 1874 the contest between the Atlantic and

Pacific and Western Union Telegraph Company began to show signs of vigor. The former company, to strengthen its position, purchased through John R. Duff 5,100 shares of Franklin stock, elected a new board who, November 20, 1874, voted under the advice of W. J. Syms, the President, to lease the Franklin Lines to the Atlantic and Pacific Company, at \$25,000 per annum, for a term of ninety-nine years. The vigorous opposition of the minority of the stockholders, however, prevented its consummation. The lease was not perfected until June 15, 1876, under Gen. Eckert as President, when the terms were formally ratified and a committee empowered to execute the lease which was made to include the assumption of all the obligations of the Franklin Company and the annual payment of \$2.50 a share to the Franklin stockholders. The contest over the execution of this lease was warm, protracted and persistent. The chief opponent of the movement was George R. Williamson, Treasurer of the Franklin, who with 100 out of 127 actual stockholders, asked the courts to dissolve the company and appoint a receiver. It was claimed that the Franklin Telegraph Company was doing a business of over \$300,000 per annum at a cost of eighty per cent, and was capable of earning a clear annual profit of twenty per cent. It was shown, however, that the average earnings during four years had not exceeded \$78,000 and that the lease was above the average profits.

The Franklin Company owned 1,133 miles of pole line, 3,262 miles of wire, 158 offices and had 500 employees.

Its Board of Directors in 1876, when the lease was finally consummated, was composed as follows: Sidney Dillon, Jay Gould, W. J. Syms, John A. Mortimer, Thomas T. Eckert, Henry M. Taber, Frederick L. Ames, Edwin F. Atkins, E. H. Rollins.

The Franklin Company under Mr. Joseph B. Stearns first brought duplex telegraphy into actual employment but to a very limited extent. James G. Smith had, some years before, made drawings of a device to accomplish it, but had regarded it as a thing possible but unneeded. Mr. Stearns was urged to consider it by the pressure of the times, the need of wires and the impecuniosity of his company. After many experiments which were more or less promising and which seem to

## THE ATLANTIC AND PACIFIC TELEGRAPH COMPANY. 595

have been in no respect different from the plan of Gintl, duplex telegraphy became by the knowledge of the use of a condenser, a success. Mr. Stearns patented his process, sold it to the Western Union Telegraph Company and introduced it into the telegraphs of Europe. It has since then been over-shadowed by the quadruplex which practically embodies the same combinations, and accomplishes its remarkable results by similar methods.

## GOLD AND STOCK TELEGRAPH COMPANY OF CALIFORNIA.

The Gold and Stock Telegraph Company of California was organized April 28, 1878, with a capital of \$600,000. George S. Ladd, President; James Gamble, Vice-President; M. Greenwood, Treasurer; Andrew White, Secretary. Board of Directors: George S. Ladd, James Gamble, M. Greenwood, William Ashburner, D. O. Mills. This company is the result of a combination of the interests of the Gold and Stock Telegraph Company of New York, and the American District Telegraph Company of San Francisco. One of the last official acts of President William Orton before his death, and which was largely the fruit of his recognition of the enterprise and ability of Mr. Ladd as an executive officer.

## CHAPTER XLIV.

## TELEGRAPHS IN CITIES.

THE primary mission of the telegraph, in the thoughts of men, was to give the means of intercourse between communities widely separated from each other. The humanizing influence it thus exerted, even in anticipation of its accomplishment, was marvelous and conscious. It gave to races of men in various far-separated climes a sense of unity. In a very remarkable degree, not necessarily definable, the telegraph in this mission of union, confederated human sympathies and elevated the conception of human brotherhood. By it the peoples of the world were made to stand closer together. In the course of time, however, the telegraph found a new field of operation. It proposed to domesticate itself among the more local and social necessities of men.

The first suggestion of the local employment of the telegraph sprang, in part, from the habit of telegraph superintendents connecting their homes with their offices. They could thus be apprized of all emergencies requiring their counsel, and could give directions as promptly as if personally present. Probably the first private telegraph line for local business purposes was erected in 1849 for Col. R. M. Hoe, the well-known inventor of the Cylinder printing press. He was a Director of the Magnetic Telegraph Company, and of a nature too practical to fail to see its possible advantages to himself. He had a line constructed between his office in Gold street and his factory in Sheriff street, New York, using the ordinary Morse machinery for communication. Its value was at once evident. The master was felt to be among his men although two miles intervened. And when the press announced that the New York, Albany and Buffalo Telegraph Company had courteously connected Professor Morse's beautiful home on the Hudson with the State offices, enabling the venerable inventor to sit like a royal



Engr. by A. H. Ritchie

Henry Bentley

spider in the midst of the webs of throbbing wire, the idea of its domestic employment became more apparent and attractive.

The first strong stimulus given to the construction of local lines, and which led to their ultimate multiplication, was given when opposition companies commenced the struggle for public business. At first a single well-located office was deemed sufficient. But when Gustavus Swan in September, 1853, left the New England lines to open an office at the Astor House, New York, for the collection of messages for all lines, and the Companies saw how large were his receipts, the advantage of auxiliary stations at all the natural centers of business became evident. Up to 1853 there was no telegraph office in New York, out of Wall street, or its immediate neighborhood, except the office of the National Western Lines opened by James D. Reid, at 181 Broadway, in 1851, when for the first time New York and Pittsburgh and Cincinnati were put in direct telegraphic connection. In April, 1853, the New York, Albany and Buffalo Company opened the first auxiliary office at the St. Nicholas Hotel. In the fall of the same year the Magnetic Telegraph Company opened an office at the Irving House, Broadway. It was sometime, however, before the companies took active measures in this direction. The volume of telegraphic business was not yet large. Meanwhile a new enterprize started into life.

In 1854, Henry Bentley, a youth aged 20, born and raised in Dutchess County, N. Y., armed with a single silver half-dollar, and a few dollars in currency, started from Poughkeepsie on a barge to try his fortune in New York. He had early in life exhibited a fondness for the goose quill, and had some experience as a writer for village papers. On arriving in New York he sought employment of that kind, and soon became a Bohemian and wrote for the *Tribune* and other daily and weekly papers. He also acted as book-keeper for a coffee and spice store whose business was "limited."

About this time J. B. Richards, a skillful mechanic, was at work at 621 Grand street, New York, perfecting the printing telegraph instruments of Royal E. House. Here Bentley found his way as an apprentice, using the night for his Bohemian duties. In 1855 he assisted in the organization of a Company for the erection of a Metro-

politan Telegraph Line to communicate between points within the city by the aid of modified House Printing instruments. When organized it was named "*The New York City and Suburban Printing Telegraph Company.*" John Hecker, Samuel Milbank, Dr. John Cockroft, and John B. Richards were the capitalists. Thomas K. Austin was Superintendent. Bentley was general manager, constructor, repairer, battery-man and cashier, assisted by S. C. Hendrickson, who, however, soon sought more profitable labor.

The central office was in a deep basement in Chambers street, near Broadway. Three wires radiated therefrom. The first went to Chatham Square, East Broadway to Pike Slip. A second went to a basement opposite the St. Nicholas Hotel. A third connected with the Astor House and 21 Wall street. An immense oval sign designed to receive in the center an illuminated clock which never appeared, was placed over the subterranean entrance. The tariff was ten cents for ten words. The scheme was a failure. Messages were few and far between. Bentley, however, having faith in the enterprise, leased the lines, and agreed to pay the stockholders twenty-five per cent of all he made.

Meanwhile he had, as a writer for the daily and weekly press, managed, by great economy, to save several hundred dollars. J. B. Richards and friends gave him one thousand more. With the bravery inspired by an ample exchequer, Bentley at once waited on a number of hotel proprietors and induced them to give him free office rent, and to board, without charge, an operator. This done, he opened offices at the Metropolitan, New York, and St. Germain Hotels, the Broadway Post-Office near Canal, Broadway and Seventeenth streets, Fourth Avenue and Twenty-Sixth street, Crystal Palace, and two other points on the east side of the city. Immediately a fine business sprang up. Bentley's purse was soon large and full.

The Magnetic Telegraph Company had attempted to connect Brooklyn by a submarine cable at Fulton Ferry. Finding, however, that the maintenance of telegraphic communication with Long Island was difficult and unremunerative, it was abandoned. The cable was, however, subsequently taken up and relaid by Bentley at Dunlop's Ferry above

Blackwell's Island, at the lower end of Hellgate, from which point the wire was continued down to Williamsburg and Brooklyn, and offices were opened at both of these places. Fifteen offices in all were thus opened. All did a fair business and returned good monthly balances. Prof. Morse became deeply interested in this work, and Bentley courteously had a wire led to the Professor's library in his city home on Twenty-Second street, New York.

While thus carrying out his project of a City Telegraph, Bentley started a system of message depositories where messages might be left, called for, and carried by messengers to the telegraph offices. For this purpose he had stamps of various denominations in the form of a small shield engraved, which could be purchased and affixed to a dispatch when deposited. Boxes for the reception of dispatches were left with druggists and others. Messengers called at stated hours and carried them to the telegraph stations. But spirited as all this was, it would not work. Wrong tariffs were paid. Illegible messages were dropped in the boxes. Answers also were received with imperfect addresses, which made delivery impossible. All this soon raised a storm, and claims for damages became unpleasantly frequent. Under such circumstances the boxes were withdrawn, and the experiment has not been repeated except in two or three European cities where it is now being attempted.

In connection with these telegraphic arrangements Bentley started the Madison Square Post-Office, soon after known as "Bentley's Dispatch," for the delivery of letters in the city and for deposit at the General Post-Office. There were, at that time, no auxiliary post-offices. Letter-carriers were rare and deliveries few. Letter-writers had to go or send to the General Post-Office to deposit their letters. Bentley offered to do this for a cent each. The project was well received and thousands of letters were brought to him daily. This was maintained for several years with great success and profit. At last Bentley sold out at a large price. Ill health also induced him to dispose of his telegraphic arrangements and lines to the American Telegraph Company by whom they were, subsequently, greatly enlarged.

Recovering his health, Mr. Bentley settled in Philadelphia, and, with

his literary instincts still strong, attached himself to the *Philadelphia Inquirer*, and became correspondent and contributor for several papers and periodicals. His war correspondence was voluminous. His "Letters from a balloon" where the writer was supposed to describe what he actually saw within the enemies' lines, were very popular. Immediately prior to the close of the war Mr. Bentley resumed his connection with the telegraph by building a number of private lines, the majority of which were finally merged in the "PHILADELPHIA LOCAL TELEGRAPH COMPANY" with a capital of \$400,000 and a liberal charter. Under this organization, of which Mr. Bentley is the President, hundreds of miles of telegraph lines were built and a very varied service supplied to a large number of persons. These were classified as "Telegraph Exchange," "Financial and Commercial News," "Bank Lines," "Private," and "Local Department." The Telephone is now added to his telegraphic wares.

The "Telegraph Exchange" so-called from the facilities it provides, exists nowhere else in so complete a form as in Philadelphia. Scores of business houses and firms are so connected, telegraphically, at will, through a general central office, that they are enabled, whenever desirable, to transact business directly with each other, or with the central station. Mr. Bentley has recently added a most important feature to the work of his Company by connecting his General News Bureau with the editorial rooms of the daily press, where by the aid of a "printer," court proceedings and all kinds of news gathered by his reporters are simultaneously recorded.

Mr. Bentley was one of the earliest promoters of private line printing telegraphs, and has much native ingenuity. One of his first devices was a plan securing an open circuit when the lines were not in use. In 1864 he turned his attention to the evils of a variable and unnecessarily large resistance in relay-magnets. By experiment he proved what Varley afterward so clearly demonstrated, that a greater resistance than 150 Ohms in a relay was a disadvantage. Another important achievement of Mr. Bentley was the employment of the pure carbon masses as obtained from the retorts of the gas works, sawn into shape, and used, in its crude state, as the negative element of the bat-

tery. These pieces of pure carbon are as compact as in the ordinary prepared material, and are essentially indestructible.

As an evidence of how much thought and skill Mr. Bentley gave to the enterprises with which he was thus identified, it is somewhat surprising to find that as early as 1856 he constructed a pair of "Indicators" on a plan very similar to that afterward so successfully adopted by Dr. Laws, and which he worked between the Irving House and the office of Aaron Swartz in Chatham Square, on the corner of East Broadway. They were very rude in construction, yet were successful in giving visual signals. There was, however, no demand for them at that time. It was not until the era of war and financial disorder and speculation came that quotation printing instruments became a success. One of Mr. Bentley's latest inventions is that of an immense adjustable and equating rheostat by which numerous wires of various length may be worked from the same battery with an unvarying current.

For some years past Mr. Bentley has been President of "Friends' Book Association," an enterprize conducted by the Society of Friends, similar in all respects to those of the "Methodist Book Concern" and the "Presbyterian Board of Publication." He is also manager of the House of Refuge of Philadelphia. The officers of this institution are appointed solely because of their high character, and the appointment is therefore a token of public estimation.

With such a reputation it was natural that many trusts should be placed in his keeping. Mr. Bentley as trustee, executor, and in various other fiduciary capacities, has had the direction of large estates involving many and varied interests given to him with the largest discretionary powers. He has honored every responsibility thus thrown upon him. The success of his life is a lesson to young men. It is the triumph of well-directed and persistent labor.

#### THE METROPOLITAN TELEGRAPH COMPANY.

In marked contrast with Mr. Bentley's successful ventures was the attempt by an organization styled the "Metropolitan Telegraph Company of New York" to establish Telegraphic connection between all parts of Manhattan Island on a uniform tariff of ten cents per mes-

sage. It was duly incorporated January 15, 1869, with a capital of \$1,000,000 in 10,000 shares of \$100 each. Its officers were General Robert B. Potter, President; W. E. Hoy, Vice President; W. B. Dinsmore, Jr., Secretary; Hon. E. Haight, Treasurer; Engineer-in-Chief G. Howard Ellers, C. E.; General Superintendent, Merritt L. Wood; Consulting Engineer, Frank L. Pope; Counsel, E. E. and E. H. Anderson. In spite of this fine array of officers, a low tariff, an ample capital (unfortunately unsubscribed), and much advertising, the enterprise, like the Royal George long ago, capsized and went down.

#### THE GOLD REPORTING TELEGRAPH.

The origin of the system of supplying quotations of sales of gold and other values by telegraph is due to S. S. Laws, LL.D., now President of the University of the State of Missouri. In 1861, Dr. Laws was President of one of the synodical colleges of the Presbyterian church in Missouri, the buildings of which becoming necessary for war purposes, they were abandoned to the Government. Dr. Laws at the same time resigned his presidency, went to Europe, whence he returned to New York in 1863. He was a thorough mechanic. For a number of years in his early life he had served in a hardware establishment for the manufacture of tools. The dexterity thus acquired he used in securing an education which he completed at Princeton, where, under Professor Henry, he became thoroughly familiar with current electrical scientific knowledge.

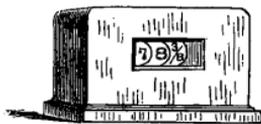
Soon after Dr. Laws had returned from Europe and settled in New York his pursuits took a new, and wholly unexpected direction. In assisting the business of a relative he had frequent occasion to transact business in the Exchanges, where he soon became known for his tact, prudence, and general ability. So recognized had this become, that upon the organization of the Gold Exchange, he was elected its Vice-President, thus becoming its acting presiding officer. He had thus the amplest opportunity to become familiar with its operations.

While thus serving as the presiding officer of the Gold Exchange Dr. Laws, following his mechanical instincts, devised an instrument, which, by a mechanical device operated from within the gold room on a

double-faced indicator—one face of which was visible to the street and the other to the gold room, he had announced, not only to the members of the Exchange, but also to interested, and often highly excited crowds outside, the varying state of the market. At that period the opening price of gold at the Gold Exchange regulated the day's prices of a large variety of articles of active commerce. Early, therefore, each morning, great crowds assembled on the street to catch the first figures of the GOLD INDICATOR, and then hasten therewith to their places of business to mark a corresponding value on their goods. This excited condition of things, and the multitude of messengers kept running between the Exchange and the offices of brokers to communicate market changes, suggested to Dr. Laws the construction of mechanism in which the electric current offered the ready and efficient agent, by means of which sales might be communicated, instantly and simultaneously, to a number of offices or centers of business.

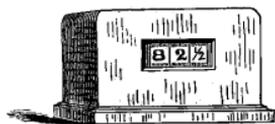
So eminently practicable and desirable did this scheme present itself to the mind of Dr. Laws that he resigned the Vice-Presidency of the Exchange and devoted himself wholly to the creation of a GOLD REPORTING TELEGRAPH. So ardently did he thus devote himself, that on the close of 1866 he had not only completed a very unique and practical device for this purpose, but had secured a patent therefor (December 31, 1866), and had closed contracts with over fifty brokers to erect indicators in their places of business. These instruments were manufactured by Charles T. and J. N. Chester. They were all connected on the same circuit; were operated upon by a single key-board, and the sales of gold were, with every fluctuation of the market, simultaneously transmitted to all subscribers. It was a beautiful and happy achievement and excited universal and pleased attention

The GOLD INDICATOR, as the Laws' instrument was appropriately called, was purely visual. It was composed of three discs, moving on parallel arbors arranged to over-lap each other, and to expose a portion of each of their edges through a slot in the face of a wooden case in which the mechanism was inclosed. Around the front of the edge of each of these discs figures



were painted, two of them with the ordinary numerals, and a third with fractions by eighths.

After a short period a new form of the Indicator designed by F. L. Pope, was introduced, which retained the same essential elements and mechanical movements. The over-lapping discs were replaced by wheels or drums with their peripheries in line and revolving, dependently, on parallel axes, behind the open slot of the enclosing case. On these peripheries the figures were painted, as in the case of the discs, and were operated in the same way. This form of Indicator, which had some advantages unnecessary to describe, is still in successful, although in much diminished use.



Dr. Laws had embraced in his plans for a visual system, an arrangement for imprinting Roman characters on a flowing paper, and which appears in his application for a patent. This he accomplished by a single wheel on the outer edge of which were types for printing letters, figures and fractions. The introduction of fractions on the type-wheel of a printing instrument was original. The movement of this type-wheel was essentially the same as in the Indicator. The device peculiar to both was in a double alternate escapement for reversal, at will, of the direction of the rotating discs, or drums, or type-wheel, by which every letter was within half a revolution of the type-wheel or dial from the point of impressment or exhibition.

On supplying to the printing instrument the simple but essential element of an independent line-wire and electro-magnet to act upon an impressing lever to secure the printed record, Dr. Laws found that Henry N. Baker of Binghamton had patented, April 29, 1856, this very combination as part of a large and clumsy machine, designed as a rival to the House Printing Telegraph, but which had so far been put to no practical use. This patent, so essential to his success, Dr. Laws at once purchased, and this purchase formed the basis of value to all succeeding instruments of this character, and gave the chief value to the assignments which Dr. Laws afterward made to the Gold and Stock Telegraph Company. A valuable device, called a unison stop, by which perfect synchronism was automatically restored along a

whole line of instruments, was added by Dr. Laws. It was effected by a small electro-magnet brought into action by an increase in the volume of the ordinary current, which threw a shaft in the way of the train at a given point.

The mechanical arrangement of the Laws Printer was the work of Thomas A. Edison.

Mr. Frank L. Pope, a name familiar to invention and telegraphic literature, became superintendent for Dr. Laws, November 11, 1867 some time before the gold indicators were put in actual service, and managed the operation of the machinery with characteristic skill. The business of exchange in gold became completely revolutionized. In a little over a year about 300 offices were supplied with indicators, and the messenger service, essential to the former system, was, much to the disgust of a regiment of outwitted boys, at an end.

Dr. Laws soon after introduced his system into Philadelphia where he erected a circuit embracing thirty offices, and which he supplied with quotations transmitted over one of the wires of the Bankers and Brokers' Telegraph Company from the New York Gold Exchange. In this he introduced the plan, now followed, of transmitting, without previous signalling, the sales as they were made. He was thus able to deliver his quotations on his Philadelphia circuit in an average of fifteen seconds from New York. Arrangements were also made to introduce it in Boston. This was prevented by a sale, August 27, 1869, of all Dr. Laws' interests to the GOLD AND STOCK TELEGRAPH COMPANY (an organization which had started to life upon a patent granted to E. A. Calahan, issued April 21, 1868), and to which Dr. Laws resigned the further management of the enterprise. At the time of this assignment Dr. Laws had made an application to the Patent Office for a patent in interference with an application of the Gold and Stock Telegraph Company for a re-issue of the patent to Calahan, in which the value of his acquired rights, especially in the matter of the Baker patent became so obvious, as to give the assignment of his interests great value both to himself and to the purchasers. The assignment included, besides the patents, seventy-five printing instruments, thirty of which were in actual use, and 140 Gold Indicators which were earning revenue in New York city.

## THE GOLD AND STOCK TELEGRAPH COMPANY.

THE GOLD AND STOCK TELEGRAPH COMPANY, now one of the most significant and interesting of modern enterprises, had its origin in the construction of a printing instrument by Edward A. Calahan for the provision, by telegraph, of sales of the New York Stock, Gold, and other Exchanges. Mr. Calahan entered the service in 1850 as messenger, under Geo. B. Prescott, for the New York and New England Telegraph Company, in Boston, having for companions William Porter and Sidney Fairchild. He afterwards became one of the operators of the Western Union Telegraph Company, and previous to his invention, was draughtsman and assistant to Gen. Marshall Lefferts, at that period its Engineer.

The device of Dr. Laws had a single type wheel, which, by the aid of two electro-magnets and wires, could be made to rotate, backwards or forwards, at will, thus rapidly reaching the letters desired. Mr. Calahan devised the plan of employing two wheels — one for figures and fractions, and one for letters, a direct forward movement for both, and the ordinary step by step motion. This he regarded as simpler and of more certain action.

The first instrument constructed by Mr. Calahan was not successful. Unskilled as a mechanic, he needed the aid of a competent workman and capital. He was fortunate, therefore, in interesting Mr. Elisha W. Andrews, now President of the American District Telegraph Company of New York, in his project, who, quickly comprehending the capacity and field of the instrument, enabled Calahan to finally perfect an effective apparatus and to secure the issue of a patent therefor April 21, 1868. It was compact and symmetrical, was operated by three wires; was covered



with a neat glass shade, which, while preserving the mechanism from dust, enabled the action to be seen; and was planted on a small and appropriate shelf, the paper ribbon with its clear bold record in open-faced Roman type flowing through an orifice beneath the glass shade. The Calahan is regarded as the simplest and most reliable instrument of the kind in the service. Since its original construction, as greater rapidity of movement came to be demanded, Patrick Kenny, an ingenious mechanic, at one time superintendent of the shops of the Gold and Stock Telegraph Company, and who constructed some of the earliest Calahan printers, attached to it a very ingenious and effective device by which the capacity of the instrument was doubled, yet without change to its original essential features.

THE GOLD AND STOCK TELEGRAPH COMPANY was incorporated August 16, 1867, under the general telegraph laws of the State of New York, with a capital of \$200,000. At the formal organization of the company, September 19, 1867, Elisha W. Andrews was elected President, George Conant Treasurer, and R. H. Gallaher Secretary. The business of the company was the instantaneous and simultaneous supply of quotations of the sales of stocks, gold, and other values made at the Stock, Gold, and other Exchanges, by telegraph. Its mission was so adapted to the banking and broking interests of New York that the new company entered, at once, into a remunerative business.

In 1868 many new parties had become stockholders, and the capital was enlarged to \$500,000. Among the new stockholders were Joseph Ridgeway, George B. Field, D. J. Garth, Joseph M. Cook, H. L. Hotchkiss, Jared Williams, M. M. Andrews, H. E. P. Gallaher, R. H. Gallaher, Jr., Forbes Parker, and C. T. Hotchkiss. At the election of officers July 13, 1868, George B. Field was elected President, H. L. Hotchkiss Secretary and Treasurer, E. A. Calahan Superintendent, and Elisha W. Andrews, D. J. Garth, Joseph M. Cook, and George Conant Directors. It was soon after this organization that Tracy R. Edson, Esq., well known as the President of the American Bank Note Engraving Company, becoming interested in its operations, invested literally in its capital. He soon began to take an active personal interest in its management, was elected a director in 1869, and has ever since been

a member of its Executive Committee. With much natural tact and persistence, Mr. Edson gave to the development of the Company much of his thought and time, and greatly aided the popular and politic administration of its affairs. It was largely through his agency that, soon after his election, the Company secured the property and franchises of Dr. Laws (August 27, 1869), and entered into a large and popular development of the business. Mr. Edson also initiated the movement, not long after completed, by which the contract made with the Western Union Telegraph Company through which the business of the Gold and Stock Company acquired its present national proportions, was finally effected.

At the annual meeting of the company held September 6, 1870, the capital stock was enlarged to \$1,000,000. At the same period Gen. Marshall Lefferts who had been elected President on the retirement of Mr. Field in the previous March, was again elected a director, and at the organization which followed, was chosen President of the Company.

One of the first acts of the company under its newly organized board was the purchase of rights under the Page patent, so far as it affected its interests or devices. Still further to strengthen itself and provide for the widening field of its operations by the construction of city lines, involving large outlay, the capital was enlarged to \$1,250,000. At the same time important changes were made in the workshops of the company. A higher class of skilled labor was employed. The printing mechanism underwent a more thorough examination, and the daily minute inspection of every instrument in use by subscribers made the service increasingly effective and popular. In a single year there was added to the rental of instruments over 300 new subscribers. In 1871 the whole number in use and earning revenue was 729.

In 1871 the Gold and Stock Telegraph Company entered a new and important field. A quarter of a century ago when the eastern seaboard telegraph lines were first constructed to Boston, and before telegraphic communication was complete with Halifax, the European news was telegraphed to New York by John Turel Smith, Lessee of the Boston Merchants' Exchange, to an Englishman named Thompson, connected

with the *Courier and Enquirer* of New York, who, after such use as he chose to make of it among his friends on Wall street, sent it to the papers South and West.

Meanwhile D. H. Craig had conceived the idea of training pigeons as European news messengers, and, at much pains, expense, and industry, had established a relay of birds from a point in Boston Bay, east of Cape Ann, to that head land, and thence to Boston. Taking with him a half-dozen of his birds, Craig would quietly take passage from South Boston to Halifax, and intercept and return by the arriving steamer from England. Providing himself with the latest copy of Wilmer & Smith's *European Times*, and other journals, he prepared, in the privacy of his own state-room, a careful digest of commercial and political news written upon fine manifold paper, to be ready for use upon arrival. At the proper place, when still far from land, and often before it had been discovered from the deck, one or more little birds might have been observed circling in the air above the steamer, and then, with the speed of thought disappearing in the direction of the yet unseen coast. Within half an hour from this silent flight of the birds from the deck of the steamer, the message was received at the Cape Ann station by the watchful keepers, transferred to other couriers, and placed in the hands of the printers in State street. Before the steamer had even been descried from Nahant, or announced as in the offing, the Press had spread the latest intelligence by the bird mail before the public, and the telegraph had dispatched it to the cities along the sea-board.

This was the origin of a system now known as the COMMERCIAL NEWS DEPARTMENT, under which, besides supplying the daily papers, early foreign and domestic market advices were provided to private parties on certain stipulated liberal terms. It was a vast power, and, in the hands of its early agents, lucrative. It was impossible that it could long remain in the control of a single man. On Mr. Craig's retirement, therefore, from the post of Agent of the Associated Press of New York, the Western Union Telegraph Company, in connection with the New York Associated Press, made it a department of their business. It soon after became one of the most far-reaching systems of modern times.

All over the civilized world the New York press had its agents. These having the run of all commercial exchanges were instantly advised of every change in values and markets, and reported them, by telegraph, to central offices in London and New York. All these reports were placed, on the instant, at the control of the Commercial News Department of the Western Union Telegraph Company for distribution throughout the country. By a wise and liberal arrangement, the markets of the world became accessible to any man, in any city or town throughout the continent, who was willing to pay for them. To encourage this the tolls were made low. To make the service effective, the moment a foreign market quotation was received at the central office in New York, wires leading to all the great commercial centers of the continent were placed into the exclusive use of the operators of the Commercial News Department, and the information, at once, flashed out from ocean to ocean, and again, by branch wires, distributed, simultaneously, in all directions. This whole system was utterly without favoritism or preferential delivery. The tariff was regulated, not by distance, but by the ability of the subscriber. The applications for reports under this department multiplied rapidly.

The commercial news system was not established without vigorous opposition. It destroyed the hopes of not a few men who made the private supply of news profitable. After a thorough examination, however, it was determined to increase its vigor and make it permanent. It was early placed under the management of Mr. E. F. Ludwig, under whose conscientious and laborious care it has worked its way to a very large and fruitful public acceptance.

Edwin Forrest Ludwig was born in White Deer, Union county, Pa., Oct. 26, 1839. He learned the telegraphic art at Milton, Pa., in 1852, and, after filling several subordinate places, became Manager of the Philadelphia office of the Susquehanna River Telegraph Company, of which Dr. A. C. Goell was President and M. C. Grier Superintendent. In 1860 Mr. Ludwig went to Charleston, S. C., and, during the war, had charge, at different periods, of the offices at Charleston, Savannah, and Augusta. In 1866 he became Manager of the New York office of the American Telegraph Company, and, in 1867, was

appointed to his present responsible duties which he performs with much acknowledged industry, fidelity, intelligence and skill.

The Gold and Stock Telegraph Company had, meanwhile, in a somewhat similar although local field, secured a strong hold on New York. Its business, within the range of its then limits, was large and promising. For about two years it had paid quarterly dividends of two and a half per cent. But it was, so far, purely metropolitan, and its business limited to the quotations of the Stock and Gold Exchanges. It had no agency through which to connect its New York system with the centers of commerce else-



E. F. LUDWIG.

where, and had no opportunity, such as it desired, to exchange local markets with those of other cities, and thus to enlarge its field of operations, except through agencies which regarded it with more or less of distrust. Its only outside agencies were in Baltimore under A. G. Davis, and in Boston under Bossart and Stearns, under whom the New York system was carried out to a limited extent.

It was in this state of things, and with evidence that the Western Union Telegraph Company had come to recognize the Gold and Stock Company as an energetic and dangerous local power, that hostility from that source began to manifest itself. The Western Union Company could not afford to allow so evident a local force to occupy a position where it could be taken up as the auxiliary of a competitor and be used against it. Indeed it had, with characteristic watchfulness, taken measures to occupy, if necessary, the same field, the value of which it could greatly enhance by its connection with the commercial centers of

the Continent and the World. George M. Phelps had already constructed for it an effective printing instrument. Its power, therefore, as a possible antagonist was evident, and had to be regarded.

Mr. Tracy R. Edson, whose exceptionally large interest in the capital of the Gold and Stock Company made him especially watchful of its affairs, soon perceived the danger to which success under a vigorous and discreet administration had brought his Company. It became evident to him also, that any enlargement of its business by its extension to other cities would have to be accomplished through one of the leading telegraph companies. He therefore, after much careful thought, proposed a plan of co-operative union with the Western Union Telegraph Company by which the mutual interests of both would be conserved. Gen. Lefferts, quickly perceiving its importance, urged on Mr. Edson the task of attempting its accomplishment. Mr. James H. Banker, then Vice-President of the Bank of New York, and at that time one of the most energetic and influential of the Executive Committee of the Western Union Telegraph Company, cordially offered his co-operation, and the project was promptly presented to the officers of that Company.

Fortunately, circumstances at that time connected with the Western Union Telegraph Company favored the proposal. Its position as a Company was powerful and commanding, but the necessary aggressiveness of its movements in the consolidation of its vast property and interests had naturally roused against it many vigilant enemies. These had seized upon the business conducted through the Commercial News Department as evidence of a design on the part of the Western Union Telegraph Company, to traffic on the knowledge of the changes in the markets of the world to the danger and detriment of general commerce. Under the administration of some men such a scheme was apparently possible. This possibility gave plausibility and a kind of dignity to denunciation. The field of operation seemed fruitful and vast, and diatribes on monopoly were many and eloquent. The Western Union Company, conscious of the impossibility of any Company being able successfully to violate in any such way a great public trust, and satisfied that time would vindicate the uprightness of its gen-

eral policy, nevertheless perceived the advantage of separating that department from their ordinary business and placing it under the special direction of a separate organization. The proposition, therefore, was made to the Gold and Stock Telegraph Company to turn over to it the entire Commercial News Service, valuable facilities of intercourse with all parts of the continent, the Phelps' machinery, and other important advantages, upon an agreement to issue to the Western Union Telegraph Company an amount of stock corresponding to the then capital of the Gold and Stock Company. This was soon after done and became the basis of a contract executed May 25, 1871, by which the capital became \$2,500,000. Gen. Lefferts was retained as President, and William Orton, Horace F. Clark, James H. Banker and Tracy R. Edson became its executive committee. The operations of the Company became at once world wide, and systems of financial, produce, cotton and other market quotations were added to its general and metropolitan business.

In its city operations the Gold and Stock Telegraph Company has some peculiar features:

1. The most prominent of these includes the instrument for distributing and recording the operations of the Stock Exchange and other important financial items—gathered therein by a staff of competent reporters. In New York, sales at the Stock Exchange are, by these instantaneously communicated by a single manipulation to about 500 different parties at their offices, where, on a flowing ribbon of narrow paper are printed in clear Roman characters the various transactions of the day, at the instant of their occurrence.

2. Another class of instruments provide the quotations of sales at the Produce Exchange, and of the markets for produce elsewhere. These embrace the sales of flour, wheat, corn, oats, rye, barley, pork, beef, bacon, lard, tallow and many other products.

3. A third class of instruments communicate what are called the "Financial Quotations," which are the prices of leading railroad and other stocks and bonds both in Europe and America, and also of all

political and general items of news affecting, or likely to affect, the value of securities.

4. A fourth class of instruments supplies the sales of cotton throughout the world with statistics of production, receipts, shipments and supply.

5. A fifth class of machinery comprises what are known as "Gold Indicators," the old Law's system, also "Gold Printers," and "Gold Bids," by which current sales of gold are announced.

6. A circuit called the "General News" circuit, the information communicated by which is a compend of the valuable items of all the others, and which has proved itself of great interest to hotels and other public resorts as well as to merchants throughout the city.

All these instruments are manufactured with great care, and each one is carefully examined by a competent inspector daily. The number of instruments for these purposes in actual daily employment is 1,574, of which about 1,000 are in New York city. It is quite likely that similar systems may be introduced to meet the necessities of other industries.

The business of stock reporting in New York for telegraphic transmission is peculiar and unique. The Board of Brokers meet daily at the Stock Exchange at ten A. M. Immediately groups of men are seen to cluster at different parts of the room. These are pools, or groups of men usually dealing in one specified stock. Sometimes these clusters represent one or more additional stocks. As purchases are made, the sale is recorded on a pad held in the hands of the broker. To each of these groups the Gold and Stock Telegraph Company station a reporter qualified to operate, who instantly records the sale on his own pad, hastens to the wall of the room, at different points of which telegraphic keys are planted connected with wires leading to the central office of the company, and, without calling, rapidly manipulates in a few chosen initials the name of the stock sold, the number of shares, and the price. This is caught by an expert operator in waiting at the central office in the Western Union Telegraph Company's building, who records, letter by letter, and figure by figure, the reports thus sent. Constantly seated by the side of this receiving operator is another skillful operator, whose business it is to

watch the quotations as they are thus recorded, and by means of a transmitting instrument supplied with a bank of keys similar in arrangement to that of a piano, and connected with 120 wires radiating from the office to all parts of the city, to manipulate the record, as it is being made by his associate, to the 500 or more recording instruments with which they are connected. Thus a sale is scarcely closed before the name of the stock and the terms of sale are recorded in clear Roman characters in 500 offices more or less remote.

At the side of the presiding officer of the Stock Board also an operator is seated who, as rapidly as sales of stock are made under the regular call of the list of the day, telegraphs them in the same manner as from the pools, and are as promptly distributed. In the room for the sale of government securities the same system is pursued, and thus all the prime transactions of the day are instantly made known. For the privilege of thus obtaining the daily quotations a large annual rent is paid by the Telegraph Company.

In the transmission of these stock reports three wires and a separate battery are required for each circuit. One of these wires controls the letters, a second the figures, the third the impression, and which are all ingeniously related to each other. The battery employed is that known as the carbon electropon, and is provided in the ratio of four cells to each instrument. About 2,000 cells are thus employed which require renewal of the liquids on an average twice each week.

#### THE FINANCIAL NEWS BUREAU.

An interesting department of this metropolitan distribution of values is carried on under the name of "THE WALL STREET FINANCIAL NEWS BUREAU." Although a branch of the Gold and Stock Telegraph Company's general business, and carried on under its arrangements, it owes its origin to, and is under the independent management and proprietorship of, John J. Kiernan, whose training under D. H. Craig of the New York Associated Press, prepared him for what has become a very responsible and interesting enterprise.

Mr. Kiernan's first exploitation was in connection with John Hassan, an enterprising New Yorker, in starting what was well known in 1866

as HASSAN'S NEWS ASSOCIATION, and which was organized in the following year into the AMERICAN PRESS ASSOCIATION, for the supply of news to the press outside of the New York Associated Press. It was managed with much adroitness and vigor and, in a single year, became the purveyor of news to over one hundred presses in all parts of the country. He subsequently started, in opposition to the Gold and Stock Telegraph Company, a circuit of quotation instruments to be supplied with matter, chiefly financial, gathered largely by means of the American Press Association. Finding it advisable, however, to cease the

antagonism with the Gold and Stock Company Mr. Kiernan arranged to have assigned to him, for the field of his peculiar business, all of New York below Chambers street. Within this region he supplied quotation machinery to the principal banks and the leading centers



JOHN J. KIERNAN.

of finance, as well as to the private offices of financial men. From a central office conveniently located at 21 Wall street, in connection with the telegraph companies, he supplies the current quotations, obtained from the most responsible sources, of United States bonds in London, Paris, and Frankfort; British consols; Bank of England rates; and the increase or decrease of specie at the banks of England and France. The price of French rentes and other European values are also given. To these is added an extensive range of home quotations. Among

these may be named government, railroad and mining securities; treasury and sub-treasury receipts; the highest and lowest prices of stocks and the aggregate sales; quotations at the Philadelphia and Boston exchanges; domestic rates of exchange; all political and war news affecting values; and the arrival and departure of steamers. These require the utmost promptitude, vigilance, discretion and honor. The trust has not yet been betrayed, and the utmost confidence is placed in Mr. Kiernan's agency.

Mr. Kiernan was born in Brooklyn, February 1, 1844; entered the service of the Magnetic Telegraph Company in 1858, and soon after became an attaché of the Associated Press. Restless, ambitious, energetic, capable of prolonged labor, and perceiving the special value to Wall street of distinctive financial knowledge, he soon struck out for himself, and by diligence, untiring industry, and a thoroughly honorable handling of information of the most important character acquired from all parts of the world, has made himself one of the necessities of the New York world of finance. Constantly on the alert, with numerous agencies in all commercial centers, he keeps his fingers on the money pulse of both continents, records every changing symptom, and reports the result to the large circle of watchful eyes which daily scan this telegraphic horoscope of the financial movements of the world.

The instruments by which this peculiar and unique business is conducted are ingenious, but all, except the Calahan, have a strong family likeness. They vary in special effectiveness given to specific parts of the same instrument.

One of the earliest of the Quotation printing instruments was the invention of Thomas A. Edison and was called THE UNIVERSAL STOCK PRINTER. It was worked by two wires, and employed two type wheels, but, by a peculiar and ingenious arrangement invented by the French electrician, Dr. P. J. Dujardin, the type wheels were so attached as to be capable of being shifted, alternately, at will, over the impressing pad. The magnet which performed the shifting movement was used to make the stroke on the imprinting pad.

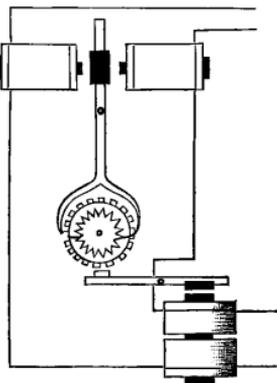
In the Universal Stock Printer was introduced a device known as the

automatic unison stop, which in its application to the step by step printer, was the invention of a young and ingenious mechanic named Theodore M. Foote. This, as constructed by Edison, consisted in an arm working in a worm formed upon the main shaft, in the path of a pin, which, when met, arrested motion in all the type-wheels on a circuit at the same point. All instruments on a circuit could, by merely turning the transmitter four times without touching a key, be thus brought into synchronism. This automatic method of the unison stop is in preferential use on all quotation telegraph machinery except the Manhattan, which employs a device, based on the plan known to old telegraphers as that of the Morse self-starter. The "Universal," as it is familiarly called, was purchased by the Gold and Stock Telegraph Company, and, at the same time, Mr. Edison was engaged as one of the Company's electricians. The "Universal" is employed solely on circuits in cities outside of New York.

An ingenious and useful improvement was made on the Unison stop by Mr. A. A. Knudson, one of the Company's inspectors. It consisted in opening the circuit of the line for a single instant, by which the pallets were released on all instruments, and the mechanism fell back with great rapidity to a common zero. This was patented October 17, 1876. Mr. Knudson also patented June 24, 1873, a device for supplying power to supersede the weight or spring in working the type wheel by a self-winding device accomplished by the re-active force of a spiral spring, one end of which was wound up by a shunted magnet. In connection with the device he inserted a call bell to indicate changes in gold or the noting of time. A third invention of Mr. Knudson, patented March 5, 1875, was an arrangement by which, in connection with a polarized armature vibrating between two magnets working the escapement, the press and spring are worked by extended cores with an armature over each. All these devices are now the property of the Gold and Stock Telegraph Company.

The Phelps Printer which became the property of the Gold and Stock Telegraph Company, through its arrangement with the Western Union Telegraph Company, was a beautiful creation, as are all the products of its tasteful and skilled inventor. As originally constructed it con-

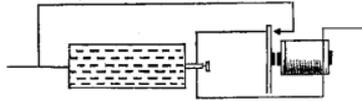
sisted of two electro-magnets, each connected in a separate line wire and placed on each side of a soft iron armature to which were attached pallets acting on a starwheel escapement of thirty-six teeth. These pallets were so formed as to advance the starwheel, on the shaft of which the type wheel was affixed, with the least possible friction. Currents of the same polarity, sent first in one wire and then in the other, caused the armature to vibrate from side to side, giving a rotary motion to the type wheel. An electro-magnet acting on a lever for impressing, having one coil connected with one line wire, and the other with the second, acted upon a permanently magnetized armature which, by its direct stroke, imprinted the characters on the flowing ribbon, and, by its return, moved forward the paper. The polarity of the currents which produced the forward motion of the type wheel repelled the permanently magnetized armature of the press magnet and kept it unaffected. The transmitting instrument, however, was so arranged that the last wave of the current which rotated the type wheel, was prolonged, and the current reversed. This retained the type wheel, put the magnetized armature in action, and produced the imprinting stroke.



This instrument, which came to be called the "financial instrument" from the fact that it was devoted by the Gold and Stock Company to what are called distinctively "financial quotations," was improved by Mr. Henry Van Hoevenbergh by removing the polarized armature from the press magnet and placing it on the vibrating armature, according to the method patented by F. L. Pope and T. A. Edison, April 26, 1870. By doing this he dispensed with one of the main wires. The current of a single wire passed through all the magnets. The transmitter sending rapidly alternate waves of positive and negative polarity vibrated the intermediate magnetic armature and rotated the type wheel. These currents were kept from actuating the armature of the impressing magnet by a spring attached thereto. The transmitter, however, was so arranged

that when a letter was being reached, the last wave of current sent was prolonged, and the prolongation of the current saturated the press magnet and secured the action which impressed the type.

An ingenious improvement to increase the working margin between the strength of current in the type and press magnets was devised by Mr. Arthur V. Waldron, an inspector in the service of the Gold and Stock Telegraph Company. This consisted in placing a rheostat in the



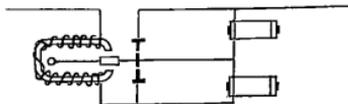
line of the main current so connected with the points of a relay in the same circuit that when the points of the relay were open the rheostat was in circuit, and when closed in the act of printing, was shunted out.

The Phelps' Fast Stock printer is of recent production and is regarded by experts as the most perfect of its kind.

In the same line wire with the type magnets is placed an ordinary electro-magnet called the press magnet, having long cores. These are surrounded with non-magnetic envelopes on which the coils are wound. The rapid waves of current passing through these coils do not charge the core sufficiently to enable it to attract its armature. When, however, the transmitter stops to print a letter, the last wave of current sent is prolonged. This causes the press magnet to attract its armature, thereby moving a detent which releases the printing mechanism. The movement of the train, thus freed, operates the printing and feeding mechanism. This instrument has a shifting pad and double type wheel, the platen of which is shifted from one wheel to another by an automatic action in the control of the operator on Dr. Dujardin's principle as in the "Edison Universal." Its capacity is thirty words per minute.

Another instrument which became the property of the Gold and Stock Telegraph Company was called THE GOLD PRINTER and was the invention of Frank L. Pope and Thomas A. Edison. As originally used by the Gold and Stock Company it was worked by a single line-wire running through the type and press magnets of the instrument. In the same circuit was placed a small electro-magnet so formed that the armature swung between the ends of the core and was furnished with a permanently magnetized armature. This armature was so con-

nected that when moved in one direction it shunted out the press magnet, and, when moved in the other,



shunted out the type magnet. By using currents of one polarity for the type and the other for the press magnet, one could be worked without affecting the other. As at present used, the polarized switch has been removed, and two separate line-wires employed.

THE GOLD BIDS INSTRUMENT is a simple vertical galvanometer furnished with a pointer outside the dial. It has two movements, one to the right representing a bid for gold, and one to the left representing an offer. This device was the invention of Mr. George B. Scott.

#### PRIVATE TELEGRAPH LINES.

The first company for the erection of Private Telegraph Lines for individuals and business houses was organized near the close of 1869 by Frank L. Pope and J. N. Ashley, and was called "THE AMERICAN PRINTING TELEGRAPH COMPANY." The instrument employed was the "Pope and Edison Printer." Although its construction was ingenious and exceedingly simple, its action was comparatively slow. Yet a number of valuable contracts were effected for its employment, one of the first of which was for the oil house of Charles Pratt, connecting his office in New York with his works on Long Island. A cable containing seven conductors was kept fully occupied for similar contracts. The success of this company although limited, yet proved the existence of a very wide field for the purposes for which it was organized.

The same parties also organized in 1869 the "Financial and Commercial Telegraph Company" to supply at low rates to merchants and importers the fluctuations of gold. A large number of simple instruments for this purpose were manufactured and put in successful use.

About the same time the Western Union Telegraph Company perceiving the value of the construction of private lines as an auxiliary to its general business, announced its design to supply to the citizens of Chicago private telegraph structures on liberal contracts. A large number of lines were thus constructed. These were transferred to the

Gold and Stock Telegraph Company, May 25, 1871. The Gold and Stock Telegraph Company having thus entered into the construction of private lines as a feature of its general business, purchased the property and franchises of the American Printing Telegraph Company and became the owners of its stock.

With the same object in view a company was organized in New York in the same year under the laws of the State of New York called the MANHATTAN TELEGRAPH COMPANY, with a capital of \$150,000, using the Dial instrument of Charles T. Chester which, since that time, has been greatly modified and improved. Its first officers were William Laytin, President; Sherlock Austin, Treasurer; William F. Coffee, Secretary. In 1871 A. C. Peck was elected President and William F. Coffee, Secretary and Superintendent. A number of important contracts were effected by this company, and it became possessed also of valuable franchises and rights of way in New York and suburbs to which its operations were chiefly confined. In 1876, important changes having been made in the direction of the company, Alfred Nelson was elected President, William Whitlock Secretary and Treasurer, W. K. Applebaugh Superintendent. This company leased its lines under a favorable contract February 1, 1877, for forty-two years to the Gold and Stock Telegraph Company.

The use of private telegraph lines by mercantile houses in various parts of the country forms one of the marked features of the commercial activities of the nation, and their employment is likely to be largely multiplied as the population and necessities of the country increase. In the city of New York and suburbs the Gold and Stock Telegraph Company have erected and maintain upon a comparatively low annual rental 300 of these lines, embracing about 1,200 miles of wire, connecting the offices and factories of as many of the mercantile houses of the metropolis. In connection with these, 151 conducting wires in twenty-four massive cables have been laid beneath the North and East rivers connecting New Jersey and Long Island. The longest of these cables is 5,100 feet. On the pole lines are three air cables containing in all thirty-five conducting wires. One of these is 7,459 feet in length and contains eleven conducting wires. These lines with their machinery

are carefully inspected every day and reported upon by inspectors who are competent mechanics and who maintain the efficiency of every instrument and wire thus provided. A cable steamer built by the Western Union Telegraph Company named the "William Orton," under the command of Capt. William Mackintosh, chief of repairs in New York, is subject to immediate use to repair any breach in the cables. For the use of these lines which vary from half a mile to forty miles in length, a monthly charge is made according to distance, and usually forming the basis of a mutual contract embracing one to five years. In Chicago and St. Louis the Company has provided, under similar arrangements, many lines of this character, and a number in Cleveland, Baltimore, Louisville, Ky., Cincinnati, O., Buffalo and elsewhere.

Mr. Robert Brown the builder of the New York city lines emigrated from England, and became an assistant to Gen. Lefferts in 1862, while the latter was Engineer of the American Telegraph Company. In 1865 he was appointed Superintendent of Construction for the United States Telegraph Company, and continued so until that company became merged into the Western Union Telegraph Company. Since then he has been an independent builder and has constructed, at different periods, the Atlantic and Pacific Line from New York to Troy; the Long Island South line from Brooklyn to Islip; the Manhattan lines in New York; and the National line from New York to Gray's Ferry, Pa. Since then he has built the Brooklyn Police and Fire Alarm Telegraph; the Fire Alarm Telegraph of New York; the lines of the "Owl Company" of Newark, N. J.; the "North Shore" of Long Island; the Herald White Stone line; the Delaware and Raritan Canal line; and all of the later lines of the Gold and Stock Telegraph Company.

Eight different instruments are now in use in the Private Line department of the Gold and Stock Telegraph Company, all of which bear a more or less marked family likeness. The first instrument employed was the invention of Frank L. Pope and Thomas A. Edison, and known as the "American." These are now practically out of use, the number employed not exceeding eleven. Several others are in limited use which may be classed as follows: "Dials" 21; the "Centennial" 30; "Magneto Electric" 2; "Chester" 25. Of the "Morse"

84 are employed. The printing instruments known as "Universals" are in wider employment and number 150, of which 94 are the original "Universal" with the Wagner improvement. THE UNIVERSAL PRIVATE LINE PRINTER, is the invention of Mr. T. A. Edison. In this instrument the weights and springs common to the movements of other instruments of a similar character were laid aside, and the machinery actuated by a small electric engine placed within the base of the instrument and which was fed by a local battery. The engine was regulated in its motion by an ingenious adaptation of the Watts' steam engine governor, by means of which the speed was kept uniform at any desired number of revolutions per minute. A separate local battery is employed to actuate the printing mechanism. By a valuable improvement made by G. G. Wagner, the company's chief inspector of Private Lines, one local battery is now made to operate both motor and press.

The instrument so far found most available for private lines is the "Gray Printer," the invention of Elisha Gray of Chicago, of which about 500 are in use, and of which the following is a somewhat concise description :



Beneath the small glass shade at the rear of the keyboard is an upright polarized relay, behind and above which is situated the type wheel and printing apparatus.

The communications are printed as received upon a continuous strip or paper which is fed from the roll above.

The type-wheel is made to revolve by means of a double acting pallet escapement, attached to an armature which vibrates between the poles of two local magnets

within the hollow base of the instrument. At the back of the instrument, directly in the rear of the type wheel, is a cylindrical brass case containing what is called the "sunflower." This is a flat annular disc of platinum, divided radially into equal segments corresponding in number to the transmitting keys, each of these segments being connected to its corresponding key by an insulated wire. A circuit-closing arm, rigidly attached to the type wheel shaft, travels over the divided disc as the shaft revolves, and places the latter in electrical connection successively with each segment. The same circuit (which is that of the main line) is conducted through the coils of the polarized relay, and this, by means of a local circuit, controls the escapement magnets.

The general principle upon which the instrument acts is as follows: Upon breaking the main circuit, by depressing the extreme right-hand key (see illustration), a polarized relay seen in the cut beneath a small glass shade, moves, and the local magnets release the escapement, which in turn allows the type wheel to move forward a step, carrying with it the moving arm upon the sunflower. By means of a pole-changer attached to one instrument only in each circuit, the direction of the line current is reversed for each letter passed over, and thus the polarized relay and escapement magnets continue to vibrate automatically until the sender depresses some other key. The depression of this key breaks the circuit leading to the corresponding segment of the sunflower, and when the traveling arm reaches this segment the main circuit is interrupted, the escapement cannot act, and the type wheels of both instruments come to a stand. The letter or character upon the type wheel corresponding to the key which has been depressed upon the sending instrument being thus brought opposite the paper strip, the impression is effected by a magnet in the local circuit, which is instantly brought into action upon the cessation of the vibrations of the relay armature.

Thus it will be seen that any person who can read and spell can transmit communications upon this instrument merely by fingering the appropriate keys, and that these may be automatically recorded, even in the absence of an attendant, at one or more distant points.

To the faithful management of Gen. Marshall Lefferts the Gold and

Stock Telegraph Company owes much of its early success. It was in the line of his tastes. He gave to it the utmost patience, labor and assiduous care. It is true he wearied himself over details which he could have safely permitted to devolve on others. But he preferred the labor rather than to trust to subordinates. He died very suddenly on July 3, 1876, while en route to Philadelphia with the New York Seventh Regiment Veterans, of which he had for many years been commander, deeply regretted by his associates in office and the entire staff of the Company.

Gen. Lefferts was succeeded in the active management of the Company by Hon. George Walker, formerly Vice-President of the Western Union Telegraph Company, who bears a strong resemblance to his predecessor in the minuteness, devotion, and thoroughness of his administration, adding thereto a legal knowledge and experience which are invaluable. The officers of the company are as follows: William Orton, President; George Walker and George B. Prescott, Vice-Presidents; R. H. Rochester, Treasurer; J. B. Van Every, Auditor; James D. Reid, Secretary. Board of Directors: William Orton, George Walker, George B. Prescott, James H. Banker, Tracy R. Edson, Norvin Green, William M. Bliss, Augustus Schell, Henry R. Pierson, William K. Thorn.

General Superintendent, GEORGE B. SCOTT.

GOLD AND STOCK DEPARTMENT.

CHARLES S. H. SMALL, *Asst. Sup't.*

D. BRYCE SCOTT, *Chief Inspector.*

JAMES ROWE, *do do*

T. J. SULLIVAN, *Chief Operator.*

GEORGE E. SCOTT, *Foreman of Repairs.*

PRIVATE LINE DEPARTMENT.

GEO. L. WILEY, *Asst. Sup't.*

G. G. WAGNER, *Chief Inspector.*

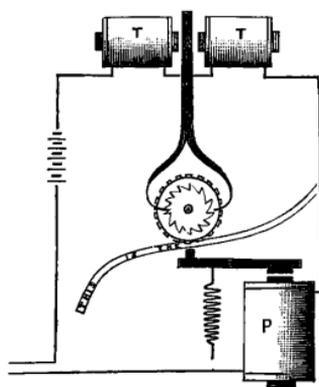
CHAS. H. WALTON, *Chief Operator.*

ROBERT CARTER, *Foreman of Repairs.*

THE MANHATTAN QUOTATION TELEGRAPH COMPANY.

Stimulated by the success of the Gold and Stock Telegraph Company, a rival organization was effected in 1872, which took the name of THE MANHATTAN QUOTATION TELEGRAPH COMPANY, with a capital of \$600,000. It was organized under the laws of the State of New York, September 2, 1872, and proposed to conduct the business of quotation reporting by an instrument constructed by Charles T. Ches-

ter, but the chief merit of which was due to important improvements made thereon by Prof. J. E. Smith. Of this company when organized David Hoadley was President; E. S. Munroe, Vice-President; George W. Fuller, Treasurer; James H. Jordan, Secretary; Mr. William F. Chester Superintendent. By dint of much energy and the possession of an instrument capable of considerable rapidity of transmission and of simple and effective mechanical details, the Company speedily attained a favorable status among business men, and secured a large although not a profitable business. In the canvass for subscribers a hot competition with the Gold and Stock Company resulted, prices were lowered, and for some time the contest was conducted at unremunerative rates. Seeing the destruction which was sure to result from the continuance of such a state of things the leading holders of the Manhattan Company's stock exchanged it for that of the Gold and Stock Telegraph Company, thus giving the latter Company control. This led to an amicable working arrangement by which the existence of both companies was preserved, but, under the same general management, the revenues being carefully separated and credited to each. The Board of Directors elected at the original organization of the company, was composed as follows; David Hoadley, W. F. Coffee, A. C. Peck, A. J. Wood, E. S. Munroe, P. M. Myers, G. W. Fuller, W. S. Nichols, J. H. Jordan, G. D. Munroe, J. Wyman Jones, C. T. Polhamus, E. V. Clark.



The instrument used by the Manhattan Quotation Telegraph Company owed its effectiveness to a device which seems identical with the patent granted to Pope and Edison, April, 1870, and to Van Hoesenbergh's improvement on the Phelps'. The accompanying sketch will aid its understanding. What are designated the type magnets which are used to bring the letter of a type wheel to a desired position, are indicated by the letters T. T. The intermediate armature

A, is a permanent magnet highly sensitive to changes of current. The press magnet P is similar to an ordinary sounder and its office is, as its name applies, to impress, when brought into action, an intervening strip of paper against the type which has been brought above its hammer.

The transmitting instrument, which it is not necessary to describe, sends, with great speed, short waves of alternately positive and negative electricity. Forty-three of these reversals are made by the armature A in a second. These currents pass through all the coils, but are too rapid to affect the armature of the electro-magnet P which is held out of their action by a spring, and only act upon the sensitive free magnetic armature A, which, by its motion, causes the type wheel to move forward, tooth by tooth, to its place. When, however, a letter is reached, the vibratory motions cease, the closing of the circuit is prolonged by the operator's depressed key, the soft core of the magnet P is sufficiently charged to draw down the armature, the impression is taken, and, by utilizing the return movement of the armature, the paper strip is slipped forward in readiness for the next letter. Thus the same current brings the type to position, impresses, and advances the paper for the next letter, by the simplest of methods. A patent for this combination and device was issued to Pope and Edison in April, 1870, but was first brought into active employment in machinery by the Gold and Stock Telegraph Company in the stock printer of George M. Phelps.

Another feature of this instrument is equally simple, ingenious and effective. It is one of the methods of the Unison stop. It is composed of a long arm with a hooked end projecting from and attached to a sleeve slipped over the axle of a slow moving wheel to which it is fitted so as to be carried forward by its motion but to readily yield to obstruction. This arm reaches to and, when uninterrupted, approaches a wheel of rapid motion on which is secured, at a certain given point, a pin which the arm, when allowed to approach, arrests. This arm is kept off by the stroke of the impressing armature in forming letters, and is brought into action by simply delaying to depress the key of the transmitter. Thus every instrument working on the same

wire is brought at will to the same position, and synchronism secured. Nothing could be more simple and effective. Yet it was one of the earliest of contrivances, and is based upon the plan of the starter placed by Prof. Morse in his register in 1845, and was first applied to a printing telegraph by Moses G. Farmer in 1856.

#### THE AMERICAN SPEAKING TELEPHONE COMPANY.

The American Speaking Telephone Company was organized under the General Telegraph Laws of the State of New York, December 6, 1877, with a capital of \$300,000. This organization was the result of an arrangement between the Gold and Stock Telegraph Company and the "Harmonic Telegraph Company," by which the control of the telephone inventions and patents of Elisha Gray and Amos E. Dolbear were secured for the manufacture and exploitation of the telephone. The caveat of Elisha Gray filed at Washington, February 14, 1876, for "art of transmitting vocal sounds telegraphically" was the earliest application of the kind in the world. In his caveat Mr. Gray thus specifies his invention.

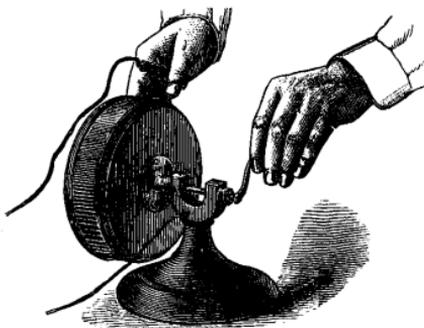
"It is the object of my invention to transmit the tones of the human voice through a telegraphic circuit and reproduce them at the receiving end of the line so that actual conversation can be carried on by persons at long distances apart."

"I have invented and patented methods of transmitting musical impressions of sounds telegraphically, and my present invention is based upon a modification of the principle of said invention which is set forth and described in Letters Patent of the United States, granted to me July 27, 1875, numbered 166,095 and 166,096, and also in an application for a patent granted to me February 23, 1875."

The Telephone, in one of its features is founded on the fact, first investigated by Professor Joseph Henry, that iron bars, when magnetized by means of an electric current, become slightly elongated, and at the interruption of the current are restored to their normal length. In the receiving telephone these elongations and shortenings of the iron succeed each other with precisely the same interval as the vibrations of the sending disc caused by the sonorous vibrations of the air.

The earliest experiments of Mr. Gray were in the transmission of harmonic sounds. This he accomplished by an armature affixed to a voiced steel reed which was made to vibrate with a certain graduated velocity in the face of an induction coil by the use of an electrotome or circuit breaker. The steel pendant or reed which carried the armature was voiced to its position in the musical scale. The sound of this vibrating reed was found to be capable of transmission to great distances through the secondary or induced current. Experiments with reeds variously voiced produced corresponding tones, and at greater distances than it was practicable to send the primary current in actuating the ordinary telegraphic machinery. By using a number of magnets, variously voiced, he was at last able to reproduce a tune at the extremity of a circuit of over two thousand miles.

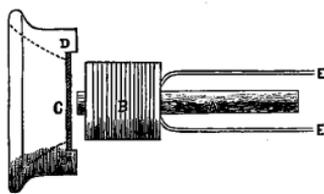
One of the various devices of Mr. Gray in his endeavor to convert electric pulsations into audible vibrations is illustrated by the accompanying cut, and is exceedingly interesting and curious. It consisted of a thin cylindrical wooden box, the face or periphery of which was covered with thin sheet metal and turned by an insulated crank. The metallic covering of the cylinder was connected through the stand with the earth. The operator, holding the wire connected with the line in one hand, and pressing the fingers of the same hand against the metal plate which was turned by the other, the tune played at the distant station or other end of the line, became distinctly audible. The faster the cylinder was revolved the louder were the sounds.



The telephone is the outgrowth of these and kindred experiments. Other minds were at work in the same direction. It appears to have been independently discovered by Mr. Gray and Professor A. Graham Bell of Boston, the latter of whom devoted his mind principally to the reproduction of tones of the human voice. Wonderful and useful as

the ability to transmit independent tones, simultaneously, no doubt is, the Telephone seems to have in it "the potency and promise" of a vastly more extended and useful service.

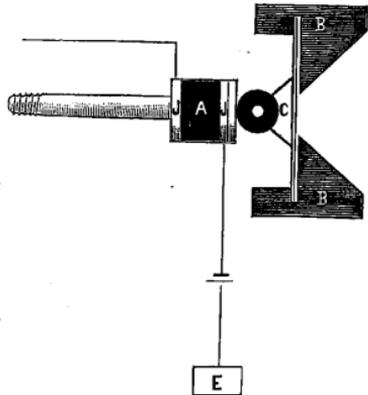
The Telephone, although variously constructed, is easily described. The parts are few and simple. The cut represents its simplest, not its yet to be perfected form. A steel magnetized bar A is wrapped at one of its extremities with several convolutions of insulated wire B. Across the face and in close proximity to the end of the magnetized bar a metallic diaphragm C against which the voice is directed is stretched at the base of a convenient mouth-piece D. One of the wires EE is led to the earth, and the other to the receiving apparatus. This is all. Stated technically, a



vibratory mechanical motion of the air is imparted to the metallic membrane or diaphragm. This motion of the vibrating membrane is converted into electricity in the coil of wire surrounding the electro-magnet which the wire conveys to its destination. At the receiving end it is first effective as magnetism; is then converted into vibratory motion; is thereby given to the air, and thus becomes again, as at first, a sound identical with the one first imparted. It is a most beautiful example of the convertibility of forces from one form to another—without change or loss. It is no wonder that Sir William Thomson said of it on his return from the Centennial Exposition at Philadelphia, where the telephone was exhibited: "This is the greatest by far of all the marvels of the electric telegraph." It is already so perfected that a whisper not audible to parties in the same room can be heard a mile distant.

The "Carbon Telephone" of Thomas A. Edison, which is part of the apparatus of the American Speaking Telephone Company, is entirely different in principle from the magneto-electric systems of Gray and Bell. It is based on the discovery that certain forms of carbon varies its resistance to the electric current by pressure. A diaphragm is made to vibrate in front of a rod on the end of which is placed a button of compressed lamp black A, on either side of which are platinum discs B B, the disc nearest the diaphragm being in contact with a battery and

earth and the other with the line. Between the end of the rod and the diaphragm and resting on the diaphragm is a piece of cork C and between the cork and platinum disc is inserted a piece of rubber tube D. The usual mouthpiece B B surrounds the diaphragm. The vibration of the diaphragm causes the carbon to offer more or less resistance to their passage over the current through it, according to the amplitude of the vibrations, and the currents sent over the wire are also in exact proportion to these vibrations. The full power of the voice being thus utilized, a greater volume of sound without any loss of clearness of articulation is secured, and also comparative freedom from interference by extraneous currents.



On the organization of the American Speaking Telephone Company the following Board of Directors were elected: William Orton, George Walker, Norvin Green, James H. Banker, Tracy R. Edson, Elisha W. Andrews, George B. Prescott, Elisha Gray, William K. Thorn, Samuel S. White, Samuel F. Barger. George Walker was elected President; Norvin Green, Vice-President; R. H. Rochester, Treasurer; James D. Reid, Secretary.

The organization of this Company and the peculiar character of the invention on which it is founded, is a new indication of the inventive character of the age and of the avidity with which every new product of art is seized upon for the advantage and convenience of mankind. The telephone is already in extensive employment throughout the continent, and cannot fail to enter very largely into the uses of society throughout the world.

## THE MERCHANTS' MANUFACTURING AND CONSTRUCTION COMPANY.

In 1869, John E. Selden, of New York, invented a neat and simple dial instrument to which he attached apparatus for printing, patented March 23, 1869, and which came into the possession of Mr. Samuel J. Burrell of New York, who at once entered into the business of erecting private lines. Nearly 100 lines of various lengths and in different parts of the country have been built under this patent, most of which have passed by purchase into the possession of the parties for whom they were built. A very few are held under lease. In 1872, Mr. Burrell, who had so far carried on the business alone, and with much satisfaction to the parties interested, organized a company styled "The Merchants' Manufacturing and Construction Company" with a capital of \$125,000, of which William C. Joy became President, and Samuel J. Burrell Secretary and Treasurer. This company is doing a quiet and satisfactory business. The office of the Company is at No. 40 Broad street, New York.

## THE DOMESTIC TELEGRAPH COMPANY, CAPITAL \$500,000.

The Domestic Telegraph Company was organized in New York city in 1874. Its original officers were T. A. Edison, J. T. Murray and J. B. Edson, who acted as Trustees. In December, 1874, when more formally organized, Gen. Thomas T. Eckert was elected President, Thomas A. Edison, Vice-President, and D. G. Farwell, Secretary. In 1876, at the annual meeting of the Company Thomas T. Eckert was elected President, Alfred Nelson, Vice-President, W. K. Applebaugh, Superintendent.

This Company was started to do a work similar to the American District Telegraph Company, and as a local auxiliary to the Atlantic and Pacific Telegraph Company. It provides a signal instrument in connection with a dwelling by which a messenger, policeman, or fireman provided with a Babcock extinguisher, can be sent for and provided. The messengers are numbered, and uniformed in gray with black trimmings, and perform a variety of duties such as delivering letters, making purchases, calling physicians and the like. The average charge is

thirty cents per hour, and two dollars for responding to a fire signal. A fixed light rent per month is charged for the machinery.

#### AMERICAN DISTRICT TELEGRAPH COMPANY.

No recent organization has been more characteristic of the times than the establishment in New York of the American District Telegraph Service. Its origin is due to the same parties who started the Gold and Stock Telegraph Company, and was designed still further to domesticate the telegraph and adapt it to social purposes and necessities. The idea was to so connect private residences with a central telegraph station, that by means of an instrument of entire simplicity of structure, and capable in the hands of even an uneducated servant of transmitting a few easily understood signals, certain classes of important household service could be quickly and economically secured.

The first signals arranged for were four. The first called a messenger, the second a policeman, the third a fireman, the fourth the family physician. To meet these calls a corps of active boys was proposed to be employed, and able-bodied men provided with fire annihilators stationed at each office. An instrument suited to the proposed service which required no battery except at the central station, and which needed only the touch of a finger to send a signal, was devised in the spring of 1872, by E. A. Callahan. In May of the same year the "AMERICAN DISTRICT TELEGRAPH COMPANY" was organized. Elisha W. Andrews was elected President, Horace L. Hotchkiss, Secretary and Treasurer; William H. Sawyer, General Superintendent.

The progress of the Company was, at first, slow, but satisfactory. The first office was opened at 905 Broadway, with four subscribers. In two years the four had increased to two thousand. The terms were made two dollars and a half a month. To secure efficiency, offices were opened throughout the city so as to be centers of districts, the most distant point from which would not require more than three minutes to reach. So admirably was the service executed, that it soon became widely recognized as a great social convenience and protector. It was found to be a messenger, policeman, burglar alarm, and fire department,

all in an instrument so small that it could be almost inclosed in the human hand. It is not surprising therefore that the business enlarged year by year until, on January 1, 1878, it connected 4,500 dwellings and stores, and had a staff of 600 expert messengers and 50 private policemen. It has 21 central stations and 42 managers — one on duty during the day and the other at night. In addition to the ordinary service of the Company it delivers daily for the Western Union Telegraph Company an average of 3,000 messages, and collects for transmission about 800 more. During the year ending September 30, 1877, 1,513,265 messages were delivered by the Company's messengers. Subscribers have the free use of messengers for the conveyance of messages to be sent by the Western Union Telegraph Company.

One of its most useful departments is what is known as the NIGHT WATCH SERVICE, by which banks, jewelry establishments, warehouses and stores are connected by wire with a central office. A watchman on the premises is required to send a signal at regular appointed intervals. Failure to receive a signal causes an instant examination of the premises. This is supplemented by a thorough system of uniformed night patrolmen who visit and inspect the premises of subscribers at frequent intervals. Thus every year more and more is the telegraph becoming the guardian of our homes and the protector of our property.

The American District Telegraph Company's offices are connected by telegraph with the police and fire departments. The calls for police service during the past year were 1,813. The fire alarms numbered 239, most of which were promptly extinguished by the use of a fire annihilator sent by an able-bodied man from the central office. Connection is also made with Express Companies and livery stables, and every means adapted to enlarge the usefulness of the Company.

One of the more recent features of the Company's business is the delivery of circulars to dwellings and places of business. One hundred thousand circulars can be thus distributed in a single day. This is already developing a large business.

The messengers of the Company are intelligent and active. Their uniform is neat and kept scrupulously clean. The whole service is

popular. Mr. Elisha W. Andrews, the chief founder of the Company, is still President, and Henry W. Pope, well known in New York for his skill, energy, and fidelity, is Superintendent. The messenger earnings of the year 1877 amounted to \$204,095.04. The present capital is \$2,000,000.

The other officers of the Company are as follows :

A. B. CORNELL, *1st Vice-President.*

THOS. M. FOOTE, *2d Vice-President.*

A. W. GREENLEAF, *Treasurer.*

CLARK B. HOTCHKISS, *Secretary and Assistant Treasurer.*

DIRECTORS.

E. W. ANDREWS.

CHARLES LAMSON.

ALONZO B. CORNELL.

TOWNSEND COX.

A. W. GREENLEAF.

HENRY T. JENKINS.

THOMAS M. FOOTE.

J. N. GAMEWELL.

G. HILTON SCRIBNER.

## CHAPTER XLV.

## THREE PROMINENT INVENTORS.

AMONG the many ingenious men brought to public knowledge by electric art, and primarily by inventions connected with the Gold and Stock Telegraph Company, three men have been specially conspicuous. Of these no one has excited more genuine interest than THOMAS ALVA EDISON, of Menlo Park, N. J. He is a native of Milan, Erie county, O., where he was born February 11, 1847. He began life as a newsboy, was a printer and editor of a paper called "*The Grand Trunk Herald*," which he printed and edited on the cars of the Grand Trunk Railroad, at seventeen. He tried chemistry on the rail, but happening to set the car in which he was experimenting on fire, it came to early grief.



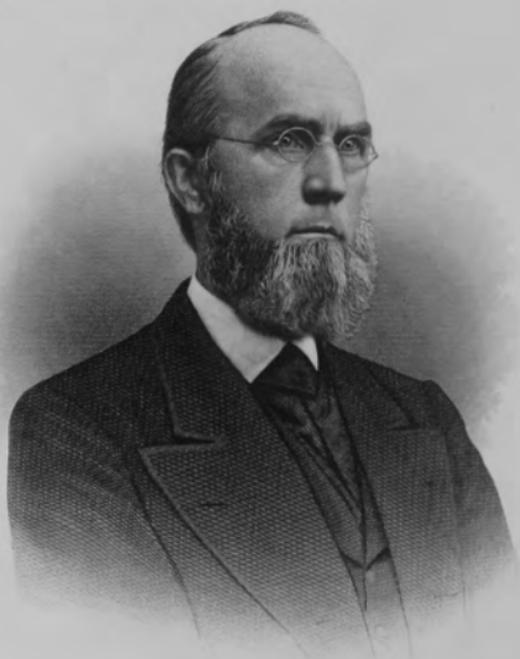
THOMAS A. EDISON.

Of course a newsboy and editor could not long be ignorant of the telegraph. Edison first used it to bulletin at the various stations items of news ahead of the train and thus beget a thirst for the coming papers. In concert with a neighbor also he erected a short line of telegraph, making the instruments himself. Battery material, however, was dear, and the builders were necessarily economic.

To save cost, Edison betook himself to experiment. He had seen sparks emitted from a cat's back. Judging that there must be good battery where the indications were so strong, he inserted a tom-cat in the circuit, using the fore and hind feet as electrodes. The connections, after some resistance, having been duly made, he tried to start an induced current by rubbing the cat's back, the incensed feline meanwhile giving him some forcible telephonic lessons, and in other ways objecting to his electrocathical operations. The experiment, however, was not without success. A tremendous local current and perfect electric arc was produced. But it would not work the line and was abandoned. The experiment illustrated the humor of the man. He soon after became manager of the telegraph office at Port Huron.

In 1867 Edison, then in Cincinnati, and ignorant of the progress made in Duplex telegraphy, conceived a plan to accomplish it. This led him to other studies and, removing to Boston and soon after to New York, he devoted himself to invention in which he soon developed marked genius and capacity. Although, following out the playful side of his nature, he gave chase to many inventive vagaries, yet he quickly elaborated some results of the utmost utility, and was soon able from the product of several valuable inventions, to surround himself with every thing to facilitate further research. He has now one of the amplest laboratories and the finest array of assisting machinery to be found in connection with scientific inquiry. He has also a large and well stocked factory with steam power; a foundry with cottages for his workmen, and a villa of comfortable dimensions for his own home.

Some idea of Mr. Edison's prolific brain may be gathered from the number of his patents. Of these there have been issued to him since 1870 in all 140, and about half that number of caveats. The chief product of his genius has been the quadruplex system of telegraphing by which already the equivalent of 50,000 miles of wire have been added to the capacity of the lines of the Western Union Telegraph Company. One of the most curious of his discoveries was that certain chemical salts lose their frictional properties when subjected to the action of an electric current. On this as a basis, Edison devised a telegraphic action in which the ordinary relay magnet became unneces-



Eng. by R. O'Brien.

Very truly yours  
G. M. Phelps

sary. This he called the ELECTRO MOTOGRAPH. It was the substitution of friction and ante-friction for the presence and absence of magnetism in the relay. It was remarkable also in that it could be worked by an almost infinitesimal current. Important results are yet to follow this curious discovery.

Mr. Edison's name is already connected with much valuable revenue earning mechanism. The "Edison Universal Printer," the "Electric Pen," the "Domestic Telegraph Call," the "Chemical Automatic Recording Telegraph," "The Carbon Telephone," are only a few of the subjects to which he has applied his thoughts. What will perhaps more than any other of his inventions give him fame, is what he terms THE PHONOGRAPH, which may be thus briefly described. A metallic cylinder is covered with tin foil. A shallow spiral groove runs from end to end of the cylinder to permit the tin foil immediately over the groove readily to yield to pressure. The cylinder is made to revolve on a shaft having a screw thread thereon corresponding with the groove on the cylinder to give it a longitudinal as well as circular motion. In front of this is placed the ordinary telephonic mouth-piece, but with a stylus nicely adjusted between the diaphragm of the mouth-piece and the foil. The cylinder is then made to revolve. While doing so a sentence is uttered distinctly at the mouth-piece. The tin foil, when examined, shows a series of indentations corresponding with the voice vibrations on the diaphragm. The cylinder is now returned to its first position, a funnel placed on the mouth-piece, the cylinder turned as before, when the words uttered to the machine are all re-spoken by the mechanism. The record is permanent. The foil may be laid aside for a thousand years and yet the language be reproduced! It may yet appear that in the mysterious laboratoire of the Almighty the records of human history may, in some similar way, be thus preserved! It is one of the startling illustrations of the conservation of force. What else remains to know, who can tell?

Mr. Edison is one of the simplest of men. Careless in his costume, without manners, although intelligent and respectful, deaf enough to give him an abstracted look, fond of fun, quick and facile at caricature, abstemious and simple in his habits, boyish in his enjoyments,

unselfish and generous, spending whole nights over some new thought which he pursues with hound-like pertinacity, — he is a singular specimen of a man having the highest natural inventive faculty coupled with the playfulness and the artlessness of a child.

GEORGE M. PHELPS.

In the fore rank of American mechanics and inventors stands George M. Phelps, Superintendent of the machine shops of the Western Union Telegraph Company in New York. Mr. Phelps is a native of Watervliet, Albany county, New York, where he was born March 19, 1820. At an early age he entered the establishment of his uncle in Troy, New York, for the manufacture of mathematical instruments. In 1852, becoming interested in telegraphic machinery, he rapidly attained reputation by solving some difficult problems in electro-magnetism in which he showed great inventive genius and originality. Although, however, the inventions of Mr. Phelps cover a wide field and include improvement in paper-making machinery, bank locks, time regulators, electro-motors, etc., it is by his numerous skillful devices in telegraphic apparatus that he is best known and on which his reputation as an inventor is likely chiefly to rest.

When Mr. Phelps first devoted his attention to electro mechanics it was a period of great activity in the telegraphic world. Between New York and Buffalo three companies were contesting for public patronage, under the Morse, Bain, and House Patents. Many of the "House" instruments were constructed at the work-shops of Phelps and Dickerman at Troy, N. Y., of which Mr. Phelps had the mechanical supervision. In 1856 the American Telegraph Company purchased the entire establishment and appointed Mr. Phelps Superintendent. Thus relieved from all financial cares he devoted himself more effectually to invention.

In 1855, David E. Hughes of Kentucky, patented a new printing telegraph which embodied important principles of much interest and of very marked value. Its mechanical details were, however, more or less imperfect. This instrument was purchased by the American Telegraph



ENG. BY A. H. WOOD

Elisha Gray

Company and placed in the hands of Mr. Phelps for examination and the proper adjustment of its parts. During a large portion of the years 1855 and 1856 he devoted himself largely to this work. This resulted in the addition of two most important features by which the Hughes' apparatus became thoroughly effective and useful. Without these improvements it is believed by experts that the Hughes' machine with all its acknowledged merit and beauty would have proved ineffective as an instrument for practical service. Mr. Hughes afterward introduced his printer in Europe and eventually met with much success. Several hundred are in employment there all of which embody the devices introduced into their mechanism by Mr. Phelps.

During the four years succeeding 1856, Mr. Phelps continued to effect improvements in printing telegraph devices, and which eventuated in 1859 in the completion and introduction of the well known "Phelps' Combination Printer," an instrument which for the past seven-teen years has been without a competitor as the most successful type-printing telegraph in the world. It has been in operation during this entire period on the lines between Washington, Philadelphia, New York and Boston. Some of these have printed over 5,000 lineal miles of paper and are still in excellent working order, although the constant friction of the operator's fingers has worn deep cavities in the key boards. Experienced operators are able to transmit by the Phelps' Combination Printer at the rate of 2,800 words per hour which are as readily impressed in clear Roman characters at the receiving station. Even this remarkable instrument Mr. Phelps has surpassed by one more recent and which is now employed on the lines of the Western Union Telegraph Company. This latest invention is the fruit of several years careful study and experiment. It is driven by an electro-magnetic motor and has been worked over a line of 500 miles at the astonishing rate of sixty words per minute or 3,600 words per hour. Even this does not fully represent the capacity of the instrument which seems limited only by the ability of the fingers which manipulate it.

Mr. Phelps has largely contributed to the perfection of the extensive system of automatic type printing instruments employed for stock and market quotations and for private telegraphing, which has attained so large a

development in America during the past few years. These improvements have been directed toward the increase of their working speed, and the diminution of the battery power required. In both of these he has been eminently successful. Among the many instruments in use for such purposes by the Gold and Stock Telegraph Company there are none which do not bear in greater or less degree the impress of his genius. Whatever he touches he beautifies.

Since Mr. Phelps entered the employment of the American Telegraph Company in 1856 he has been constantly in its service and in that of its successor the Western Union Telegraph Company as Superintendent of its mechanical department, first in Troy, afterward in Williamsburgh, and finally in New York. The apparatus manufactured under his supervision is noted for elegance of design and the superiority of its performance. In beauty and excellence of finish the products of his establishment are unexcelled by any of the celebrated workshops of the world.

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#### ELISHA GRAY.

Mr. Elisha Gray, the electrician of the Western Electric Manufacturing Company of Chicago, is of Quaker origin. He bears some distinguishing evidences of his descent in a certain placidity and directness of manner indicative of his temperament and character. He was born at Barnesville, Belmont county, Ohio, August 2, 1835. In early life he was a carpenter's apprentice, and was somewhat of a social nuisance because of his proclivity to acids and laboratory stuffs. At twenty-one he went to Oberlin College where he studied diligently for five years. His mental bent during this period was strongest in the study of natural philosophy. To this he devoted all his spare hours. It was not, however, until he reached his thirtieth year that his attention was first turned to electrical mechanism. This soon fascinated and largely monopolized his time and study.

He at once began to invent. His first attempt was to meet, by internal mechanism, a relief from the difficulty then embarrassing all telegraph lines arising from defective insulation. To accomplish this he

constructed a self-adjusting magnet which would, automatically, accommodate itself to the variable condition of the circuit. It was a bad direction for genius. It was like building a go-cart for a drunken man. All such devices tended to cover up evils which were readily removable by suitable attention. This possibility, it is true, was not so apparent then as now. Yet many knew that to work over escapes by use of machinery was to reduce the necessity of outside care in keeping the wires clear and clean. The self-adjusting relay was, however, made. It was a success. By adjusting it to the most distant office, it adjusted itself to every intermediate point. There was, however, little demand for it. There was no money to spare for scientific devices.

The automatic self-adjusting relay introduced the construction of several forms of automatic repeating machinery. These, many still regard as valuable. They are not much used.

One of Mr. Gray's most practical inventions was a needle annunciator for hotels. This he invented in 1870 and perfected in 1872. It has had a large sale. It is simple and effective. The electrical annunciator for elevators was invented about the same time. His most important invention, however, until a very recent date, was his "Private Telegraph Line Printer," of which a description has already been given.

Mr. Gray's name is now connected with an invention more useful and wonderful than any to which his mind has, so far, been directed. During the years 1873-4-5 his attention was largely absorbed in developing a system of "Electro-Harmonic Telegraphy" for the transmission of sounds over the wires of the telegraph. The basis of this system is the discovery of a law of vibration, by which a sound produced in the presence of a magnet will cause a magnet of similar adjustment to respond to its tone. This is not all. It has been found that, over the same wire, another note, by another magnet, may be sent *at the same time*, and be received on a second magnet adjusted to the second note. Mr. Gray has already succeeded in sending over a wire of 500 miles in length, nine different messages at the same moment, each message having a distinctive note. These several messages, also, can be taken off by any number of intermediate offices by simply turning the relay to the key note on which each is transmitted! Mr. Gray expects to be

able to send in this way, simultaneously, fifteen or more messages. Theoretically, these can be increased to as many notes and semi-tones as the range of the gamut will permit.

Mr. Gray was led to these investigations by a domestic incident. In his paper on the "Transmission of Musical Tones" before the American Electrical Society, Chicago, March 17, 1875, he says: "My nephew was playing with a small induction coil "taking shocks" for the amusement of the younger children. He had connected one end of the secondary coil to the zinc lining of the bath tub, which was dry. Holding the other end of the coil in his left hand he touched the lining of the tub with the right. In making contact, his hand would glide along the side for a short distance. At these times I noticed a sound proceeding from under his hand at the point of contact having the same pitch and quality of the vibrating electrome. I immediately took the electrode in my hand, and, repeating the operation, found, to my astonishment, that by rubbing hard and rapidly I could make a much louder sound than the electrome. I then changed the pitch of the vibration, and found that the pitch of the sound under my hand was also changed, agreeing with that of the vibration." Simple contact produced no sound. Rapid friction was necessary.

"One of the earliest discoveries in connection with these experiments was the fact that not only simple but composite tones could be sent through the wire and received, either on the metal plate or on a magnet. Not only could a simple melody be transmitted, but a harmony or discord could be communicated equally well. If the tones thus produced could be analyzed at the receiving end, it would, of course, lead the way to a multiple Morse, a fast printing, an autographic or other systems. By this curious method, therefore, not only may different messages be sent simultaneously, but a tune, with all its parts, may be sent through hundreds of miles of wire, and be distinctly audible at the receiving end." This discovery underlies the whole system of telephones now under so rapid and promising development. Of Mr. Gray as the inventor of the Telephone, notice has been taken elsewhere and of which the evidence is complete.

Mr. Gray's characteristic as an inventor is in avoiding mere mechan-

ical devices to accomplish results. Intricacy, in his mind, is failure. He seeks to make electricity do its work direct, and therefore endeavors in his devices to train and harness it for that purpose.

As a man Mr. Gray is genial and friendly, and simple and retiring in his habits. His home is at Highland Park, near Chicago, where he is highly respected. He was a member of the firm of Gray & Barton of Chicago, and has from the start been an officer in the Western Electric Manufacturing Company of Chicago, of which Gen. Anson Stager is President.

It is a curious fact that two centuries ago similar discoveries were being made. In the year 1667 Robert Hooke, Fellow of the Royal Society of Great Britain, published a work entitled "Micrographia." In the preface occurs the following remarkable paragraph :

"And as Glasses have highly promoted our seeing, so 'tis not improbable but that there may be found many Mechanical Inventions to improve our other senses, of hearing, smelling, tasting, touching. 'Tis not impossible to hear a whisper at a furlong's distance, it having been already done; and perhaps the nature of the thing would not make it more impossible, though that furlong should be ten times multiply'd. And though some famous Authors had affirm'd it impossible to hear through the thinnest plate of Muscovy-glass; yet I know a way, by which 'tis easier enough to hear one speak through a wall a yard thick. It has not been yet thoroughly examined how far Otocousticons may be improv'd nor what other wayes there may be of quickning our hearing, or conveying sound through other bodies then [than] the Air: for that that is not the only medium, *I can assure the Reader, that I have, by the help of a distended wire propagated the sound to a very considerable distance in an instant, or with as seemingly quick a motion as that of light at least, incomparably swifter then [than] that, which at the same time was propagated through the Air; and this not only in a straight line, or direct, but in one bended in many angles.*"

So now, after the slumber of a couple of centuries, with the world ready to use and utilize these marvelous laws thus shrewdly guessed at by thoughtful heads so long ago, the active brain of the nineteenth century gives them to our most common use.

## CHAPTER XLVI.

## PROGRESS.

THE first step forward in the history of the telegraph in America was one forced upon it by the necessities of its condition. A number of short and segregated lines had sprung into life in rapid succession whose independent and restricted domain was fast sowing the seeds of early ruin. When local pride of management at last gave way before the evidence of the cost at which separate existence was maintained, and the fact that the frequent repetition of messages from line to line not only prevented the promptitude which the public had been educated to expect, but multiplied both the hazards and the cost of transmission, the clubbing of lines for mutual safety and economy commenced. This was soon attended with results so marked as to establish it as the policy of the future. Whatever of triumph the telegraph in America has since secured to itself, whether as a financial venture or as the product of science, has been based upon the unity and sweep of its administration which experience had thus made manifest as the primary condition of success. What some have denounced as a grasp after monopoly, has been simple fidelity to a trust than which none grander has ever been confided to human care. It has been a policy, also, which has made possible the enlargement of the trust until it has assumed national unity and puissance, and has given opportunity for some of the most brilliant expositions of the resources of invention in one of the subtlest of the realms of human thought.

The mechanism of the telegraph, in its ordinary conditions, has undergone few changes. The Morse correspondent or key remains as at first constructed except in the addition of a switch or circuit-closer, which, conveniently placed at the right of the lever, is readily reached by the operator's hand. The first method for closing the circuit was

by the use of a brass wedge inserted between the anvil and the central support, which had to be withdrawn and lay loose on the operating table while a message was being sent. Self-closing keys have been made in ingenious variety, but have never proved useful, and have been laid aside as rapidly as made.

The earliest practical device of any utility was the construction of a lightning arrester for which a silver medal was presented to the writer in 1846 by the Franklin Institute of Philadelphia. It consisted in the insertion of a large wired relay between the machinery and line adjusted above the power of the ordinary current. Any excess of current called the magnet into action and switched the connection from the machinery to the earth. It led to the simpler method, original with David Brooks of Philadelphia, who, covering the gaspipe of the office with a film of paper, wrapped a piece of copper wire connected with the line around it, and thus led the lightning to earth. The same plan is still in use, an independent ground wire connected to a metal plate placed proximately to a similar plate connected with the main conductor being preferred. Metallic brushes in similar relation have also been used.

The first marked step forward was the reception of messages by sound. This formed a part of the Morse patent and one of its most salient features. From the very first use of a Morse instrument, signals and phrases by sound were familiar to the ear, and the Washington operator of the government line often laughed as his Baltimore comrade replied to him with the ha! ha! ha! of the register. Both Prof. Morse and Mr. Vail could read slowly manipulated words. But it was dreaded as a reliance in actual business, and the paper of the Morse register was, by executive direction, in universal use during the first two years. After some careful tests, however, the first of which was conducted by John J. Speed, Jr., between Buffalo and Cleveland in 1847, it was found that sound telegraphy had manifest advantages, and was permitted. Year after year since then it has become more and more distinctly what it now is, the American system.

In the construction of lines the employment of copper wire for the main conductors was early discarded. It was expensive and without

tensile strength. It could not be relied upon and iron wire quickly took its place—the honor of the introduction of which has had several claimants. The first iron wire actually placed in the circuit of a telegraph line was when the writer, in extremity, inserted a piece of tinner's wire into the line of the Magnetic Company in the early spring of 1846, and which was done with some apprehension of the result. As a matter of scientific formula it was known that the equivalent of a number 16 copper wire was number 8 iron, and Charles T. Smith who wound most of the first magnets and knew the ratio of metallic values as conductors probably pressed the substitution on this knowledge. Mr. O'Reilly, whose apprehensions were quick, adopted it without hesitation. Amos Kendall, in the spring of 1846, made it one of the conditions of the contract for the construction of the Magnetic Lines from Philadelphia to Baltimore. Unfortunately it was introduced in the form of wire cord of three strands number 16 wire, which, although strong, yet because its stranded form assisted the retention of moisture, rapidly corroded.

The iron wire, after working well for a time, because of imperfect joints made in the process of repairs, which were frequent, soon began to degenerate. Even when the joints were soldered, rust supervened. Henry J. Rogers, well known as one of the superintendents of the government line, and the first manager of the Bain lines, purchased from Morehouse & Co. of New York, in the spring of 1847, the first galvanized or zinc-covered wire for use on United States lines and erected it between Baltimore and Harrisburg on the line of the American Telegraph Company, of which he was president. The low resistance preserved on lines using this material led to its large employment. The Bain lines, next to the Montreal Telegraph Company of Canada, were the first to adopt it, and they were regarded as fine specimens of effective telegraphs.

The insulation of the lines was prolific of invention. From the iron-clads of Vermont to the cow-horns of Texas the expenditure of brain in this direction was marvelous. A museum of insulators would require a many-shelved and ample gallery. In this field an English inventor, now a resident of Virginia, named George Little, better known in con-

nection with automatic telegraphy, produced in England, in 1846, one of the more valuable of practical and readily applied forms. The Little English insulator was of glass with umbrella or saucer base. Glass insulators in the form of bureau knobs were in that year in use in America. In 1847, with the rapid substitution of iron wire for copper, insulators of the Little form were employed. They were credited, probably with justice, to Ezra Cornell. Innumerable forms with this as a basis have since then been common, and almost universal.

The annoyance caused by frequent breakage of the glass insulators which were a fine target for ambitious school boys and Sunday shooters became so great as to lead to methods for their preservation. Supposing that a covering of iron might be thus employed, David Brooks of Philadelphia, after many failures, produced an iron covered insulator which has stood both in this country and in Europe some extraordinary tests, and which has led to their somewhat extensive employment, especially on lines having a single conductor, and to which their use has been chiefly confined. The introduction of gutta percha also greatly stimulated the hope that a basis for a perfect and permanent insulation had been found. Especially was this so when John M. Bachelder and Moses G. Farmer began the construction of insulators from vulcanite or bone rubber. With its close texture, its glossy surface, its high qualities as a dielectric, every desired and desirable condition seemed to have been secured. Experience however soon proved that every departure from the simple plan of the glass and wooden pin supporter was more or less at fault. By a kind of unanimous consent, therefore, the glass and wooden pin has become, par excellence, the American insulator. The umbrella watershed form has, to secure constant cleanness of surface, given place to straight vertical sides, while the addition of a screw thread formed on the inside of the insulators fitted to a similar thread on the pin, has rendered its removal by wind or upward strain impossible. Already, therefore, has this vexed subject of insulation been, apparently, solved.

The gradually deteriorating condition of the con-



ductors led to invention in another direction. A relay of high sensitiveness, which was another word for high resistance, was one of the earliest plans to render the wires effective. These accomplished little practical benefit. They worked splendidly in fine weather. It was never suspected that increased sensitiveness rendered the relay also more susceptible to the dishonest rains and amorous leaves which stole away the baffled currents.

Then came a host of self-adjusting relays which, like well tempered characters, were asserted to be equal to any condition of current however vagrant and uncertain. Some of these, prominent among which was a compensating magnet the invention of Elisha Gray, were of great ingenuity and showed that invention was entering a higher realm. But the idea upon which they were based was vicious. It was an attempt to cure symptoms instead of disease—to compensate by inside devices for exterior degeneration and neglect. Every such attempt only multiplied the perplexities of the service and added to its toils. The introduction of electrical measurements and recognized standards of resistance based upon the laws of Ohm, have banished forever all these devices.

Invention early took another direction the value of which has by no means disappeared. This was in the construction of repeaters by which the comparative ease in working short lines could be communicated to long ones. The first method of this character was based on the plan of the local circuit as described by Morse in 1838 and which made him remark: "If I can work twenty miles I can go round the world." It was called the Button repeater, and differs only from more modern forms in that it required the presence of an operator at an intermediate station to reverse the circuits as one or the other of the operators on either side took their turn in transmission. It was usually accomplished by attaching the main wires of the second circuit to the lever and post of the register, using a simple button to open or close the circuit. It was effective and valuable. Soon, however, invention gave it automatic action when it came into enlarged and very valuable employment and led to a system of direct transmission between widely separated cities which has vastly enlarged and improved the service.

In the introduction of the button repeater the earliest known expert concerned therein was Merritt L. Wood of Ithaca, N. Y. Another button repeater, but with several ingenious elements wanting in the other, was arranged by Thomas A. Edison. Charles Bulkley, Superintendent of the Washington and New Orleans Telegraph Company, devised an ingenious automatic action which worked as a repeater on a series of open circuits. The low condition of the lines of that period is incidentally shown by the fact that it required ten of these repeaters to operate the wire to New Orleans from Washington, a work now readily done with two.

Immediately following Bulkley's repeater appeared one of a somewhat similar character invented by Amos Kendall and J. B. Tree. Soon after appeared in rapid succession the fine inventions of J. J. Clark, of Philadelphia; George B. Hicks, of Cleveland; George F. Milliken, of Boston; B. B. Toye, of Toronto; Elisha Gray, of Chicago; Charles H. Haskins, of Kenosha; Jesse H. Bunnell and Gerritt Smith, of New York; Woodman and Farmer, of Massachusetts. Of all these, however, ingenious and practical as they all were, the only repeaters which have approved themselves to general employment are those of George F. Milliken of Boston and B. B. Toye of Toronto. By these a message is now as easily sent by a single manipulation from ocean to ocean and into a thousand branch lines as to the nearest suburban station.

In 1854, and also at a later period, a movement was started to change the Morse Alphabet so as to substitute new combinations for the spaced letters C, O, R, Y and Z. It was the subject of an official order by the New York and New England Union Telegraph Company, and also by the New York, Albany and Buffalo Telegraph Company, but was only partially carried out in the former, and not at all in the latter. Mr. O. E. Wood, Superintendent of the Buffalo line, threatened to resign if the order was enforced. Both orders were revoked. The alphabet and numerals remain as first arranged by Professor Morse. The punctuation signs are of later date.

After the introduction of the Bain system and especially after the exhibition of its capacity for rapid transmission by automatic processes, attention was turned to methods of rapid manipulation. Prof. Morse

in 1848 proposed a mode of fast writing by the use of strips of paper with the messages embossed thereon. This he proposed to do by using comparatively thick paper well sized and dampened, on which the message to be sent could be embossed by passing the paper through the ordinary register, manipulating the key as in the ordinary process of sending a message and leaving the paper with the message thus embossed thereon to harden, which it would do rapidly, and be then used to transmit by the action of a light lever passing over the embossed letters. Mr. C. Westbrook, of Harrisburg, Pa., devised a similar process in 1868. Various attempts were also made to construct a transmitter which would, by a key-board arrangement, automatically transmit each letter in the act of depression. A. F. Park, of Troy, N. Y., produced the most effective of this class of instruments. None of these, however, have ever been employed.

Automatic transmission by processes similar to Bain's rapid method, for many years engaged the serious attention of many minds. This was prompted by two considerations. The first of these was the constant risk of error by hand manipulation and the danger of mistranslation. Absolute accuracy in a system of signals seemed only possible by the use of mechanical manipulation. The second was the enlarging volume of business which demanded either additional wires or faster processes. Bain's method of punched paper, which was the equivalent of, although

THE MORSE ALPHABET.

A	--	F	----	K	-----	P	-----	U	----	Z	....
B	----	G	----	L	--	Q	----	V	-----	&	....
C	...	H	-----	M	--	R	---	W	----		
D	----	I	--	N	--	S	---	X	-----		
E	.	J	-----	O	..	T	-	Y	----		
1	-----	3	-----	5	-----	7	-----	9	-----		
2	-----	4	-----	6	-----	8	-----	0	-----		
Comma	-----	Semicolon	-----	Italics	-----						
Parenthesis	-----	Paragraph	-----	Period	-----						
Exclamation	-----	Interrogation	-----								

preferable to Morse's port rule and type plan, was abandoned for want of proper mechanism to prepare the paper. It was revived in 1857 by John P. Humaston, who invented an ingenious perforator. By a single movement a complete letter was cut out in the paper strip and a message prepared with great rapidity. Gen. Lefferts devoted much time upon this device, and experimented with it on the lines of the American Telegraph Company between 1861 and 1866. A speed of 120 words a minute was secured, but the system, though regarded by some as of much value, was not then adopted. In 1869 George Little of New Jersey, invented a perforator by the use of electro-magnets. George H. and Fred. J. Grace, also contrived plans of much excellence for perforating, and also for the removal of the effects of inductive action, which had been hopefully begun by Mr. Little. But after all was accomplished, the processes were found too multiplied to be economic and have therefore come into very restricted use.

The attempts to invent rapid processes of transmission led to several interesting challenges among operators. In 1868 a trial of speed took place between New York and Philadelphia, the sender being M. Bagley of New York, and the receiver Nicholas J. Snyder of Philadelphia. The first nine minutes of the test hour D. F. Marks sent 373 words; the next eleven Bagley sent 450; and each ten minutes thereafter severally 374, 460, 430, 433; total, 2,520 or 42 words per minute. The copy at Philadelphia was clear and legible. The whole matter was sent and received without break or error.

A similar trial was made between P. H. Burns of Boston and Walter P. Phillips, the "John Oakman" of modern telegraphic literature. In this contest 2,620 words were transmitted within the hour. The beauty of Mr. Phillips' chirography as well as the absolute accuracy of the manuscript was such that Professor Morse acknowledged it by presenting Mr. Phillips with a gold pen and holder. The most rapid transmission ever accomplished was in 1860, when James Fisher of Nashville sent to James Leonard of Louisville, fifty-five words in one minute. The capacity of the Morse machinery is only limited by that of the operator to manipulate or copy.

Of the printing instruments as developed by House, Hughes and

Phelps, mention has already been made. The printing apparatus now in use known as Phelps' Electro-Motor Telegraph, and perfected in 1875, may be regarded as a specimen of the highest efforts of the human intellect, and of the subordination of matter to man's dominating brain. An actual test of speed during five minutes, resulted in a transmission of 290 words containing 1,634 characters inclusive of letters, points and spaces, or fifty-eight words per minute. This rate of speed can be maintained by a practiced and skillful operator. The Phelps' motor printer has been worked between New York and Chicago, 1,000 miles, upon a single circuit, the conductor being a number six galvanized wire. These instruments are employed only at Washington, Philadelphia, New York and Boston, and are worked by some of the most skillful operators of the American staff.

#### PRINTING TELEGRAPH OPERATORS, 1877.

NEW YORK: Thomas M. Miler, John K. Calvert, Thomas P. Scully, Edmond W. Gibbons, Jos. L. Edwards, William Blanchard, Theodore Fullon.

BOSTON: James C. Barrett, Charles B. Noyes.

PHILADELPHIA: George W. Snyder, Jacob R. Woodruff.

WASHINGTON: Frederick W. Royce, A. J. Lombard.

In the field of practical telegraphy, Marshall Lefferts, as Engineer of the American Telegraph Company, began, in 1864, a system of methodized administration which was fruitful of useful results. By the aid of skilled labor he had charts of all the lines, showing the locality of offices, the route, number and quality of the wires and their entry into stations, the streams crossed, and a general description of the topography of the country, carefully prepared. He established at the same time a system of what he named "casualty reports," in which the time, extent, and character of obstructions and breaks with their causes were accurately noted. These statistics became of much practical value. To a limited extent, also, the employment of galvanometers in testing the capacity of the wires and batteries was introduced with evident yet ill-defined advantage. It was, however, a much needed inauguration of the tabulation of exact statistical information in telegraphic management,

although it lacked the complete technical knowledge which alone could render it entirely effective.

In 1868, Cromwell Fleetwood Varley, the well known English electrician, visited America. As electrician of the leading British Telegraph Company he was familiar with the most advanced methods and telegraphic processes of Europe. Tests were applied there as yet unknown to American telegraphy except to a few well informed but unofficial students of electric art. Fortunately, Mr. Varley was invited to apply these tests to American lines.

The report of Mr. Varley, which was very minute and exhaustive, was a startling revelation of the condition of the American wires. The obstruction by imperfect joints, by relay magnets of all grades of resistance, by impure wire, by contact, by defective and neglected insulation was more or less universal. It was soon perceived that the wires were capable of a vastly increased service if freed from the burdens under which they labored. Acting upon Mr. Varley's report, measures were at once taken to clear them from their embarrassments. The vigilance thus begun, has not ceased.

The first direction taken to improve existing conditions was in reducing the resistance of the conducting wires to a given standard per mile. This could only be done in many cases by the substitution of new wire. Many of the original wires were small, naked, full of joints made in all conceivable ways, into which the detained moisture ate a path of rust and ruin. The wires which seemed to have deteriorated the most were those known as the wire cord which corroded so deep and rapidly as soon to become friable. Thousands of miles of the finest of English and American galvanized or zinc covered wire were erected in their place. All wire purchased was directed to meet certain standards of resistance, averaging from 12 to 15 ohms, before acceptance. The standard of resistance per mile finally adopted was the quotient of the constant number 5,500 divided by the number of pounds. Thus a number 8 wire weighing 388 pounds was required to show a resistance not exceeding 14.1 ohms per mile. The wire was also required to be capable of elongation fifteen per cent and to have a minimum tensile strength equal to 2.5 times its weight in pounds per mile. With this

substitution of wire of low resistance a marked change was soon felt in the operating room. The files were kept clear. The operator's left hand, which, during many years, had been kept busy adjusting the spring of the relay, now became a time-keeper, indorsing messages with the time sent, without removing the right hand from the key. What had been toil became agreeable labor. The danger and the fear of error was largely removed. The expedition with which public business was executed greatly enlarged its volume.

A second step in the removal of obstructions was in the improvement of the relay magnets. They had been constructed almost wholly without definite standards. The helices were long, short, and of many or few coils as an uninformed caprice dictated. Resistance varied from 150 to 2,500 ohms in relays on the line of the same conductor. A standard resistance of 150 ohms with a pure silk-covered wire number 32 was adopted. This, also, was a great advance on former conditions. The whole telegraphic service seemed to take a spring forward.

The battery came next in review. When the first lines were built, the Grove battery with its mercury-coated zincs, porous cells, nitric and sulphuric acid, was the only efficient battery known. Operators could be identified by their yellow fingers and spotted raiment.

The first change from the Grove battery was the introduction of a liquid known as electropoion, first prepared in America by Chester & Brother, from the formula of the European Electricians, Bunsen and Poggendorf. It was known as the chromic acid or carbon battery. The elements were bi-chromate of potash and sulphuric acid. This battery element was first employed by Marshall Lefferts, after carefully recorded experiments between New York and Boston, under Frank L. Pope and George F. Milliken. It was powerful and economic, but not constant, and required frequent renewal. It is now used successfully by the Gold and Stock Telegraph Company on their metropolitan lines. For general telegraphic lines it came for a time into wide employment until the gravity battery of Callaud with its simple and constant, elements became the adopted battery of the country. The Callaud was preceded for a time by the Daniell which employed a side pocket for the sulphate of copper and a porous cell. But its resistance

and unscientific arrangement were quickly detected, and the Callaud came into all but universal employment.

The gravity battery in its present arrangement is due to John Fuller of England, who invented it in 1852. This was the result of a series of experiments to see if the deposit of copper on the porous cell of the Daniell, by which the activity of the elements was retarded, could be avoided. Finding that pure water charged with zinc sulphate was lighter than water charged with sulphate of copper, he constructed a battery by simply suspending a cylinder of zinc near the top of a glass jar, placing a copper disc at the bottom, and filling the jar with a saturated solution of the two sulphates. The difference in the specific gravity of the sulphates caused them to separate, and in this relation action was effectively maintained, the resistance of the porous cell removed, and the constancy increased. This was a most valuable achievement—and has for the time, at least, determined the question of battery elements in America. Mr. C. F. Varley, not knowing of Fuller's experiments, patented the same process in 1854.

As has been stated elsewhere one of the immediate results of Mr. Varley's visit was the appreciation of electrical studies and a demand for men of advanced scientific knowledge. There was no lack of such, but hitherto telegraphic administration had not asked for them. The electrician now had an honorable place assigned him, and invention and experiment were stimulated and encouraged. Among the men who were thus brought to immediate and prominent recognition in the more occult and hitherto uncared for realm of scientific studies were George B. Prescott, Frank L. Pope, Thomas A. Edison, George B. Hicks, Charles H. Haskins, Moses G. Farmer, George A. Hamilton, J. B. Stearns, Gerritt Smith, Elisha Gray, George M. Phelps, C. H. Summers, F. W. Jones, Stephen D. Field, George F. Milliken, Hugh Neilson, Dr. Hill, B. B. Toye, A. S. Brown, Charles Smith, N. Debee, I. N. Miller, Dr. Leverett Bradley, A. S. Downer, E. P. Warner, J. I. Sprague, and a number of others who, with more or less devotion, entered the field thus opened.

A new and brilliant era for the Telegraph had its introduction in the announcement in 1868 that Joseph B. Stearns of Boston had success-

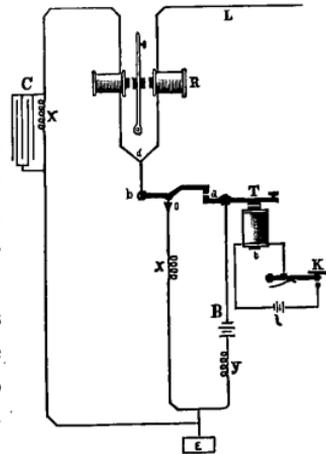
fully transmitted, simultaneously, two messages over the same wire on the Franklin line between New York and Boston. The first practical telegraphing of two messages over one wire, at the same instant of time, in this country, was in 1856, when D. E. Hughes, the inventor of the Hughes' Printing Telegraph, and Charles P. Craig, transmitted over the New York and Philadelphia wire, by the Hughes' Printers, twenty-six words per minute from New York, and twenty-eight words per minute from Philadelphia. This was done by the application of the duplex system of M. G. Farmer. For some reason, this achievement was not widely published. Moses G. Farmer had hinted at such a possibility in 1852, and had, to some extent, formulated plans for its accomplishment. His idea required great rapidity of movement and a synchronism not then readily attainable by known mechanism, although, on a small scale, its possible accomplishment had been proved. The first practical system of this character was devised by Dr. Petrina of Germany, and practically applied by Wilhelm Gintl, Director of the Austrian State Telegraphs, in 1853. The idea was simple and ingenious. It consisted in so arranging an equating battery acting on a wire surrounding a relay, that in the act of transmission of a message to a distant station the relay magnet of the home station would be held neutral, and yet free to the operation of a fresh current from a distant station.

In 1858 and 1859 Mr. Farmer patented a method for simultaneous transmission in which the method of Petrina was conspicuous but by a new application of the currents. The normal conditions were a closed circuit, open keys, and reversed batteries. The operating key in the act of closing, simultaneously made connections which effected a reversal of the line current without disturbing its continuity. The relay had two separate coils, one of which was included in the main circuit, and the other in the circuit of a local or equating battery. The main batteries at two terminal stations presented negative poles to the line, and, with the keys open, neutralized each other. By depressing the home key the battery was reversed and thus corresponded with the battery of the other terminal. At the same time the local circuit was closed and held the home relay neutral. With the key open and the local current absent, the relay responded to the remote station. When

both keys were depressed the signals were given by the action of the equating battery. The history of the development of this device which requires lengthy description to be intelligible, is given in Prescott's "Electricity and the Electric Telegraph."

To the American operator accustomed to the sound of his instrument in transmitting, the silence of the home relay in transmitting was confusing and unnatural. To obtain this as well as to secure prompt reversal contact from the front to the rear of the key by which the electrical conditions were arranged for duplex transmission, an electro-magnet or sounder was placed in a short circuit with the manipulating key, the sounder becoming the manipulator, an arrangement first proposed by Mr. Farmer in 1859. The following is the arrangement of the Stearn's duplex:

"A rheostat X, the resistance of which is exactly that of the main line, is placed in the circuit of a short artificial line. When the key K is depressed, the circuit of the local battery *l* is closed, when the magnet attracts its armature making contact at *a* and breaking contact at *c*. The current from the battery B is thus sent through the lever of the key T by way of *a* and *b* to *d* where the current is divided — one-half going through the left half of the relay *via* the rheostat, and the other through the right half to the line, both circuits having a common earth at E. Of course the currents being equal, the intermediate armature is held neutral but ready to respond to a distant current which can only come in by the right hand magnet. An ingenious disposition of the return or discharge called by operators the "kick" of a current which long prevented simultaneous transmission, was effected by Mr. Stearns by the use of a condenser C bridging the rheostat X. This forms the basis of the success of all duplex telegraphy. Duplex transmission by means of the condenser became pos-



sible and easy. It was still further aided and encouraged by helpful and ingenious devices by Thomas A. Edison and Charles H. Haskins, General Superintendent of the Northwestern Telegraph Company. It owed much of its success, however, to Mr. A. S. Downer, Manager at New York, who was first intrusted with its application to the wires of the Western Union Telegraph Company. In 1872 duplex machinery came into large employment on the leading circuits of the country and, at once, doubled telegraphic facilities thereon. One wire could now do the work of two.

It would have been supposed that now invention would have rested, put on its crown and been content. But it was the very reverse. Immediately the wits of a dozen men were set at work to see whether the simple multiply twice 2 is 4 was possible as a telegraphic result. Quadruplex transmission depended on the provision of either of two processes. If two relays could be constructed so that they would respond, independently, to batteries of different strength, or by a difference of the relay resistance—with batteries of like power; that was one mode. The other method was by the employment of a magnet which would respond to the changes of the polarity of a current and which would remain unaffected by increase or diminution of its volume. Such a magnet, known as the polarized relay, was used for this purpose. which, by responding to a moderate current, left a large margin of available enlargement for the use of the ordinary relay. Thus two magnets, one sensitive solely to polarity, and the other solely to volume, could, by adding to each of two terminals the principle of the Duplex which limited the action of the home machinery to remote manipulation, be operated, simultaneously, without interference. This was accomplished in 1874 by Thomas A. Edison, while engaged with George B. Prescott in devising modifications of the duplex apparatus. Its application to practical employment upon the lines has been attended with complete success. This has been furthered by ingenious devices by Mr. Prescott's able assistant, Gerritt Smith, among which is a method by which the false signal or "kick" usually accompanying the reversal of currents through the relay in transmitting signals, is removed. So complete has been the success of the quadruplex that, at the period of

this writing, January, 1878, 13,000 miles of wire are being operated by the quadruplex machinery, making an equivalent of about 40,000 miles of phantom wire, unseen but co-efficient. No more brilliant progress in the history of invention is on record. The estimated economy in the maintenance of the lines directly ascribable to the use of the quadruplex machinery, thus far exceeds half a million of dollars

Mr. F. W. Jones, Assistant Manager of the Western Union Telegraph Company's office at Chicago, honored his appointment by introducing the differential instead of the Bridge system in working the quadruplex on the western lines with useful results. He also invented a new method of double transmission based on the key system of Stark and Duncker, using no reversed currents, and yet which worked with entire independent action over a circuit of 470 miles. Mr. Jones is one of the most promising of the younger American electricians, and is Secretary and Librarian of the American Electrical Society. He entered the service in 1863 as manager at Kentville, Nova Scotia, removing to Chicago in 1862. His skillful application of the duplex system led to his rapid promotion.

As an example of the use of the quadruplex it may be interesting to note the following employment of a single wire between New Orleans Memphis, Louisville and Cincinnati. The wire between the two first named points is equipped with the ordinary duplex apparatus, and, between Memphis, Louisville and Cincinnati, with the quadruplex, aided by automatic repeaters at Memphis and Louisville. Thus, for example, Cincinnati may simultaneously transmit two communications — one to Memphis and the other to Louisville, while, at the same time, each of these last named offices may simultaneously transmit a message to Cincinnati, while Louisville is sending a message to New Orleans, and New Orleans another to Louisville. Nor is this all. These duplex and quadruplex processes were commenced with more or less timidity and difficulty. Perfect success did not seem possible and serious drawbacks were apprehended. All these apprehensions have disappeared. Not only are the phantom wires, thus evoked, worked with a facility equal to the metallic conductor on the old plan, but there are indications of even greater capacity of action and of new and more free employment.

These modern achievements give broad humor to the long ago prognostications of sapient men who, though deeply interested in the telegraph, conceived it to have very restricted limits. An amusing illustration of this is the following graphic bit of doubting comfort sent by J. Fennimore Cooper to Professor Morse :

ASTOR HOUSE, JAN. 31, 1838.

“MY DEAR FRIEND. \* \* \* I wish you all success with the telegraph which might be made very useful for long distances. Your difficulty will be in communicating between more than two stations, for half a dozen sparks traveling on the same wires will play the devil with the registers.  
J. FENNIMORE COOPER.”

What would the author of Leatherstocking say now were he once more a resident of the Empire State?

With such achievements what has been accomplished thus far can only be accepted as the evidence that in the electric spark there is the potency and promise of future triumphs. The quadruplex will, no doubt, in time, give place to the multiplex. Elisha Gray has already shown that every musical note is capable of separate and simultaneous transmission. The capacity of a wire to convey sounds appears to be limited only by the range of the gamut. Each tone in Gray's scheme of telegraphic harmonics selects its own magnet, not to voice a message in a new tone, but to communicate it with the ordinary click of the Morse alphabet, the tone being simply an analyzer to select the magnet by which to voice its message. It is a system in which sounds seek their affinities. What width of realm lies beyond all these revelations, it is hazardous to conjecture.

There are some indications that the autographic process, by which the transmission of fac similes of messages, drawings, and even likenesses was introduced into the telegraphy of Europe in 1856, by Caselli, may be revived in America. This process is one by which, with the greatly increased knowledge of securing synchronous action acquired since Caselli introduced his apparatus, and especially by the harmonic multiplex system proposed by Gray, fac similes of messages can be rapidly transmitted, and a money telegraph order be made to bear exact autographs of the parties interested.

The most recent phase of modern invention is the téléphone, with its wonderful capacity to communicate human speech by the wires to great distances. The marvel of the performance is only equaled by the simplicity of the mechanism. It may be that this last gift of science is designed to realize the prophecy that "their lines have gone through all the earth, and their words to the end of the world." Indeed the latest of the inventions of Thomas A. Edison, whose genius seems at present to be the household talk of the world, render almost certain not only the ability to make the human voice audible at great distances, but to make it record itself in such a way as to reproduce, by simple mechanism, the original voice in the tones with which it was first uttered.

The Centennial year marked the introduction of pneumatic tubes beneath the streets of New York for the transmission of messages in their original condition from the more active of the auxiliary stations to the central office of the Western Union Telegraph Company, New York. A double acting air pump engine in the basement of the main building of that Company, produces at way stations, to which the system extends, a strong current of air, by which small circular boxes of light material, capable of holding a dozen messages, are swiftly shot through the tubes to the center of the main operating room in the seventh story of the central building. A signal announces to a clerk in attendance their arrival, when they are instantly released from the office of the tube, and their contents placed on the respective files for telegraphic transmission. Every station, thus connected, becomes, essentially, a part of the central office. In a very brief period this system will, without doubt, be so extended that a large web of city wires called loops and branches will be dispensed with. The employment of pneumatic tubes in large cities is destined to greatly simplify telegraphic labor.

The Morse patent has long since expired. The brains of men have been busy over other modes of electrical transmission. Except, however, a dozen printing instruments, of admitted beauty and effectiveness, employed to transmit a portion of the correspondence between four seaboard cities, there is nothing heard in the 15,000 telegraph offices of the continent but the merry click of the Morse machinery. And as the observer looks in through the windows of these offices, either

where they chatter at the railroad station, or in the ante-rooms of the great hotels, or in the pandemonium of the Stock Exchange, or up in the great central building in New York, which, itself a marvel, seems built to stand as a sublime pledge of the faith of enterprise in the national protection, he will find the same mechanism as at first, now simpler than when it first became the vehicle of human thought. And not only so, but all over the earth, in every clime, throughout the territories of every civilized nation, wherever human language is known, or home fires are lighted, or commerce has marts, or the smelting furnaces flash out their ever-burning fires, or the groan of giant engines work out the products of human skill or tell the story of human industry, the electric wires which web the world in a net-work of throbbing life, utter their voices in all their varied tongues, very largely, and, in America, almost solely, by the alphabet and apparatus of Professor Morse.

#### THE VICTORY.

When Man, in his Maker's image, came  
 To be the lord of the new-made earth,  
 To conquer its forests, its beasts to tame,  
 To gather its treasures and know their worth,  
 All readily granted his power and place,  
 Save the Ocean, the Mountain, and Time, and Space ;  
 And these four sneered at his puny frame,  
 And made of his lordship a theme for mirth.

Whole ages passed while his flocks he tended,  
 And delved, and dreamed, as the years went by,  
 Till there came an age when his genius splendid  
 Had bridged the rivers, and sailed the sky,  
 And raised the dome that defied the storm,  
 And mastered the beauties of color and form ;  
 But his power was lost, his dominion ended,  
 Where Time, Space, Mountain, and Sea was nigh.

The Mountains rose in their grim inertness  
 Between the nations, and made them strange,  
 Save as in moments of pride or pertness  
 They climbed the ridge of their native range,  
 And looking down on the tribe below,  
 Saw nothing there but a deadly foe,  
 Heard only a war-cry, long and shrill,  
 In echoes leaping from hill to hill.

The Ocean rolled in its mighty splendor,  
Washing the slowly wasting shore,  
And the voices of nations, fierce or tender,  
Lost themselves in its endless roar.  
With frail ships launched on its treacherous surge,  
And sad eyes fixed on its far blue verge,  
Man's hold of life seemed brittle and slender,  
And the Sea his master for evermore.

And Space and Time brought their huge dimensions  
To separate man from his brother man,  
And sowed between them a thousand dissensions,  
That ripened in hatred and caste and clan.  
So Sea and Mountain and Time and Space  
Laughed again in his lordship's face,  
And bade him blush for his weak inventions  
And the narrow round his achievements ran.

But one morning he made him a slender wire,  
As an artist's vision took life and form,  
While he drew from heaven the strange, fierce fire  
That reddens the edge of the midnight storm;  
And he carried it over the Mountain's crest,  
And dropped it into the Ocean's breast;  
And Science proclaimed from shore to shore,  
That Time and Space ruled man no more.

Then the brotherhood lost on Shinar's plain  
Came back to the peoples of earth again.  
"Be one!" sighed the Mountain, and shrunk away.  
"Be one!" murmured Ocean, in dashes of spray.  
"Be one!" said Space, "I forbid no more."  
"Be one!" echoed Time, "till my years are o'er."  
"We are one!" said the nations, and hand met hand  
In a thrill electric from land to land.

ROSSITER JOHNSON.

## CHAPTER XLVII.

## TELEGRAPHIC JOURNALISM AND LITERATURE.

THE first suggestion of a telegraphic journal in America was made by Joshua N. Alvord, of St. Louis, and which he proposed to make the organ of the Telegraph Convention organized in Washington in 1853. It was not met with favor.

In 1863 the National Telegraphic Union was organized, with James G. Smith as President; Lewis H. Smith was Secretary, and, assisted by James G. Kendall, copied and mailed the circulars of the Union. This duty was onerous, and Mr. L. H. Smith suggested the publication of a paper to be made the vehicle of the Union's official notices and reports. Gradually enlarging his conception of such a publication and its uses, he urged the issue of an independent telegrapher's paper, and assured the Union that such a paper, so managed that every one connected with the telegraph could regard it as his own, would be supported and succeed.

At the annual meeting of the Union in Philadelphia, September 5, 1864, *The Telegrapher* was founded. It was ordered to be issued on the last Monday of each month. Mr. L. H. Smith was elected editor. He was authorized to look for support to advertisements! The first number was issued on Monday, September 26, 1864, of which two editions of 500 each were sold. The second number comprised ten, and the succeeding numbers twelve pages of two wide columns each. It became a semi-monthly publication December 1, 1865. Its circulation soon averaged 1,200.

Mr. Smith was succeeded in the editorship by Frank L. Pope, August 15, 1867. He at once made it an eight-page weekly paper and gave it importance as a scientific journal. In the following year, Feb-

bruary 8, 1868, Mr. Pope, whose other engagements required his attention, resigned, and the *Telegrapher* was transferred to the charge of Mr. J. N. Ashley, a man of nerve and ability, and a journalist of tact and experience. He drew to it a large advertising patronage. It became independent of the Union, and the most pecuniarily successful paper of a telegraphic character in the world.

In 1870 the National Telegraphic Union expired. Mr. Ashley at once pushed his paper as a personal venture. It became newsy, aggressive, full of fun, fight, and fire. It gave careful descriptions of all new inventions, scientific clippings from European journals, personal items, bulls, births, marriages, deaths. It also did much lively controversy, for which its editor had a genuine proclivity. It had a free and large correspondence and was a breezy sheet.

The most valuable contributor to the *Telegrapher* was Frank L. Pope, whose ability as a terse and clear writer on electrical subjects was early noticeable. His first illustrated article was on "*The Telegraphic Repeater*," January 30, 1865. His correspondence with the *Telegrapher*, while in command of the British North American section of the Collins' Overland Telegraph Expedition, added greatly to its popularity. Under both Mr. Pope and Mr. Ashley the *Telegrapher* was ably edited and aggressive.

So long as vigorous opposition existed among telegraph lines the *Telegrapher* flourished and its editor prospered. As one by one, however, the fighters fell in the field or wedded the enemy, Mr. Ashley began to perceive that the millenium was at hand, and that the sword must seek the scabbard. The tone of the paper became gentle and subdued. At last, on February 3, 1877, after an eloquent paragraph on "the hardness of the times," it was announced that the *Telegrapher* would thenceforward cease to be, and that Mr. Ashley would thereafter be known as the editor of the "*Journal of the Telegraph*."

#### THE TELEGRAPHIC JOURNAL.

On March 7, 1867, Jerry Borst, of the Western Union Telegraph Company, well known as a skillful operator, started the *Telegraphic Journal*. It was issued weekly in ordinary newspaper form, and united with

matters telegraphic, much general miscellany. It was started without capital, and, although well received, had a short and impecunious existence, and expired in November of the same year

#### JOURNAL OF THE TELEGRAPH.

The *Journal of the Telegraph* was started under the auspices of the Western Union Telegraph Company, December 1, 1867. It was found necessary as a medium for the communication of the orders of the company, and of information to agents. It was found essential, also, as a medium for authoritative interpretation of the rules of the company.

No sooner was it issued than it became useful in many other directions. The opening of new offices, which was constantly occurring in all parts of the country, with the tariffs thereto, had to be announced. The European tariffs, also, with their exceptional rules and charges, had to be clearly stated and circulated. So of the money order and transfer service. For these purposes, as well as for the general collection of accurate scientific information, the record of inventions, the answer to inquiries on points of doubtful interpretation, the *Journal of the Telegraph* became a prime necessity.

In quite another direction, also, the *Journal of the Telegraph* has been, from its first issue, potential and useful. Its influence has been unific. It has not only given unity and vigor to the service, but has cultivated an elevated and cordial *esprit du corps*, enthusiasm in the performance of duty, and a general friendliness and fellowship. Its first editor was James D. Reid, who resigned in May, 1872. He was succeeded by Frederick J. Grace, and on February 1, 1877, by its present editor, James N. Ashley.

Mr. F. J. Grace, who died April 1, 1877, entered the service at twelve years of age, as messenger in the New York office of the New York and Philadelphia Printing Telegraph Company. Ingenious and apt, he soon became a skillful operator and served first at Hartford, and afterward as manager at Worcester, Mass. In 1859 he was appointed chief operator of the "House" office in Boston, under J. N. Ashley, manager. In 1860 he became manager for the American Telegraph Company, at Springfield, entered the naval service under Farragut in 1861,

became manager at 22 Broad street, New York, for the American Company in 1862, and, in 1872, was appointed editor of the *Journal of the Telegraph*. He was a man of fine judgment and of manly character.

The *Journal of the Telegraph* is issued semi-monthly on the 1st and 15th of each month. Its circulation is over 10,000. Its terms are one dollar a year to employees, and two dollars to the public.

#### THE OPERATOR.

The *Operator*, a finely printed quarto, was started March 1, 1874, by Samuel L. Welp and Tom. Allen, of the staff of the Western Union Telegraph Company. It is now published and edited by Mr. W. J. Johnston, who, by tact and industry, has made it a success. Many of its issues have been models of taste in the arrangement of its selected articles, and the scope and spirit of its editorials and correspondence. It is spirited, cheerful, vivacious. It has a large subscription list, and the odor of the operating room pervades its pages. Such a paper is only possible in an intelligent staff of men such as work the wires of the American lines.

From time to time short lived publications, started by irrepressible operators, have appeared, which have maintained for a season a brilliant existence, were full of sparkle, and had a short and merry life. Prominent among these was "*Telegraphica*," by Walter P. Phillips, who led this style of journalism. "*The Plug*," of Cincinnati, followed. Then appeared the "*Fraternity*" and "*Switch*" of Chicago, and the "*Electric*" of St. Louis. A weekly called the "*Weekly Porous Cup*" came near being born in Syracuse, N. Y., but it decided to remain in MSS. All these lived so bright a life that they can scarcely be said to have died, but simply "ceased to shine."

Of a more pretentious character were three periodicals which began the history of periodical telegraphic literature in America. The first of these, and it is believed the first telegraphic periodical published in America, was a monthly periodical edited by Don Mann, in the interest of Henry O'Reilly, named the *American Telegraph Magazine*. It was a sprightly, red hot publication, but was special in its design, and passed away with the circumstances which brought it to life.

The second was the *National Telegraph Review*, a handsome quarterly of 96 pages, published in Philadelphia, the first number of which was issued April 1, 1853. It was edited by James D. Reid. It was an experiment which proved too costly to be continued. At a later date such a periodical would have filled a useful place. It expired with its first birthday, leaving behind it a handsome volume of 400 pages, now out of print.

A third was *Shaffner's Telegrapher's Companion*, edited by Tal. P. Shaffner, well known as the author of *The Telegraph Manual*. The first number was issued January 1, 1854. It was published quarterly, in New York, by Pudney and Russell, and contained much valuable current matter, and all the more important testimony on questions affecting patent controversies then in progress. It expired in 1855.

Of American publications connected with electric literature the list is not large, yet apparently ample, and, to some extent, complete. The following are the works which have taken book form :

History of Induction.....	C. G. Page.
The Magnetic Telegraph.....	Alfred Vail.
Wonders of Electricity.....	J. Baile.
History, Theory and Practice of Electric Telegraphs..	George B. Prescott.
Eelectricity and the Electric Telegraph.....	George B. Prescott.
The Telephone and Phonograph.....	George B. Prescott.
The Electro-Magnetic Telegraph.....	Lawrence Turnbull.
Modern Practice of the Electric Telegraph.....	Frank L. Pope.
Telegraph Manual.....	Tal. P. Shaffner.
The Galvanometer and its Uses.....	C. H. Haskins.
Manual of Military Telegraphy.....	
Davis's Manual of Magnetism.....	D. Davis.
Electricity and Magnetism.....	Miller.
Book of the Telegraph.....	W. F. Channing.
Telegraph Law Cases.....	Theo. Bacon.
Telegraph Cases.....	Charles Allen.
Law of Telegraphs.....	Scott and Jarnagin.
History of the Atlantic Telegraph.....	H. M. Field.
The Story of the Telegraph.....	C.F. Briggs and A. Maverick.
Atlantic Telegraph.....	J. Mullaly.
Ocean Telegraphy .....	S. F. Van Choate.
Handbook of Electrical Diagrams and Connections....	Davis and Rae.
Russian Overland Extension Papers.....	O. A. Palmer.
Report of the Electric Department, Paris Exposition..	S. F. B. Morse.
Telegrapher's Companion.....	Jones and Lawson.

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Manual of the Telegraph.....	J. E. Smith.
Manual of the Telegraph.....	Walter O. Lewis.
The Telephone.....	Amos E. Dolbear.
Oakum Pickings.....	Walter P. Phillips.
Lightning Flashes and Electric Dashes.....	W. J. Johnston.
Telegrapher's Souvenir.....	F. W. Huntington.

An extensive work, designed to be exhaustive, is understood to be in preparation by Tal P. Shaffner, who has been for many years collecting material for that purpose. The most voluminous telegraphic material is a collection of correspondence presented by Henry O'Reilly, Esq., to the New York Historical Society. It is a marvel of labor and patience, and consists of one hundred large quarto volumes.



PROFESSOR S. F. B. MORSE.

## MORSE MEMORIAL.

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### CHAPTER XLVIII.

#### FOREIGN PUBLIC HONORS TO PROFESSOR MORSE.

“There is an elevation which does not depend on fortune. It is a price which we imperceptibly set on ourselves. By this quality we usurp the deference of other men.”—*La Rochefoucauld*.

HAVING interrupted the personal history of Professor Morse to give that of his invention, the remaining pages are assigned to memorials of his later years, when, with his work done, his head white with years, special honors came to irradiate the steps which led him to his rest.

On the 5th of June, 1856, with the telegraph extensively established throughout America, Professor Morse sailed for Europe. In London he met, with great joy, his artist friends — West, Landseer, Leslie, and many others distinguished in art or science. All warmly congratulated him on the brilliant career which had been opened to him, the success which he had already achieved therein, and the *eclat* which had become associated with his name. In their estimation he had honored, in this new realm, the old art which he had loved and elevated. Morse's development from an artist into an inventor was, to them, no marvel. He was still giving utterance to natural forces, as when, a few years before, he combined his colors on the canvass and produced his Hercu-

les. A few years later Gen. N. P. Banks felicitously expressed the same thought when, on a great memorial gathering, he said: "There is doubtless some connection between the profession of Mr. Morse as a painter and the invention which gave him renown. The cultivation of the imagination, which naturally resulted from his studies in art, imparted a clearer insight into the nature of things than another course of life might have given. It revealed to him, affinities. Genius is, in truth, the capacity to discern the relation of things and events to each other which have, apparently, no connection. This quality of mind Mr. Morse exhibited throughout his whole career."

After enjoying for a time this charming re-union with his old friends, engaging also in frequent consultations with the English electricians, Glass, Bright, Whitehouse, Statham and others in connection with the interesting experiments then in progress to determine the possibility of submarine telegraphy, he left England for the Continent. Before his departure he participated in a patriotic dinner given on the Fourth of July by George Peabody, at the Star and Garter Hotel, Richmond Hill.

On his arrival at Copenhagen, whither he first directed his course, he was introduced, at the castle of Fredericksborg, to Frederick VII., King of Denmark, who with his court, received him with every mark of honor. Here, also, he visited with affectionate interest and curiosity, the study-chamber of Oersted, whose discovery of the deflection of a needle by a galvanic current was the dawning fact which eventually made his own invention possible.

Continuing his journey to Russia, where he had been invited to meet the Emperor, he found, on arriving at the quay at Peterhoff, the imperial carriages, with their usual accompaniment of footmen, wearing the royal livery, in waiting. By these he and his party were carried at a rapid rate to the imperial palace, where, with every demonstration of respect, he was received by the Emperor, Alexander II., by whom he was most kindly congratulated as one of the world's benefactors.

After a brief dalliance with these imperial courtesies, he proceeded to Berlin. Here he was received with almost affectionate cordiality by Humboldt, who welcomed him to his house, and treated him during his

stay, with the utmost delicacy and respect. At his departure the great author of *Cosmos* presented him with an imperial photograph of himself, on the margin of which he wrote :

“To Mr. S. F. B. Morse, whose philosophic and useful labors have rendered his name illustrious in two worlds, the homage of the high and affectionate esteem of  
ALEXANDER HUMBOLDT.”

This memorial, of one so great and gifted, he greatly valued and carefully preserved. Prussia about the same time presented to him the Prussian golden medal for scientific merit.

After passing through many prominent places in Europe, in all of which he was received with distinguished honor, Prof. Morse returned to London in the latter part of September, 1856. Society was at that time greatly excited over the subject of the proposed submarine connection by cable with America. A plateau extending across the bed of the Atlantic Ocean, between the two continents, had been discovered under a survey conducted by Lieut. Maury for the United States government, by Lieut. O. H. Berryman, and which was regarded as extremely favorable for the projected enterprise. Prof. Morse, as electrician of the New York, Newfoundland and London Telegraph Company, in behalf of which the soundings were made, now prosecuted, in concert with Dr. Whitehouse and Mr. Bright, the English electricians, a series of most successful experiments with a covered conductor of 2,000 miles through which they succeeded in sending 270 signals per minute on the Morse register. A vast field of sub-oceanic telegraphic communication between far distant shores was thus opened up. These experiments removed a grave apprehension entertained respecting the retardation of the electric current in conductors of this character, and greatly hastened and gave assurance of the success of an Atlantic cable. It became a simple question of capital and nautical engineering. The first was quickly pledged. The latter was not doubted.

While in London, thus occupied, Prof. Morse was tendered, among other civilities, a public banquet. It was a most unexpected proposition. England had, he thought, ungraciously treated him in his application for a patent. Nothing was expected of her now. He was surprised, therefore, when the English telegraph companies offered him a

public acknowledgment of his services to science. Well they might do this, for they were using his invention throughout the British Empire, and wholly without compensation to the inventor. Prof. Morse promptly accepted the proffered honor, and the dinner was announced to be given October 9, 1856, at the Albion Hotel, in London.

The chairman of the banquet was Mr. W. Fothergill Cooke, who had, with his partner, Wheatstone, resisted Morse's application for a patent. It was a large and brilliant assemblage. The chairman, in presenting Prof. Morse to the company, used the following frank and manly language :

"Gentlemen, I was consulted only a few months ago on the subject of a telegraph for a country in which no telegraph at present exists. I recommended the system of Prof. Morse. I believe that system to be one of the simplest in the world, and in that lies its permanence and certainty. (Cheers.) It is a great thing to say, and I do so after twenty years' experience, that Prof. Morse's system is one of the simplest that has ever been, and, I think, ever will be, conceived. (Cheers.) He stands alone in America as the original and carrier-out of a grand conception. We know that America is an enormous country, but I think we have a right to quarrel with Prof. Morse for not being content with giving the benefit of it to his own country, but that he extended it to Canada and Newfoundland. And even beyond there his system has been adopted over all Europe. The nuisance is, that we, in England, are obliged to communicate by means of his system! And he threatens to go further still, and promises if we do not, he will carry out a communication between England and Newfoundland across the Atlantic! I almost envy Prof. Morse for having forced from an unwilling rival a willing acknowledgment of his services. May he long live to enjoy the high reputation he has attained throughout the world!" (Long continued cheers.)

Other speeches, equally complimentary, by distinguished gentlemen present, followed.

It was on the day of this banquet also that Mr. Morse received from Paris the announcement that the Emperor Napoleon III had made him a Chevalier of the Legion of Honor. It was a day of pleasant triumph. The London *Times* gave noble testimony that his labors were appreciated by England's most intelligent men.

Martin Farquhar Tupper sent him, a day or two afterward, the following lines referring to the banquet :

" A good and generous spirit ruled the hour ;  
 Old jealousies were drowned in brotherhood ;  
 Philanthropy rejoiced that . kill and power,  
 Servants to science, compass all men's good,  
 And over all religion's banner stood,  
 Upheld by thee, true patriarch of the plan  
 Which in two hemispheres was schemed to shower  
 Mercies from God on Universal man.

" Yes, the electric chain from East to West  
 More than mere metal, more than Mammon can,  
 Binds us together — kinsmen in the best,  
 As most affectionate and frankest bond.  
 Brethren as one ; and looking far beyond  
 THE WORLD IN AN ELECTRIC UNION BLEST !"

Mr. Morse had now reason to feel his success to be complete, so far, at least, as recognition of his invention was concerned. Had these good cousins given him a little of the gold which so aids human happiness and comforts human souls, the honors would have seemed more real. Yet the acknowledgment was noble, generous, and, to Prof. Morse, gratifying and grateful.

The following year Prof. Morse left New York, April 21, 1857, on the U. S. government steam frigate "Niagara" to supervise, with others, the laying of the first Atlantic cable. While in England he was again actively engaged previous to the sailing of the four cable ships, the "Niagara," "Leopard," "Agamemnon," and "Susquehanna," in another series of experiments, testing the integrity and resistances of the cables these vessels were to carry. Of one of these, conducted while absent because of an injury received in passing from one of the small boats to the ship, he wrote : " Our success in the electrical experiments is most gratifying. Mrs. Whitehouse showed me a strip of paper marked on my register with my alphabetic characters, beautifully made through the whole cable of twenty-five hundred miles, and with a feeble sand battery of only twelve plates. If the nautical and engineering department perform their part successfully we are now sure of success."

Among all these mingled labors and honors a letter from the distin-

guished scientist, Steinheil, whose invention, first published in Munich in 1836, most resembled his own, greatly pleased him. It was dated Munich, October 30, 1858. He says:

“DEAR SIR.—Accept, first of all, my sincere and cordial congratulations on the beautiful results which have followed the acknowledgment of your invention, and which bears your name, and which has at last extended the only important system of telegraphing (as I believe), over the whole world. \* \* \* You have contributed the quickest, simplest and most beautiful mode of communication. I have (alluding to his discovery of the earth's circuit) reduced to one-half the conducting wire, and also made it surer and cheaper.”

Four years before the date of this letter this magnanimous scholar and gentleman wrote: “In this way I have been able effectually to labor for the adoption of the Morse system throughout all Europe, and that I have thereby extended his well-earned fame has been to me a source of peculiar pleasure.” These are splendid words from one who himself had done so much for electric science, and whose own inventions were so important and skillful. Steinheil's invention was the only recording telegraph in Europe. He had devised also an arrangement of bell sounds corresponding with the tones of the human voice. He was a man of extensive learning and much personal refinement. His congratulations, therefore, so frank, so cordial, so magnanimous, were more grateful to Prof. Morse than gold, and were more significant than any banquet.

In 1858 Prof. Morse again sailed for Europe. Without lingering in England he hastened to Paris. A most important movement was on foot. On his arrival he was received with great enthusiasm, and another banquet was tendered him by his countrymen. Col. John S. Prescott presided. The vice-president was Hon. Hamilton Fish, afterward Secretary of State. It was an occasion of much enjoyment. A number of speeches were made in the highest degree laudatory of their guest. Charles Sumner, who, on account of his physical condition, was not allowed to be present, wrote a letter in which he thus expressed himself, “Through Prof. Morse, civilization has made one of her surest and grandest triumphs, beyond any ever won on any field of blood; nor do I go beyond the line of the most cautious truth when I

add that if mankind had yet arrived at a just appreciation of its benefactors it would welcome such a conqueror with more than a marshal's bâton."

But there was something better coming. The Morse telegraph had become universally adopted in Europe. There was a recognition of this in some compensating form due the inventor. He had politely asked for it. The American minister in Paris, Hon. John Y. Mason, entered heartily into the matter, and made the application. France had granted a patent, but had made it worthless. She refused its use to the public, but had adopted it for the government service without compensation to its author.

This application led to a consultation with other governments, equally indebted, all having the Morse system in use. Ten of these before being officially asked to contribute voluntarily proposed to join in a united token of appreciation in some substantial manner. The following was the fruit of the conference. It was a most brilliant recognition of Mr. Morse's claims. How profoundly gratified must the Professor have been when the imperial packet, inclosing the following letter from Count Walewski, sealed with the great seal of state was placed in his hands:

" MINISTRY OF FOREIGN AFFAIRS, }  
" PARIS, *September 1, 1858.* }

"SIR,—It is with a lively satisfaction that I have the honor to announce to you that a sum of 400,000 francs will be remitted to you in four annuities, in the name of France, of Austria, of Belgium, of the Netherlands, of Piedmont, of Russia, of the Holy See, of Sweden, of Tuscany, and of Turkey, as an honorary gratuity, and as a reward, altogether personal, of your useful labors. Nothing can better mark, than this collective act of reward, the sentiment of public gratitude which your invention has so justly excited.

"The Emperor has already given you a testimonial of his high esteem when he conferred on you, more than a year ago, the decoration of a Chevalier of the Legion of Honor. You will find a new mark of it in the initiative which His Majesty wished that his government should take in this conjuncture, and the decision that I charge myself to bring to your knowledge is a brilliant proof of the eager and sympathetic adhesion that his proposition has met with from the states I have just enumerated.

" I pray you to accept on this occasion, sir, my personal congratulations, as well as the assurance of my sentiments of the most distinguished consideration.

"S. WALEWSKI."

It may be added in connection with this letter that Professor Morse was specially honored in France. The Emperor of the French, then in the zenith of his glory, omitted no opportunity to show him respect. He was invited on all state occasions, and the best places were reserved for him and his family. At the court parties they were always placed with the imperial family and the diplomatic corps.

Count Walewski is reported to have spoken as follows, in a lengthy address before the conference, where this gift was determined upon :

"The honorary distinction which several of the sovereigns have deigned to confer on him have, beyond any doubt, been to him valuable marks of a lofty esteem ; but they have been insufficient to supply the place of the pecuniary compensations which his sacrifices and his labors seemed destined to assure to him, and which are so much the more justly called for, since electro-magnetic telegraphing, independently of the immense services which it renders by the rapidity of transmitting news and correspondence, also obtains, by its operation under the governments having the monopoly of it, profits in money, already considerable and which must continue to increase. It is, therefore, under a conviction that there is justice as well as generosity in acceding to the claim of Mr. Morse, whom the infirmities of age have now reached, after he has entirely devoted his small fortune to experiments and voyages necessary to arrive at the discovery and application of his process, that the Emperor's government has solicited various states, to whose gratitude Mr. Morse has acquired rights, to join in the remuneration which is due to him."

The grant was cordially made. It was based on the use of twelve hundred and eighty-four sets of Morse apparatus, three hundred and eleven francs, fifty-five centimes, or about sixty-two dollars for each, to be paid by the several governments, as follows :

	No. Instru- ments.	Payments.
Austria.....	224	69,787 20 francs.
Belgium.....	52	16,200 60 "
France.....	462	143,936 10 "
Netherlands.....	72	22,431 60 "

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	No. Instru- ments,	Payments.	
Piedmont.....	73	22,743	15 francs.
Russia.....	110	34,270	50 "
Holy See.....	17	5,296	35 "
Sweden.....	191	59,506	05 "
Tuscany.....	14	4,361	70 "
Turkey.....	69	21,496	95 "
	<u>1,284</u>	<u>400,030</u>	<u>20</u> "
Equal to.....		<u>\$80,000</u>	<u>00</u>

The European governmental tokens of honor, aside from this joint act of justice to Professor Morse, were as follows:

France: Decoration of the Legion of Honor.

Prussia: Presentation of the "Gold Medal of Scientific Merit," enclosed in a gold snuff box.

Austria: The "Gold Medal of Scientific Merit" of Austria.

Spain: Presentation by the Queen of Spain of the Cross of "Knight Commander de Numero" of the order of Isabella, the Catholic.

Portugal: The King of Portugal conferred upon him the Cross of a "Knight of the Tower and Sword."

Italy: The King of Italy presented to him the cross of a "Knight of Saints Lazaro and Mauritio."

Denmark: King Frederick VII honored him with the cross of "Knight of the Danneborg."

Turkey: The Sultan directed, in highly appreciative language, the presentation to him of the decoration in diamonds of the "Nishan Iftichar," or Order of Glory. Turkey was the first power in Europe thus formally to recognize the value of Prof. Morse's invention.

England: A banquet.

While thus referring to the honors paid him by European governments, it seems appropriate to note other honors of a more private, but not on that account, less grateful character.

As early as 1835, before his telegraphic reputation can be said to have begun, Mr. Morse was elected a corresponding member of the Historical Institute of France.

On January 12, 1837, he was elected a member of the Royal Academy of Fine Arts of Belgium.

July 15, 1839, the great silver medal of the "Academy of Industry," of Paris, was voted to him for his invention of the telegraph.

October 12, 1841, the National Institute for the Promotion of Science, established at Washington, made him a corresponding member.

October 8, 1842, the gold medal of the American Institute was awarded him, for successful submarine telegraphic experiments.

June 12, 1845, he was elected a corresponding member of the Archæological Society of Belgium.

August 27, 1846, Yale college conferred on him the degree of Doctor of Laws, an honor which he regarded with special pleasure.

April 21, 1848, he became a member of the American Philosophical Society, Philadelphia.

November 14, 1849, he was elected a Fellow of the American Academy of Arts and Sciences, Boston.

A vast number of other tokens of honor were accorded him from time to time. Of two of these he was much pleased, and often referred to them in his last years. One was in Berlin, when the operators of the central office conveyed to him through Col. von Chauvin, chief of the German telegraph system, their great desire to see him. Gladly assenting to this request he was conducted to the operating room, a vast hall, said to be the largest operating room in the world. At a signal from the chief the operators, numbering several hundred, stood up, when Col. von Chauvin addressed them :

"Gentlemen, you have the honor to see before you the 'Father of the Telegraph.'"

This interview gave him genuine pleasure. The title was one of endearment which he felt and cherished gratefully.

Following this interview, he was introduced to the Director-General of the Posts of the North German Bund, who, after receiving him very cordially, led him into a cozily furnished room, remarking as they entered: "Here I have so often thought of you. Over this small table, Mr. Morse," tapping upon it as he spoke, "passed the important telegrams of the war of 1866." Then approaching a large telegraph map

on the wall, he added: "Upon this you can see how invaluable was the telegraph in the war. Here," pointing with the forefinger of his right hand, "the Crown Prince came down through Silesia." "This," indicating with the other hand a passage through Bohemia, "was the line of march of Prince Frederick Carl. From this station the Crown Prince telegraphed Prince Frederick Carl, always through Berlin, 'Where are you?'" The answer from this station reached him also through Berlin.

"The Austrians were here," placing the thumb on the map below, and between the two fingers; "the next day Prince Frederick Charles comes here," the left forefinger joined the thumb, "and telegraphs the fact, always through Berlin, to the Crown Prince, who hurries forward here," the forefinger of the right hand slipped quietly under the thumb, as if to pinch something. "Thus, by aid of the telegraph, a junction between the armies of the two royal cousins was formed at Königsgrätz, which crushed the enemy, decided the fate of Germany, and secured to Prussia its present commanding position."

While in Paris in 1867, the year of the International Exposition, Prof. Morse served, after much urging, as a member of the committee on telegraphic instruments. As a member of that committee he wrote an exhaustive report on the merits of telegraphic contrivances, which was published with the official reports of the Exhibition. He also prepared with great care, and on the advice of friends, a complete narrative of his own inventions, extracts from which have been already given.

It was the most complete of the many vindications of his claims, and was marked by the lucidity and graphic particularity and care which characterized his best days.

Covered with honors, and having long overstepped the threescore years and ten which marks the extreme boundary of the lives of most men, Professor Morse returned to America to husband in domesticity and retirement the residue of his life. He left Havre in the St. Laurent May 24, 1868, and arrived early in June at his rural home near Poughkeepsie, N. Y., where he was affectionately welcomed by his friends and neighbors.

## CHAPTER XLIX.

## AMERICAN HONORS.

"He has written us a story  
 On the earth in pulsing lines,  
 From our northlands, bleak and hoary  
 To where the blue Marmora shines.  
 Through the deep track of the ocean  
 Flashing past the coral isles  
 Viewless, voiceless, without motion,  
 Thrills his fame down countless miles.  
 Faithful spirit, all undaunted,  
 Toiling, undismayed, for years,  
 Till along the wire enchanted  
 Greetings join two hemispheres."

**S**CARCELY had the early American telegraph companies been formed, or the wires begun to web the highways of the country, before Professor Morse entered into new and more bitter contests than any he had yet encountered. His struggles, so far, had been with poverty, that Gethsemane of many a brave life. He had, however, stepped out from beneath the olive shadows unbroken. Now he had to grapple with foes fiercer than want, and to take part in a battle which was to keep up the rattle of its artillery for a score of years.

For sometime succeeding the years 1846 and 1847, Professor Morse seemed not only lost amid the noisy laudation accorded to men who had performed the more showy offices connected with the introduction of the telegraph in America, but the rivalry of other inventions, already trumpeting their claims to public notice, added to a certain fatality which seemed to enter into the management of his interests, evoked a wide and very bitter feeling against his claims. Many an influential journal which had echoed the public joy at the birth of the telegraph, now as lustily echoed this hostility. During one of the many legal contests which year by year arose as various parties sought to invalid

date the Morse patent, this became signally conspicuous. The suit was in Boston. A long and bitter tirade against Prof. Morse as a scientific charlatan had been uttered by one of the silver-tongued orators of a bar noted for its forensic power. To this, a calm but crushing and triumphant reply had been given, which carried conviction and a prompt verdict for the inventor. But the leading papers, with showy introduction, printed in leaded columns the adverse address, and gave the rejoinder the compliment of a dozen lines. About the same time, also, a banquet was given to one of his chief opponents, accompanied by every demonstration calculated to wound and offend Mr. Morse. His sun was in deep obscuration. Writing of these things to his friend Mr. Kendall, he said :

“ But I am not disturbed at the present state of things. I feel that these men have carried their hostile machinations to such an extreme that a reaction is inevitable. Their triumph will be short. When once the public shall apprehend the truth, so befogged, so misrepresented, there will be such a burst of public indignation as will make them hide their heads with shame. This may not come in my life-time, but that it will come I am as confident of as that truth is truth.”

A sublime faith in the triumph of the right was a prominent trait in Professor Morse's whole career. It gave him patience in every peril. It added dignity to a nature naturally noble.

Professor Morse's first, most bitter, most relentless, and insidious enemy was his partner, F. O. J. Smith. Nothing could exceed the cool malignity of his treatment. One of its first displays was amusing and characteristic. The agreement under which Smith acquired a quarter ownership of the patent required that he should accompany Mr. Morse to Europe and bear his expenses. When the time of settlement came, Smith, knowing Mr. Morse's careful habits, and that every cent expended by him was noted down, asked for his expense book. Without suspicion it was given, and in one of the early suits he had every item of this private memorandum book published, the fees paid to waiters, the contribution for the poor at the communion table, the tickets to public places where his mission made it politic to attend, the repairs to his raiment, the franc dropped into the hand of charity, the cleaning of

his watch, every thing in short for which a sou had been spent, was exhibited to show how dependent the inventor was on the purse of his partner, and how freely he had used it. This malignity he kept aglow from year to year. The last shaft he aimed at his illustrious victim entered the silent room where death already had commenced to glide across the threshold where the wearied head had settled itself for its final rest. That contest is over now. Both are dead.

Henry O'Reilly was Professor Morse's first open antagonist. Some of the circumstances which led to this have been given. It took distinct form when Mr. Kendall secured an injunction on the use of the Columbian instrument, a machine arranged by Ed. F. Barnes to evade the Morse patent, and which consisted in a simple reversal of the parts. O'Reilly at once attacked the Morse patents. He engaged Hon. Salmon P. Chase and General R. H. Gillette, of Washington, as his counsel. The case was argued before the Circuit Court of the United States for the district of Kentucky. It was conducted with great brilliancy on both sides. It ended in a triumph for Mr. Morse on every point. It was his first great vindication and honor.

In 1853, an appeal having been taken, it was re-argued before the Supreme Court of the United States. George Harding, St. George T. Campbell and George Gifford, names not without fame, appeared for the appellees. The case was argued before Chief Justice Taney. Not a stone was left unturned in the search for evidence which would tear the laurel from the inventor's brow. But it was not found. He was again the victor. His patent was unanimously sustained on every claim save one, and that in no way affecting his credit to the invention which bears his name. The clouds were breaking rapidly from his horizon.

As a chief feature of the telegraphic history of these years, some record of this important decision is necessary. It is no part of the design of this narrative to follow Mr. Morse through all his legal contests, in which he was invariably successful. But the decision in this case, covering as it does the whole controversy, requires notice.

After arguments of counsel had closed, Chief Justice Taney gave a lengthy opinion, of which the following is an excerpt containing the salient features of his decision :

The evidence is full and clear that when Morse was returning from a visit to Europe, in 1832, he was deeply engaged upon this subject during the voyage; and that the process and means were so far developed and arranged in his own mind; that he was confident of ultimate success. It is in proof that he pursued these investigations with unremitting ardor and industry, interrupted occasionally by pecuniary embarrassments; and we think that it is established by the testimony of Professor Gale and others, that early in the spring of 1837, Morse had invented his plan for combining two or more Electric or Galvanic Circuits, with independent Batteries, for the purpose of overcoming the diminished force of Electro-Magnetism in long circuits, although it was not disclosed to the witness until afterward; and that there is reasonable ground for believing that he had so far completed his invention, that the whole process, combination, powers, and machinery, were arranged in his mind, and that the delay in bringing it out arose from his want of means. He, however, filed his caveat on the 6th of October, 1837, and on the 7th of April, 1838, applied for his patent, accompanying his application with a specification of his invention, and describing the process and means used to produce the effect. It is true that O'Reilly in his answer alleges that the plan by which he now combines two or more galvanic or electric currents, with independent batteries, was not contained in that specification, but discovered and interpolated afterward; but there is no evidence whatever to support this charge. And we are satisfied from the testimony, that the plan, as it now appears in his specification, had then been invented, and was actually intended to be described.

“With this evidence before us, we think it is evident that the invention of Morse was prior to that of Steinheil, Wheatstone or Davy. The discovery of Steinheil, taking the time which he himself gave to the French Academy of Science, cannot be understood as carrying it back beyond the months of May or June, 1837; and that of Wheatstone, as exhibited to Professors Henry and Bache, goes back only to April in that year. And there is nothing in the evidence to carry back the invention of Davy beyond the 4th of January, 1839, when his specification was filed, except a publication said to have been made in the *London Mechanics' Magazine*, January 20, 1838; and the invention of Morse is justly entitled to take date from early in the spring of 1837. And in the description of Davy's invention, as given in the publication of January 20, 1838, there is nothing specified which Morse could have borrowed; and we have no evidence to show that his invention ever was or could be carried into successful operation.

"We suppose no one will doubt that Morse believed himself to be the original inventor when he applied for his patent in April, 1838. Steinheil's discovery does not appear to have been ever patented, nor to have been described in any printed publication until July of that year. And neither of the English inventions are shown by the testimony to have been patented until after Morse's application for a patent, nor to have been so described in any previous publication as to embrace any substantial part of his invention. And if his application for a patent was made under such circumstances, the patent is good, even if, in point of fact, he was not the first inventor.

"In this view of the subject, it is unnecessary to compare the telegraph of Morse with these European inventions, to ascertain whether they are substantially the same or not. If they were the same in every particular, it would not impair his rights. But it is impossible to examine them, and look at the process and the machinery and results of each, so far as the facts are before us, without perceiving at once the substantial and essential difference between them, and the decided superiority of the one invented by Professor Morse.

"Neither can the inquiries he made, nor the information or advice he received from men of science, in the course of his researches, impair his right to the character of an inventor. No invention can possibly be made, consisting of a combination of different elements of power, without a thorough knowledge of the properties of each of them, and the mode in which they operate on each other. And it can make no difference in this respect whether he derives his information from books, or from conversation with men skilled in the science. If it were otherwise, no patent in which a combination of different elements is used could ever be obtained. For no man ever made such an invention without having first obtained this information, unless it was discovered by some fortunate accident. And it is evident that such an invention as the Electro-Magnetic Telegraph could never have been brought into action without it. For a very high degree of scientific knowledge, and the nicest skill in the mechanic arts, are combined in it, and were both necessary to bring it into successful operation. And the fact that Morse sought and obtained the necessary information and counsel from the best sources, and acted upon it, neither impairs his rights as an inventor, nor detracts from his merits. Regarding Professor Morse as the first and original inventor of the Telegraph" \* \*

The only point of disagreement was in reference to the eighth specification and claim in the re-issued patent of 1848. It is in the following words:

“ Eighth. I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call Electro-Magnetism, however developed, for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer.”

Chief Justice Taney decided this as too broad. He was sustained by three of the justices. The three others delivered a dissenting opinion and upheld the claim. They said :

“ The claim of the patentee is, that he may be protected in the exercise of his art as against persons who may improve or change some of the processes or machines necessary in its exercise. The court, by deciding that this claim is too broad, virtually decides that such an inventor of an improvement may pirate the art he improves, because it is contrary to public policy to restrain the process of invention; or, in other words, it may be said that it is true policy of the courts to refuse that protection to an art which it affords to a machine, and which it is the policy of the constitution and the laws to grant.

“ Let us now consider what is the nature of the invention now under consideration.

It is not a composition of matter, or a manufacture, or a machine. It is the application of a known element of power of nature to a new and useful purpose by means of various processes, instruments, and devices, and if patentable at all, must come within the category of ‘ *a new and useful art*.’ It is as much entitled to this denomination as the original art of printing-itself. The name given to it in the patent is generally the act of the commissioner, and in this, as in many other cases, a wrong one. The true nature of the invention must be sought in the specification. The word ‘ Telegraph ’ is derived from the Greek, and signifies to ‘ write afar off, or at a distance. ’ It has heretofore been applied to various contrivances or devices to communicate intelligence by means of signals or semaphores which speak to the eye for a moment; but in its primary and literal signification of *writing, printing, or recording at a distance*, it never was invented, perfected, or put into practical operation, till it was done by Morse. He preceded Steinhel, Cook, Wheatstone and Davy, in the successful application of the mysterious power or element of electro-magnetism to this purpose; and his invention has entirely superseded their inefficient contrivances.

It is not only 'a new and useful art,' if that term means any thing, but a most wonderful and astonishing invention, requiring tenfold more ingenuity and patient experiment to perfect it, than the art of printing with types and press, as originally invented."

Thus, although disagreeing on a single point in which Professor Morse's claims as inventor were not at issue, the Supreme Court of the United States unanimously sustained the Morse patent. This was his first profound triumph. Every suit conducted under his own personal auspices and that of his faithful friend and agent, Mr. Kendall, was successful. Not so his congressional partner. In the summing up of the able counsel before the Boston court, in a suit which it was found necessary to institute against F. O. J. Smith, by Mr. Kendall, he says :

"Every prosecution instituted by Morse and Vail to vindicate the patents has resulted favorable, and in every instance the decision of the courts has been in favor of their validity; whilst in every instance in which Smith has attempted to vindicate the patents by a judicial determination, he has in every instance been unsuccessful, and has either had decisions which in effect have not as yet amounted to a judicial determination in favor of their validity, or has abandoned such prosecution before obtaining a judicial decision.

"That in all instances of proceedings by Morse and Vail, in suits instituted to restrain by injunction infringements of the patents, such injunctions have been granted and upheld by the courts, while on the other hand in every instance in which Smith has attempted to restrain by injunction the infringement of patents, such injunctions have uniformly been refused."

In 1847, as substantial results from the sale of rights and the organization of companies began to appear, Prof. Morse, now in his 56th year, longed earnestly for a home. His life had been restless, anxious, and broken. His social instincts were strong. A home in which he might enjoy domesticity and rest, became his controlling desire. He sought it in the country where the restfulness and the beauty and the subduing silence of nature might minister to his heart and tastes. His first nest was on the banks of the Hudson, near Poughkeepsie, and comprehended about 200 acres of fine arable land, and to which

he gave the name of "Locust Grove." This he was enabled to purchase, and into this retreat, having gathered his family together, he commenced a series of improvements which soon rendered it a spot of exquisite beauty. The sketch of this rural home was made for me by Prof. Morse many years ago. It is now much more attractive by surrounding objects and cultured vines.

In the year following this purchase he married Miss Sarah E. Griswold, daughter of an officer of the United States army, and granddaughter of Arthur Breese, Esq., of Utica, N. Y. The first substantial fruit of the telegraph to its inventor was thus made complete.

Mrs. Morse was a lady of unusually fine and queenly presence and manners. A certain difficulty in hearing gave a peculiar brightness and animation to her countenance, especially in conversation. She read from the movements of the lips with as much readiness as most people do from the living voice. A woman of high spirit, noble, dignified, yet eminently kind, gentle and affectionate, she was a companion in every way congenial to Mr. Morse's tastes and habits, whose memory she treasures still with ever increasing veneration and regard.

The facility with which Mrs. Morse could read the movements of the lip was surprising and curious. In a large company in Paris she remarked to her daughter Leila, referring to a couple of ladies who were conversing on the other side of a wide salon, "these ladies are speaking of me. They say I am a deaf mute."



LOCUST GROVE, Near Poughkeepsie, N. Y.  
it the same name of Locust Grove.

Mrs. Morse was born at Fort Brady, Sault St. Mary's, Dec. 25, 1822. Her grandmother was Catharine Livingston, of Poughkeepsie. It is curious to find that the very property Mr. Morse had purchased had been the home of his wife's ancestors, and who had given

The house erected for the family home was built on the plan of an Italian villa, and was eminently tasteful and convenient. It embraced a capacious study and well appointed library. In the rooms were numerous birds of sweet song. Around it were gardens of rare beauty and variety, where the odor of many flowers laded the air with their fragrance, and in whose mute eloquent presence he delighted. Added to all these there gradually gathered a delightful, and refined, and affectionate family circle, often enlarged by numerous choice friends. Around was a landscape fair and varied, and beautiful, the majestic Hudson flowing down between. All this was substantial honor. It touched his heart and made him grateful. To add to the completeness of his home, the New York, Albany and Buffalo Telegraph Company, with much courtesy, led one of their wires into his study, and thus placed him like an immense spider in the center of the vast web he himself had woven. Here he could hold court with all the world!

For all this he was profoundly grateful. He wrote to his daughter, "Locust Grove is now *mine*. If I use the influence and the property God has bestowed, for mere selfish purposes, He will take them away. I have decided, deliberately, that one-tenth of my income shall be consecrated to Christian benevolence." Thus he enjoyed and consecrated his success.

Several years later he purchased a large and beautiful house, No. 5 Twenty-second street, New York, which he furnished with great taste and elegance, and erected on the vacant lot adjoining, a capacious studio, or art gallery, where he spent much of his time. In these two homes he took great delight, and exercised a generous and cultivated hospitality.

In his own home Prof. Morse was a most impressive character, and gave to it and to all its occupants and visitors a touch of his own gentleness and peace. Like Benozzo, who made green and beautiful the once melancholy arcade of the Campo Santo at Pisa, Mr. Morse invested with a subdued sunshine and delicacy whatever he did, and every circle of which he formed the center or a part. His love of nature was devotion. Flowers had to him fascination and companionship. Not seldom would he stop in his garden rambles, which were his sole recrea-

tion, take a flower in his hand, and talk with delightful enthusiasm of its great mission of beauty. He knew the voices of all the birds which sung or twittered in the trees around him. He had openings cut in the trees so as to reach certain points of view in the adjacent mountains which attracted his artist eye and which impressed him with their sublimity or repose. In his garden grew the oberon, titania, puck, peas blossom, cobweb, moth and mustard seed, and many others. His grapes, of which he had many varieties, were of the finest. Walking among all these, holding a kind of mute intercourse with them, they calmed and purified and strengthened him. He took no exercise beyond these walks. Much of his time was spent in his library, where, with care and labor, he prepared the numerous papers required in the various suits which during so many years required his attention. There, seated near a window having a fine view of the Cattskills, with a tame flying squirrel now sitting on his shoulder, and now sleeping in his pocket, with all quiet save the song of birds and the clicking of the apparatus near him, which gave him the sense of contact with the busy world beyond, he spent his time in alternate labor and study.

It is a somewhat curious circumstance that, although fluent and easy in conversation, Prof. Morse never was able to make even a brief address without preparation. When caught in one of the public gatherings in London, and made the subject of a toast, he simply rose in his place and quoted the verse of a Psalm, "Their line is gone out through all the earth and their words to the end of the world." All his public addresses, like every thing he did, bore the evidence of discriminating taste and care.

The first money received by Prof. Morse, outside of the government appropriation, was \$50 for the right to construct a line in Washington to the National Observatory. His first dividend was received February 15, 1847, from the New York, Albany and Buffalo Telegraph Company. The dividends received by him from telegraph companies dating from June 20, 1854, when his patent was renewed for seven years, and which embraces the most fruitful period prior to the final expiration of his patent, were, with a few minor exceptions, as follows :

Washington and New Orleans Telegraph Co., 1854-60...	\$22,431 50
Magnetic Telegraph Co., 1854-60.....	18,537 00

New York, Albany and Buffalo Telegraph Co., 1854-60..	\$18,565	00
Western Telegraph Co., 1859-60.....	358	05
Cleveland and Cincinnati Telegraph Co., 1857-9.....	401	50
American Telegraph Co., 1860.....	2,877	00
	<hr/>	
	\$63,170	05

Besides these he derived a considerable revenue from the New Orleans and Ohio telegraph lessees. Yet the annual aggregate was not large. It became much greater during the following six years, when the American Telegraph Company became prominently successful and with which his telegraph interests were largely identified. His receipts from the date of his patent to the expiration, June 20, 1854, were \$90,874.00. Litigation during the same period had cost him \$13,000.

Prof. Morse, like most men whose natures are refined and who give on principle, was not known as markedly generous. Yet acting upon his rule of giving one-tenth of his income to Christian benevolence, his charities had both magnitude and method. Among the gifts bestowed by him as his resources enlarged, was the purchase and presentation to the New York National Academy of Design of his friend Leslie's portrait of his art teacher, Washington Alston, at a cost of five hundred dollars; the purchase at a cost of \$7,000, and presentation to the Yale School of Art, of Alston's celebrated painting of Jeremiah; the endowment by a gift of \$10,000, of the "Morse lectureship on the relation of the Bible to the Sciences," in honor of his father; and a gift to the Rutgers Female College of \$2,500. In these and in many other ways he endeavored to honor his success. In one of my last interviews with Professor Morse he expressed a desire to endow some annual memorial gift for the competition of the operators of America. But serious entanglements brought about by a few crafty men, who came near stripping him of his fortune, caused him to delay the design until too late. But for this, the project would undoubtedly have been consummated.

Considering the vast utility and the adaptation to the myriad uses of the world of his invention, its pecuniary result to him was limited. It yielded far less to him than to many of the men who built his lines. His estate in 1871 was valued at half a million. Since then the gen-

eral shrinkage of values has reduced it largely. Yet he was abundantly content. It enabled him to gratify all his desires.

In the summer of 1868 Professor Morse returned from Europe. He was in fine health, his eye bright, his intellect unclouded.

"A mirthful man he was, the snows of age  
Fell, but they did not chill him."

His battles, and they had been many and prolonged, for his rights had been bitterly disputed, were ended. He had settled down in calm gratitude to husband his remaining years amid the abundance and elegance which wealth and taste had brought around him. He had again returned from Europe laden with fresh honors. He longed for the quiet and rest of his beautiful home on the Hudson, where he was welcomed by his fellow-citizens with great joy.

#### THE NEW YORK BANQUET.

It was then that toward the close of 1868 a number of gentlemen, numbering among them many of the most distinguished and representative men of New York, invited him to a banquet to welcome him home and to give a definite expression of their concurrence with foreign nations in according to him the title of the "Father of the Modern Telegraph." This was accepted. It was held at Delmonico's, corner of Fifth avenue and Fourteenth street, New York, December 30, 1868.

Some of the most eminent persons in the country were present to do him honor; the banquet was of the rarest and most exquisitely varied character; the speeches were marked with supreme good sense and feeling; the entire entertainment one which will long live in the remembrance of those who assisted in it.

The banqueting-room was very beautifully decorated. A narrow drapery of crimson silk ran round under the cornice, beneath which were suspended the arms of those nations which have been most conspicuously ready to avail themselves of the benefit of telegraphy. At the back of the chairman's seat was a splendid medallion, bearing the arms of the United States, surmounted by the eagle; beside this were the arms of England and France, all united, with the center emblazoned in a grand trophy of flags.

The tables were splendidly adorned with curious pieces of confec-

tionery of emblematical designs. In front of the chair was a large gilded statue of Atlas supporting the globe, around which were fixed telegraph poles, which, by light filaments of gold, were connected with the trophy above. Further down, on the central table, was a statuette of Franklin with the kite; and there were also symbolical pieces representing painting (in allusion to Professor Morse's former pursuits), a temple of merit, and a "Trophée aux inventeurs," which was extremely handsome. The carte bore a well-executed portrait of Professor Morse.

The Hon. Salmon P. Chase, Chief Justice of the United States, who had been chief counsel against Prof. Morse in the first attempt to break his patent, presided on the occasion, having on his right the guest of the evening, and on his left Edward Thornton, Esq., H. B. M. Minister to the United States.

Among the guests were President Woolsey, Professor Goldwin Smith, Rev. Dr. Adams, Ex-Governor Buckingham, William E. Dodge, Amos Kendall, David Dudley Field, Hugh Allan (of Montreal), E. M. Archibald, Sidney E. Morse, James Brooks, President Barnard, William M. Evarts, Major-General Irwin McDowell, Edwards Pierrepont, Rev. Alexander Vinton, D. D., Governor Curtin, Wm. Cullen Bryant, A. B. Durand, Rev. Dr. Farley, Professor White, Wm. B. Reed, J. H. Wade, B. R. McAlpine, Gen. Anson Stager, James D. Reid, Ezra Cornell, Gen. Marshall Lefferts, Cyrus W. Field, William Orton, Peter Cooper, L. P. Morton, Wm. F. Blodgett, C. Van Santvoord, Clarence A. Seward, G. D. Phelps, Hiram Walbridge, Wilson G. Hunt, A. T. Stewart, Marshall O. Roberts, Moses H. Grinnell, Howard Potter, Clarkson N. Potter, H. H. Van Dyke, George Opdyke, Chas. Butler, Moses Taylor, A. A. Low, Abram Wakeman, J. J. Cisco, Samuel J. Tilden, Samuel B. Ruggles, Hamilton Fish, Erastus Brooks, C. L. Morse, R. Morse, C. Lanier, C. E. Detmold, E. L. Godkin, M. K. Jessup, Judge Kirtland, General Viele, S. L. M. Barlow, C. A. Rapallo, J. F. Kensett, Eastman Johnson, C. P. Cranch, Judge Erskine, etc. The total number of guests was about two hundred.

The invocation was uttered by Dr. William Adams.

After justice had been done to the dinner, the Rev. Dr. Vinton returned thanks in a short prayer.

At this moment Mrs. and Miss Morse, Mrs. Dix, Mrs. Huntington and Mrs. and Miss Thornton and other ladies entered, and were greeted with applause.

The President, Chief Justice Chase, said : And now, gentlemen, will you allow me what would be called in another place a word of "personal explanation." There is certainly nothing in my official position or in my official duties which would naturally suggest an invitation to me to preside upon this occasion ; but the gentlemen who had charge of the arrangements remembered that in the earlier days of the telegraphic enterprise I was its sincere friend, and later had some personal connection with it. They, therefore, honored me with an invitation to be present and preside to-night.

The telegraph long since ceased to have need of friends and my personal connection with it terminated years ago. But my old interest in its progress has not abated. I remember the past as they do, and I would not be thought backward, whenever and wherever honors are to be paid to the Father of American Telegraphy. [Cheers.] I accepted their invitation, therefore, and am here. And now if you receive this excuse as sufficient, and I take it you do, I will call on Mr. Cyrus W. Field for any letters he may have to read to us.

Mr. Field responded :

MR. CHAIRMAN AND GENTLEMEN — I well know how impatient you are to hear the distinguished gentlemen that are to address you this evening, and I will not detain you by reading the letters that we have received from the President of the United States ; from Gen. Grant ; from Speaker Colfax ; from Admiral Farragut, and from many others of our most worthy citizens. But I will, as this is a banquet given to a distinguished electrician, read you two telegrams that we have received. The first is from the Governor of Massachusetts, the state in which Prof. Morse was born :

BOSTON, Mass., Dec. 29, 1868.

CYRUS W. FIELD and others, Committee for the Morse Banquet, Delmonico's :

I regret my inability to accept your invitation. Massachusetts honors her two sons—Franklin and Morse. [Loud applause.] The one conducted the lightning safely from the sky. The other conducts it beneath the ocean from continent to continent. The one tamed the lightning ; the other makes it minister to human wants and human progress.

ALEXANDER H. BULLOCK, *Governor.*

LONDON, 4 o'clock P. M., Dec. 29, 1868.

CYRUS W. FIELD, New York :

The members of the Joint Committee of the Anglo-American and Atlantic Telegraph Companies hear with pleasure of the banquet to be given this evening to Prof. Morse, and desire to greet that distinguished telegraphist, and wish him all the compliments of the season.

J. C. DEANE, *Secretary*.

This telegram was sent from London at 4 o'clock this afternoon, and was delivered into the hands of your committee at 12:50. [Applause and laughter.]

After toasts to the Queen of Great Britain and to the Army and Navy of the United States had been given and eloquently responded to by British Minister Thornton and Gen. McDowell, the Chairman said :

REMARKS OF CHIEF-JUSTICE CHASE.

GENTLEMEN: You will now allow me to invite your attention to the next regular toast. God has given understanding to man, to be employed for His glory in promoting the happiness of His creatures. And in nothing that belongs to earth can the human understanding be more worthily employed than in the researches of Science and in the works of Invention.

Science and Invention may be called, perhaps not unfitly, the creators and servants of civilization. Sometimes Invention, by a sort of intuition of principles, has grasped results and seemed to anticipate Science. More usually, Science, by the patient investigation of truth, and the discovery of principles, has prepared the way for the triumph of Invention.

All Invention is realized Science. And this is especially true of the Telegraph.

I will not fatigue your attention with ancient and modern devices for communicating intelligence at a distance; but it seems proper to notice, here, how many men of science, and of what various nationalities, have contributed to that wonderful art and instrument, by which the world is now bound in electric chains.

Many shining names will at once occur to any one at all familiar with the history of the telegraph. Among them I can pause to mention only those of Volta, the Italian, to whose discoveries the battery is due; Oersted, the Dane, who first discovered the magnetic properties of the electric current; Ampere and Arago, the Frenchmen,

who prosecuted still further and most successfully similar researches; then Sturgeon, the Englishman, who may be said to have made the first electro-magnet; next, and not least illustrious among these illustrious men, our countryman, Henry, who first showed the practicability of producing electro-magnetic effects by means of the galvanic current, at distances indefinitely great; and finally, Steinheil, the German, who, after the invention of the telegraph in all its material parts was complete, taught, in 1837, the use of the ground as a part of the circuit. These are some of those searchers for truth whose names will be long held in grateful memory, and not among the least of their titles to gratitude and remembrance will be the discoveries which contributed to the possibility of the modern telegraph.

But these discoveries only made the telegraph possible. They offered the brilliant opportunity; there was needed a man to bring into being the new art and the new interest to which they pointed. And it is the providential distinction and splendid honor of the eminent American who is our guest to-night that, happily prepared by previous acquirements and pursuits, he was quick to seize the opportunity and give to the world the first recording telegraph. Fortunate man! thus to link his name forever with the greatest wonder and the greatest benefit of the age.

But his work was not done when in 1832 he conceived the idea and devised the plan of the first telegraph. Long years of patient labor and constant perseverance were needed to bring the telegraph into use. Its first messages were not transmitted until 1844. Even then, and indeed before that year, with something like prophetic inspiration, he grasped the future, and predicted that telegraphic connection between Europe and America, which it was reserved for another distinguished American, kindred in spirit and kindred in renown, and illustrious to accomplish. Here I must pause — not, however, without uniting all your aspirations in the fervent wish that our honored guest may live long and happily to enjoy the applause, the gratitude and the reverence of mankind which he has so honorably won.

Gentlemen, I now give you "Our Guest — Prof. S. B. Morse — The man of Science, who explored the laws of Nature, wrested Electricity from her embrace, and made it a Missionary in the cause of human progress."

The venerable Professor then arose amid tumultuous applause. He was under deep feeling too strong to be concealed. As he did so, the

whole company arose, and made cheer follow cheer in testimony of their admiration and respect. At last Professor Morse, in a clear, silvery voice addressed the company at considerable length, reciting the history of the telegraph and concluding as follows :

In casting my eyes around I am most agreeably greeted by faces that carry me back in memory to the days of my art struggles in this city, the early days of the National Academy of Design.

Brothers (for you are yet brothers), if I left your ranks, you well know it cost me many a pang. I did not leave you until I saw you well established and entering on that career of prosperity due to your own just appreciation of the important duties belonging to your profession. You have an institution which now holds and (if true to yourselves) will continue to hold a high position in the estimation of this appreciative community.

If I have stepped aside from Art to tread what seems another path, there is a good precedent for it in the lives of artists. Science and Art are not opposed. *Leonardo da Vinci* could find congenial relaxation in scientific researches and invention, and our own *Fulton* was a painter, whose scientific studies resulted in steam navigation. It may not be generally known that the important invention of the *percussion cap* is due to the scientific recreations of the English painter *Shaw*.

But I must not further detain you from more instructive speech. One word only, in closing.

I have claimed for America the origination of the Modern Telegraph System of the world. Impartial history I think will support that claim.

Do not misunderstand me as disparaging, or disregarding the labors and ingenious modifications of others in various countries, employed in the same field of invention. Gladly did time permit would I descant upon their great and varied merits.

Yet in tracing the birth and pedigree of the modern Telegraph, "American" is not the highest term of the series that connects the past with the present; there is at least one higher term, the highest of all, which cannot and must not be ignored.

If not a sparrow falls to the ground without a definite purpose in the plans of infinite wisdom, can the creation of an instrumentality, so vitally affecting the interests of the whole human race, have an origin less humble than the Father of every good and perfect gift? I am sure I have the sympathy of such an assembly as is here gathered, if in all humility and in the sincerity of a grateful heart, I use the words of in-

spiration in ascribing honor and praise to Him to whom first of all and most of all it is pre-eminently due. "Not unto us, not unto us, but to God be all the glory."

Not what hath man, but "*What hath God wrought?*"

Mr. Morse's address was listened to with deep attention and was greeted at the close with great and continued applause.

Brilliant speeches followed from Professor Goldwin Smith, Hon. Wm. M. Evarts, A. A. Low, Esq., William Cullen Bryant, Hon. William Orton, David Dudley Field, Esq., Hon. William E. Dodge, Sir Hugh Allan, Daniel Huntington, Esq., and Governor Curtin of Pennsylvania. The utmost enthusiasm prevailed, and the speeches were eloquent and inspiring.

As Mr. Huntington's address contains some special thoughts, showing the relationship of the painter to invention, and is, besides, a most affectionate and interesting tribute to his beloved master, Mr. Morse, it is deemed no discourtesy to the other distinguished speakers to give it nearly entire. It was delivered in response to the fourteenth toast.

"The beauties of the fine arts are based on the foundations of science."

The President called on Mr. Daniel Huntington, who now occupies the chair of President of the Academy of Fine Arts, first filled by the honored guest of the evening, to respond.

#### MR. HUNTINGTON'S REMARKS.

The sentiment of this toast few will doubt. At this late hour I will not consume the time in enlarging on its truth. It will be generally admitted that structure and proportion lie at the root of all perfect expression of character, generally in all visible objects, but pre-eminently in the human figure, the most difficult and the highest subject of the artist's study.

An exact perception of gradation and relation in light and shade, only can enable the artist to portray cunningly the flow of light and the relief of forms; and even the more subtle and evanescent charms of color depend on the laws of light, the relations and quantities of the colored rays; so that even these fleeting beauties are obedient to laws as absolute as those which guide the stars in their courses. In the present instance, however — I mean that of our illustrious guest — it might seem

that the noble fruit of scientific discovery had sprung from the tree of art, for he chose art for his first mistress; there he won his earliest laurels, carrying off the prizes in foreign exhibitions, winning the praise of the highest judges in sculpture as well as painting, and founding in our city an Academy of Design whose affairs and studies he guided as President for many years.

In fact, however, every studio is more or less a laboratory. The painter is a chemist, delving into the secrets of pigments, varnishes, mixtures of tints, and mysterious preparations of grounds and overlaying of colors; occult arts, by which the inward light is made to gleam from the canvass and the warm flesh to glow and palpitate.

The studio of my beloved master, in whose honor we have met to-night, was indeed a laboratory. Vigorous, life-like portraits, poetic and historic groups, occasionally grew upon his easel; but there were many hours — yes, days — when, absorbed in study among galvanic batteries and mysterious lines of wire, he seemed to us like an alchemist of the middle ages in search of the philosopher's stone. I can never forget the occasion when he called his pupils together to witness one of the first, if not the first, successful experiment with the electric telegraph. It was in the winter of 1835-6. I can see now that rude instrument, constructed with an old stretching frame, a wooden clock, a home-made battery, and the wire stretched many times around the walls of the studio. With eager interest we gathered about it, as our master explained its operation, while with a click, click, the pencil, by a succession of dots and lines, recorded the message in cypher. The idea was born. The words circled that upper chamber as they do now the globe.

But we had little faith. To us it seemed a dream of enthusiasm. We grieved to see the sketch upon the canvas untouched. We longed to see him again calling into life events in our country's history, but it was not to be. God's purposes were being accomplished, and now the world is witness to his triumph.

Yet the love of art still lives in some inner corner of his heart, and I know he can never enter the studio of a painter and see the artist silently bringing from the canvas forms of life and beauty, but he feels a tender twinge as one who catches a glimpse of the beautiful girl he loved in his youth whom another has snatched away.

Finally, my dear master and father in art, allow me in this moment of your triumph, in the field of discovery, to greet you in the name of your brother artists with "all hail." As an artist you might have spent life worthily in turning God's blessed daylight into sweet hues of rainbow colors and into breathing forms for the delight and consolation of

men, but it has been His will that you should train the lightnings, the sharp arrows of His anger, into the swift yet gentle messengers of Peace and Love.

There was one man who sat at the central board of the banquet on whom many eyes rested, and who enjoyed the scene with a keener relish than his placid features denoted. It was the man who came to New York twenty-four years ago, and could not find within it one merchant who would invest one dollar in the enterprise which he had undertaken to introduce. Bravely conquering public apathy, bravely defending the assailed rights of the inventor through many a long and tedious suit, and at last triumphantly securing to Professor Morse that success without which mere renown would have been a worthless plume, Hon. Amos Kendall sat among his distinguished companions proud of all of which the banquet was the sequence and the crown. When the Professor, in his address, mentioned his name, the whole audience gave a loud cheer, which he modestly acknowledged by rising in his place.

The intercourse between Professor Morse and Hon. Amos Kendall was one of almost heroic confidence and affection. In one of his sworn statements to the Commissioner of Patents Professor Morse says : " I was compelled to seek, at almost any sacrifice, the services of some gentleman of high character, both competent and willing to meet the exigencies of the telegraph enterprise. Such a gentleman I at length found in the Hon. Amos Kendall, whose experience as Postmaster-General, united with enlarged, liberal, and public spirited views and unimpeachable integrity, fitted him above all others for such an agency. If I have received any pecuniary benefit from my invention ; if I have not been left a prey to pirates ; if I have not been swindled by unprincipled men out of all my property in the telegraph, I conceive it to be mainly due, under Providence, to the tact, the faithfulness, the integrity of Mr. Kendall."

## CHAPTER L.

## THE STATUE.

" That life a richer soil doth know  
 Than our poor praise could e'er supply,  
 Not nourished from our scanty urns,  
 But fed from His unfailing river,  
 Which runs, and will run on forever."—*Trench.*

PROFESSOR MORSE had now reached a period when human honors had lost their charm, and when in domesticity and in the companionship of books and friends and in the contemplation so welcome to devout refinement, he proposed to husband his remaining years. A few months more would bring him to his 79th birthday, but he was still alert, gay of heart, and mellow with the pleasure of

" The universal instinct of repose,  
 The life where hope and memory are as one."



ROBERT B. HOOVER.

It was then that Robert B. Hoover, Manager of the Western Union Telegraph Office, Alleghany City, Pa., started a movement to present to Professor Morse a testimonial which would adequately represent the esteem of the American Telegraphic craft. His first companions in this work of love were Samuel Fullwood and S. L. Gilson, of Pittsburgh, Pa., and these gentlemen resolved to make an effort to carry out the design.

The idea of a testimonial took at first in Mr. Hoover's mind a limited scope. A personal gift was the design first favored, and many an eager conversation was held around the office stove in Alleghany City as the wintry winds came whistling up the Ohio or down the Monongahela, or the snow piled itself in white acclivities up against the office window, or the merry bells of sleighing parties outside made music beneath the keen starlight of the winter's night. And there were also many anxious and earnest conversations over the wire when the day's duties were over, with Pittsburgh and Crestline, and Wellsville, and Canton, O., where congenial souls waxed warm over the project. Of all this, however, Mr. Hoover can better speak for himself.

#### MR. HOOVER'S STATEMENT.

That so large and respectable a class of men as that composing the telegraph fraternity, had not sooner given Professor Morse some testimonial of their appreciation, was always to me a matter of surprise. As Manager of the Western Union Company's office at Alleghany City, I had opportunity for observing the influence the telegraph was exerting throughout the country, and how it was rapidly becoming not only a luxury but a necessity. I noted, also, how the people at large were acknowledging the beneficence of the work of our profession, and how it was daily being exalted in their estimation by the courteousness of my fellow-laborers, the promptness of their work, and the almost divine mystery of this means of communication. Many incidents, going to prove this, happened during my stay in Alleghany. One in particular is worthy of mention here, as having an important bearing upon the suggestion of the testimonial.

An aged lady, of fine appearance and culture, called upon me one day with a message she had just received from her only son, who was lying ill in a hospital in California. I made up a money order for her and transmitted a rather large amount to the young man. The mother was so distressed about her son that she would not leave the office until she was assured he had the money. It was the old story she had to tell me, of a son who, with many noble qualities, preferred a life of adventure to a quiet home, and now, in the hour of his sickness and distress, had called upon the good old mother whom he knew would still be waiting and watching his return. In due time I handed her the reply: "Money received; I am better. God bless you and forgive me." I shall never forget the joy of the good old lady, nor deem it

unmanly to have shared with her a tear as she left the office with a blessing upon the telegraph and the men who worked it.

I reflected long over this incident. Was it an isolated case? Among the thousands of little winged messages falling noiselessly into office and household from hour to hour, many were bringing joy into the hearts of the receivers, while even the tidings of sorrow lost much of their bitterness in the important knowledge thus promptly conveyed.

If this were so—if society was so greatly indebted to the telegraph, what had been done to honor him who had cradled it? While foreign nations had vied with each other in giving him honor, why had the land of his birth done absolutely nothing?

Deciding that so far as the fraternity, at least, was concerned, this should be remedied, I made the suggestion to give to Professor Morse a fitting testimonial of our regard, not only for the debt we owed him as a profession, but as a memorial of our appreciation of the lasting benefit he had bestowed upon mankind.

It only remained to place the matter in such a shape as to best merit the approval of the profession. After a consultation with Samuel L. Gilson, Manager of the Western Union Telegraph Company's Pittsburgh office, and Capt. Saml. Fullwood, now Superintendent of the Pittsburgh Fire Alarm Telegraph, it was decided that in order to give the movement the requisite standing, its head-quarters should be in New York. Acting upon this suggestion, on March 1, 1870, I addressed a letter to James D. Reid, Esq., then editor of the *Journal of the Telegraph*, setting forth our wishes, and urging him to take an interest in the matter, and placing ourselves wholly in his hands as to any action he might deem best. After some correspondence Mr. Reid agreed to become Chairman of the Executive Committee, the matter grew into working shape, and in the *Journal*, a few weeks afterward, a carefully arranged scheme for raising funds, notices of committees appointed, etc., appeared.

To Chas. O. Rowe, S. L. Gilson and Saml. Fullwood, of Pittsburgh, and to O. H. Booth and P. Bruner, of Ohio, are the thanks of the fraternity due for many valuable suggestions and encouraging words in the early days of the testimonial. Neither would I forget the great army of contributors who so nobly responded to the call from all quarters. In this respect the messenger boy vied with the President, and all alike worked together to render honor to the Father of the Telegraph.

R. B. HOOVER.

MARIETTA, OHIO, Oct. 3, 1875.

This statement of Mr. Hoover, from which is eliminated much personal compliment, gives the true starting point of a movement which was honorable to his head and heart.

The first announcement of the project was made in the *Journal of the Telegraph*, April 1, 1870. It was proposed as an operators' testimonial, and evoked from the start the utmost enthusiasm and popularity. On announcing it in a brief note to President William Orton, he thus replied :

NEW YORK, April 9, 1870.

JAMES D. REID, ESQ.—*Dear Sir* : In reply to your note of yesterday I beg to say that the movement which has been commenced with the view to present a testimonial to Professor S. F. B. Morse, is one which merits, and will receive, my warmest sympathy and most hearty encouragement. The venerable "Father of all the 'Telegraphs'" has long since passed the meridian of life; and although his step is firm, and his eye undimmed, he is nearing rapidly the verge of that dark river from whose further shore no message ever comes. It becomes, therefore, all those who know and love him, as all who know him do, not to delay their tributes of respect and affection. I am confident that all connected with us will take pleasure in rendering you whatever assistance they are able.

Yours very truly,

WILLIAM ORTON.

Thus stimulated by this characteristically hearty approval, the invitation was at once given, the subscriptions to be based, nominally, on one dollar each, but to be less or more, as donors might decide.

The following gentlemen were appointed an Executive Committee :

#### EXECUTIVE COMMITTEE.

David McCargo, Pittsburgh, Pa.,  
S. L. Gilson, Pittsburgh, Pa.,  
James Merrihew, Philadelphia, Pa.,  
J. M. Fairchild, New Haven, Conn.,  
H. D. Hopkins, Montpelier, Vt.,  
F. A. Armstrong, Cincinnati, O.,  
Calvin Fox, Detroit, Mich.,  
R. M. J. Paynter, Richmond, Va.  
William Sanford, Mobile, Ala.,  
L. E. Curtis, Galveston, Texas,  
E. H. Brown, St. Louis, Mo.,  
O. H. Dorrance, Lawrence, Ks.,

J. W. Brown, San Francisco, Cal.,  
C. C. Whitney, Indianapolis, Ind.,  
Charles A. Tinker, Washington, D. C.,  
W. T. Westbrook, Wilmington, Del.,  
H. C. Bradford, Providence, R. I.,  
T. M. Robinson, St. Johns, N. B.,  
A. Weller, Milwaukee, Wis.,  
B. F. Bush, Denver, Col.,  
J. D. Easterlin, Charleston, S. C.,  
D. Flanery, New Orleans, La.,  
Mont. Pepper, Memphis, Tenn.,  
R. S. Fowler, Dubuque, Iowa,

J. N. Ashley, New York,	S. McKelvey, Wheeling, Va.,
Henry H. Ward, New York,	A. Wilson, Jr., Baltimore, Md.,
Samuel Fullwood, Pittsburgh, Pa.,	John Frothell, Newark, N. J.,
A. S. Brown, New York,	H. N. Rowell, Concord, N. H.,
G. F. Milliken, Boston, Mass.,	Alex. Hoyt, Halifax, N. S.,
C. D. Livermore, Portland, Me.,	E. A. Brown, St. Louis, Mo.,
R. C. Rankin, Chicago, Ill.,	Ed. Conway, Corinne, Utah,
F. Lehmer, Omaha, Neb.,	W. H. Towner, Savannah, Ga.,
T. N. Loucks, Wilmington, Del.,	Wm. E. Flippen, Vicksburgh, Miss.,
C. L. Hatch, Jr., Tallahassee, Fla.,	T. R. Boyle, Louisville, Ky.,
Ed. C. Newton, Little Rock, Ark.,	M. O'Connor, Olympia, Wash. Ter.

The response was immediate and hearty. Never was a movement so universal, so spontaneous, so inspiring, so generous. Every mail came with its offerings. And so it happened that from the president down, throughout the entire continent, scarcely an office which heard within it the click of a Morse machine failed to send some token of its interest in the testimonial movement. It was as heartily responded to in Canada as in the United States. California was as prompt as Maine. Louisiana and Texas shook hands with Illinois and New York over it. And so the stream of offerings flowed on until every dollar needed was received. The name of every donor was published. That list is a monument of the generosity and fraternity of the telegraphic brotherhood of the Western World. Here are some of the forms in which the remittances came :

DURAND, ILL., May 7, 1870.

Accept my mite inclosed for the Morse Testimonial Fund.

"Plumb" may the pure, fair marble column rise,  
 His fame to trace, 'midst blue etherial skies.  
 High o'er "Time's Level" this bright record bear;  
 "He tamed the Lightnings," they his servants are.  
 The "Square of Virtue" will this truth indorse —  
 A world's benefactor, Samuel F. B. Morse!

E. C. STEVENS, *Manager.*

LOUISVILLE, KY., June 17, 1870.

DEAR SIR: In behalf of the telegraphers of this office whose names appear on the accompanying list, I inclose to your care seventy-two 75-100 dollars, aggregate of amount tendered WITH A HEARTY GOOD WILL by every person connected with our office, to aid in procuring a testimonial for our friend, Prof. Morse.

A testimonial we all hope will be selected worthy of the man, which will assure him that the good work which he has accomplished here is appreciated by his host of friends, whose verdict is, what we pray it may be hereafter, "Well done, good and faithful servant."

Yours truly,

T. R. BOYLE, *Manager.*

ROCHESTER, N. Y., July 9, 1870.

DEAR SIR: I intend to claim my right to the honor of contributing to the statue of Professor Morse. I see by the list of those who have subscribed that some have been allowed to give twenty-five dollars. If this is to be permitted I may claim as good a right as any one. So put me down for twenty-five dollars, with the privilege of increasing it if others are allowed to give more. There can certainly be no want of funds or interest in this well-deserved tribute to Professor Morse.

\$25 00.

Yours truly,

HIRAM SIBLEY.

EXECUTIVE DEPARTMENT, STATE OF GEORGIA, }  
ATLANTA, GA., Oct. 6, 1870. }

J. D. REID, *Chairman, etc.* — *Dear Sir:* I hope the Morse Monumental Fund will prove a perfect success, and inclose my check for \$100. If an additional hundred should be necessary to secure the completion of the statue, you can draw on me for it.

Yours fraternally,

RUFUS B. BULLOCK.

ALBION STEEL AND WIRE MILLS, }  
SAVILLE ST., SHEFFIELD, NOV. 19, 1870. }

DEAR SIR: We appreciate your desire to make some suitable testimonial to Prof. Morse, the projector of the telegraph, to whom universal honor should be accorded.

We cordially present you with the inclosed check, value 25 dollars, as a token of our appreciation of the project. Wishing you every success, we are, dear sir,

Yours very respectfully,

GEORGE GRAY & CO.

As the stream of offerings began to flow, it became evident that company lines, within which it was at first confined, must be broken down. This was first made evident by a note from South Carolina, as follows:

CAMDEN, S. C., May 2, 1870.

DEAR SIR: The suggestion of a testimonial to Prof. Morse will no doubt find a warm response from every man in the country connected with the telegraph.

Can you call it national? It should be extended, and made universal. The world owes him a debt of gratitude. Wherever the telegraph extends—in Europe, Asia, Africa, the Isles of the Sea—gratitude is felt for the great benefits conferred by Prof. Morse. Honored are the operators in being permitted to unite in bestowing their mite in the grand undertaking. May it be such a testimonial as was never bestowed on one individual in our country before. Richly, indeed, does the venerable Morse deserve such an one.

Very respectfully, J. R. WITHERSPOON, *Operator*.

Also by the following:

NO. 8 DEV ST., NEW YORK, May 9, 1870.

DEAR FRIEND REID: In a recent *Journal* I found the circular of the "Morse Testimonial Fund," and at once determined to send to you a token which would indicate my appreciation of the movement and my desire for its success. All I have I owe to the telegraph, and the world acknowledges, as I do, its indebtedness to Prof. Morse for a system of telegraph so simple and effective as to render it an easily acquired and universal blessing. But I am restrained, and I am persuaded many others are, by the limits of your appeal. It is addressed only to the Western Union force. Is it your design to so limit it? Or may I, by virtue of my long connection with that Company, not claim a right to share in a movement which should be national? At all events I inclose you my check for twenty-five dollars as my contribution to the memorial fund, assured that in your hands the movement must be a gratifying success.

Yours sincerely,

L. G. TILLOTSON.

The suggestion to make the subscription national was at once adopted. It speedily became continental, and Canada claimed, through James Dakers, Esq., Secretary of the Montreal Telegraph Company, the right to join in the contemplated honors.

The heartiness and generosity which thus marked the progress of the subscription, soon made it evident that the testimonial must assume some such public and permanent form as would be in character with the bounteousness of the gifts. Nothing seemed to meet this demand so properly or with more likelihood of general approbation as the erection, on some appropriate site, of a commemorative shaft or statue. The suggestion was made public, and met with a prompt and general

approval. It was therefore determined to erect a marble statue, of the size known as heroic, the cost of which, exclusive of the base or pedestal, would approximate six thousand dollars.

The artist selected for the work thus decided upon was Byron M. Pickett, a pupil of Palmer, and who had executed several works of art regarded by competent critics as of great and decided merit.

Application was immediately made for permission to erect the statue, when completed, in Central Park, New York, that being the place, because of its beauty and national and central character, which the general judgment decided as the only appropriate site. The following is the application and the response :

NEW YORK, July 22, 1870.

PRESIDENT OF THE BOARD OF COMMISSIONERS OF THE CENTRAL PARK,  
CITY OF NEW YORK.

SIR: The telegraph operators of the American Continent having determined to erect a marble statue in honor of Professor S. F. B. Morse, and which shall also in the excellence of its execution faithfully represent the advanced condition of American art, I have the honor, on their behalf, to ask you to grant a place in Central Park for that purpose. Professor Morse's fame rests on a basis so permanent, so cosmopolitan and beneficent, that it leads us to the assurance that you will assign to our use some distinguished spot in the beautiful grounds under your control. It is our desire to lay the foundation and pedestal without delay, and have the statue unveiled by the President of the United States on Professor Morse's eightieth birthday, April 27, 1871. I have the honor to be your obedient servant,

JAMES D. REID,

*Chairman Morse Testimonial Fund.*

The following is the response :

CITY OF NEW YORK,  
DEPARTMENT OF PUBLIC PARKS, }  
October 8, 1870.

SIR: At a meeting of the Department of Public Parks, held October 4, 1870, the following resolution was adopted :

*Resolved,* That the application for the erection of a statue to Professor Morse in Central Park be accepted and approved, and the request be granted. That it be referred to a special committee of two to

select a place for locating the same, with power to impose such conditions in respect thereto as may be deemed advisable.

Commissioners Hilton and Dillon were appointed such committee.

Respectfully,

GEO. M. VAN NORT,

*Comptroller D. P. P.*

As soon as these arrangements were thus completed, the great Iron Building House of J. B. and J. M. Cornell, New York, submitted plans of an elegant dome which they offered to erect for the protection of the marble statue, as a gift, the cost of which, at a low estimate, would have exceeded \$10,000. It was designed to stand upon a broad and ample platform of solid masonry, which would have made it the most permanent and attractive of the works of art in the finest of America's public grounds. Thus every thing seemed to contribute to give promise of a happy and satisfactory issue of this popular movement.

Just, however, as the artist had completed his model, and arrangements were in progress which promised the gift of a splendid block of pure native marble for the sculptor's chisel, the commissioners of Central Park announced that no marble statue would be allowed to be erected. They further announced that the proposed canopy would not be permitted, and that the erection must consist of a granite pedestal and a bronze statue. There was no appeal from this decision. The canopy was abandoned after some expense had been incurred for architectural plans for the foundations, and the style of the pedestal had to be changed from its original and simple elegance to a style corresponding with the new conditions. The necessity was peremptory but unpleasant. Unfortunately the model of the statue, which was designed with express reference to its execution in marble, was preserved.

It became now clear that at least six months would have to be added to the period allowed for the completion of the work, and that its cost would be largely increased. This was a keen disappointment. Until now all had been smooth and auspicious. It was feared that it would be found in this, as in many things, that

"The ample proposition that hope makes  
In all designs begun on earth below  
Fails in the promised largeness."

Or that by the new burden thus thrown upon the managers,

“Discord, the sleepless hag, who never dies,”

might find her miserable way into our councils or among the masses interested in the result. It had the effect, however, of infusing more warmth and life into the movement. It enlarged the area and the bounteousness of the subscriptions. On they came, day after day, many duplicating, not a few triplicating, their first remittances. It was during this period, when the whole country seemed aglow with generous enthusiasm that, in answer to a letter written to Professor Morse at his country home near Poughkeepsie, by Mr. Hoover, that gentleman received the following characteristic response :

PROFESSOR MORSE TO MR. HOOVER.

POUGHKEEPSIE, Sept. 24, 1870.

MY DEAR SIR : I have had upon my table your very kind and friendly letter of the 15th instant, which should have been acknowledged before this, but that absence from home compelled me to defer a reply until my return.

And truly, now, I am at a loss in what terms to express the emotions which fill my heart at the unexpected evidence of such a wide-spread, kindly feeling toward me, and which owes its manifestation to your generous suggestion.

I am astonished, and, as you may well believe, deeply impressed with the evidence of such an unexampled universality of kind and friendly feeling from those whom I have loved to call my *children*. I know by early experience some of their trials, and can therefore sympathize with them, and I should be false to my own convictions if to those who have called me *Father* I should be recreant in manifesting my grateful thanks for their expressed sentiments of affection and respect.

You justly say “that the suggestion of the proposed testimonial should come from the *rank and file* of the great Telegraph Army cannot be *displeasing* to me.” So far from this, it could not have been suggested from any other source, or taken a form more grateful to me, since it demonstrates the spontaneity of the movement, and has brought forth the latent but real feelings of that large class whose welfare, in connection with the telegraph, I have ever delighted to promote.

So far as I am personally affected by this movement, I know not how to define the feelings which fill my heart. They are quite the opposite

of exultation; for they oppress rather than exalt. I must refrain (at least for the present) from giving utterance to the thoughts which it has engendered. Yet there is one which I must ever give forth when the Author of the Telegraph is alluded to. The first message sent on the *first public* line after it was established, as you well know, was "WHAT HATH GOD WROUGHT." It was indited by a young lady friend. This was no chance message. I cannot but believe it to have been inspired. It declared in its four brief words as sublimely as the mandate "*Let there be Light*," the true Author of the Telegraph; and could the secret history of its elaboration in my own mind be unfolded, the ascription "Not unto us, not unto us, but to God be the glory," would have a confirmation which would rescue this oft repeated phrase from commonplace and heedless or heartless utterance, and flash its perfect truthfulness on every mind.

Thanking you, dear sir, for your kind letter, let me ask your acceptance of the inclosed photograph portrait, which my friends think among the best, if not the very best, that has been taken of me.

With sincere regards, your friend,

R. B. HOOVER, ESQ.,

SAML. F. B. MORSE.

Alleghany City, Pa.

The model of the statue, in the preparation of which Professor Morse gave the artist numerous sittings, and which underwent the scrutiny of the family as feature and form came out from the manipulated clay, was at last completed, and was exhibited first to the family, and then to a large number of invited guests, in a spacious room where the merits or faults of the artist's work might be clearly visible. The following are some of the testimonials received in reference thereto.

#### OPINIONS OF THE STATUE.

##### FROM GENERAL BANKS.

"It is a magnificent statue, and a fine portraiture.

"N. P. BANKS."

##### FROM PROFESSOR MORSE.

"5 WEST TWENTY-SECOND STREET, December 30, 1870.

"MY DEAR SIR: In reply to your request for my opinion of the statue, which under the flattering promptings, principally of the large corps of operators of the telegraph, not only in the United States, but

in Canada, Mr. Pickett was chosen to model, I have only to say that AS A WORK OF ART, I consider it eminently successful, and in the highest degree creditable to the genius of the sculptor.

"In regard to its faithfulness as a likeness, others must be the judge. Generally the most fastidious critics in this respect, as artists well know, are the family of the sitter. In this case, every member of my family who have had an opportunity of seeing the statue, pronounce it a faithful likeness.

"With respect and esteem, your friend and servant,

"SAMUEL F. B. MORSE."

J. D. REID, ESQ.

FROM THE FAMILY OF MR. MORSE.

"We, whose names are hereunto signed, of the family and relatives of Prof. Samuel F. B. Morse, having seen and examined the statue which has been modeled by the sculptor, Byron M. Pickett, and as it stands in clay, preparatory to its being cast in bronze, take great pleasure in expressing our entire satisfaction with Mr. Pickett's labors, especially with the faithfulness and truthfulness of the likeness to the original.

CATH. W. GRISWOLD, Mother-	Mrs. RICHARD MORSE, Sister-
in-law of Prof. Morse,	in-law of Prof. Morse,
SARAH E. MORSE, Wife,	CHARLES W. MORSE, Son,
E. L. MORSE, Son,	MARY SEYMOUR WALKER,
SYDNEY E. MORSE, Brother,	Cousin,
LEILA L. MORSE, Daughter,	WILLIAM G. MORSE, Son."

These expressions of opinion, and many more from the highest sources, determined its acceptance. It was therefore placed in the hands of the New York National Fine Art Foundry for final casting into bronze, and with which a contract to that effect was made. It was stipulated that the statue should be completed and in place before the anniversary of Professor Morse's birthday, April 27, 1871, at which time he would complete his eightieth year. In the meantime the pedestal was ordered from Quincy, Massachusetts. The design was simple. It was to be composed of three blocks of finely chiseled granite. It was executed promptly, was erected on the spot originally selected by the Park Commissioners, near the Casino, and was com-

mended by them for the simplicity of the design and the excellence of the granite.

The time, however, allowed for the casting was found too limited. It required a high character of qualified labor not readily available. It was therefore very reluctantly determined to postpone the inaugural ceremonies until June 10, 1871, and assurances were given that the work would then be complete. The promise was no doubt honestly given. The men worked day and night to fulfill it. Yet with all the effort put forth the statue was not put in place until within an hour or more of the time fixed for the inaugural ceremonies, and even then in a state of imperfect execution and which has required its recent removal, the re-adjustment of the granite base, and the perfection of the entire work. This has been done, and the statue now stands near the entrance known as the Inventor's Gate, very greatly improved since its first erection.

When the day for the inaugural ceremonies had been finally decided, letters were addressed to the President of the United States and to the Governors of Massachusetts and New York to assist in the unveiling of the statue. At the same time a full programme of the services and of the names of all expected to take a part therein, was transmitted to the Department of Public Works.

The following is the last dollar received on the eve of the inaugural ceremonies :

Please allow a young operator — a beginner, and poor — to contribute, at this eleventh hour, one dollar from her first month's salary. While studying the science and learning the art she has longed, with longings seemingly never to be fulfilled, and hoped against all hope, that the pleasure of adding her "mite" might be granted her; and now she has the opportunity she will unite with her prayers for long life and much happiness for Professor Morse, the prayer that her meagre offering may not be too late, but that she may be able some time to look upon the noble work and say, "I did what I could for this."

MARY J. CATLIN,

*Operator, Lebanon, N. H.*

## CHAPTER LI.

## THE INAUGURATION.

“There was not on that day a speck to stain  
The azure heaven. The blessed sun alone  
In unapproachable divinity  
Careered, rejoicing in his fields of light.”

THE brightest plans are sometimes marred by non-concurring nature. Never, however, did a purer, brighter day dawn on this beautiful earth, than that which burst through the gray curtains of the morning on the 10th day of June, 1871. The sun rose up from the margin of the placid sea without a cloud. The sparrows in the parks were full of chatter, and every caged and uncaged bird was eloquent with song. As the day advanced a light breeze wafted to multitudes of delighted men and women the odors of flowers, which smiled to the serene sky from unnumbered stems in the glory of that summer morning. Heaven returned the smiles as it gave its cheek of cerulean blue to the kisses of the laughing earth and the placid sea.

At an early hour the city was full of delegates. They came from almost every state and territory. Even from the far Pacific coast, and from Nova Scotia, New Brunswick, Quebec and Ontario, they had come to the great sea-gate of eastern commerce to give dignity and character to a day which was to illustrate one of the noblest impulses of our modern civilization. Never did a finer body of men assemble for a similar purpose. It was a gathering of the best blood, sinew, and soul of Young America and her sister provinces. The delegations were too many and large to permit of a perfect record, and hence none was attempted. They were met by the

## OPERATORS' COMMITTEE OF RECEPTION.

W. K. Applebaugh, Gerritt Smith, Fred. T. Bickford, C. E. Higdon, R. B. Lown, F. H. Seibert, T. Carter, P. T. Hauff, C. J. Ryan, for whose use Cyrus W. Field, Esq., had kindly tendered the use of his offices. In these rooms the joy of the day began. Men who had for years longed to see each other grasped hands with fraternal vigor. Others who had been long separated from each other by the changing fortunes of their lives, looked again with the gleam of awakened affection into each other's eyes. It was characteristic of the day.

## THE HARBOR EXCURSION.



One of the most enjoyable features of the day was an excursion given to the delegates and their friends by L. G. Tillotson, Esq., whose father was the first Superintendent of the Erie and Michigan Telegraph Company, and who had himself been connected with the telegraph in some of its relations from his early boyhood. Entering heartily into

the designs of the day, and anxious to contribute to its success, he chartered, at his own expense, the magnificent ferry steamer, James Fisk, Jr., for a pleasure trip up the East and North rivers and down to the Narrows, to which a cordial invitation was given to all delegates and their friends. This was joyously accepted. At least one thousand persons responded by their presence. A number of distinguished gentlemen with their ladies were also on board. Among these were Hon. Erastus Brooks, Governor Claflin of Massachusetts, James Dakers, Esq., of Montreal, Hon. Hiram Sibley of Rochester, C. G. De Moll of Philadelphia, and many others. The splendid band of the Fifty-fifth regiment accompanied the excursion. Over the steamer, which was gay with fresh bunting streaming from every available point, waved a beautiful banner, on which was inscribed the word WELCOME, and which was held aloft by Mr. Tillotson on the prow of the boat as she lay moored to the crowded pier.

At 10 A. M. the steamer left the pier at the foot of Chambers street amid the cheers of the multitudes who lined the shore, and to which the band responded by playing "Solid Men to the Front" and "Hail Columbia." The sight was magnificent. Away the gallant ship and her merry crew swept down the Hudson to get a glimpse of

"The sea! the sea! the open sea!  
The blue, the fresh, the ever free!  
Without a mark, without a bound  
Which runneth the earth's wide circle round."

A circuit was made past Governor's Island toward the Narrows, then up the East river and back, after a few hours, to the landing. The steamer seemed to fly over the waters. All along the shore and on the water there were displayed gratifying tokens of the sympathy of all classes with the day's proceedings. Cheer after cheer rang out from pier to pier. The vessels of every nation in the port of New York were decorated with their national flags in honor of the day. Steam whistles filled the air with their noisy but merry salutations.

Mr. Tillotson, having a good knowledge of human nature, was, of course, mindful of the inward needs of such an occasion. He knew

from experience that hunger waits on joy, and that fresh air and a merry heart sharpen appetite. He believed with Byron that

“Of all appeals, although  
I grant the power of pathos and of gold,  
No method surer to take hold  
Of the best feelings of mankind, which grow  
More tender as we every day behold  
Than that all-softening, overpowering knell  
The tocsin of the soul — the dinner bell!”

It is not necessary to enumerate the number or describe the vastness of the well-filled baskets which were found piled up in the cabin for the comforting of hungry souls. They were soon opened, emptied, and enjoyed with many a spoken and unspoken blessing on the provider. Every one was happy and in splendid appetite.

Of course no American excursion could be complete without a meeting. It was essential to the general safety that vent be given to pent-up emotion already big in many bosoms. So with a characteristic shout a meeting was organized, and Mr. Tillotson being called for, welcomed the multitude in a few well chosen words. He said:

MY FRIENDS: I am glad to be able to look into the faces of so large a delegation from the telegraphic ranks, not only of the United States but of Canada, as are now before me. Surely so large a number of telegraph men were never before assembled within so narrow limits. I trust the day which opens so auspiciously may close with every thing accomplished which, in the honors designed for Professor Morse, it is in all our hearts to do.

There are some who have sneered at the telegraphic profession, and there have, no doubt, been some who have, by their misconduct, brought it into contempt. Yet I believe these are the exceptions which are to be found in every business. I believe there is to-day no more honorable calling, and none where a young man of character is more likely to be honored. It is a business in which the public are compelled to place confidence in the men who fill its offices, and to whom they intrust their most important and confidential interests. Character, in connection with the telegraph, is a necessity, and, when found, is certain to be appreciated. I believe the telegraphic craft of this continent stands high in this respect among the citizens of the country.

I also believe that the telegraph has been to a vast number of men a profitable profession. Men have left its ranks year after year to be governors of states, generals in the army, members of our legislatures, officers of our government, and influential as merchants or private citizens. It is a profession of which no man need be ashamed. Gentlemen, may your years be many and happy.

Mr. Tillotson thereupon called for three cheers for Professor Morse, which were given with much enthusiasm.

A letter was read from Professor Morse, regretting his inability to participate in the excursion, as he was husbanding his strength for the reception at the Academy of Music, in the evening.

Addresses were then made by Hon. Erastus Brooks, Rev. Mathew Hale Smith, Captain Macintosh and Joseph W. Stover, which were well received and heartily applauded. Mr. R. B. Hoover was also presented to the multitude, who warmly congratulated him on the happy issue of his generous thought. The whole company returned to shore greatly pleased with a most delightful excursion. One of its chief delights was, as in the morning, the meeting again of friends long separated, and of many known to each other by reputation or by signals over the wires, who now saw each other face to face, and for the first time grasped each other's hands. It was a delightful prelude to the day's proceedings.

#### THE INAUGURATION CEREMONIES.

The place selected for the site of the statue was at first located on what is known as the Fifth Avenue Drive, near the Casino, in Central Park, New York. The ceremony of unveiling attracted a large and brilliant assemblage. The cars and omnibuses leading to the Park were crowded from an early hour by thronging multitudes. Numerous carriages, belonging to New York's best citizens, also came full of eager, expectant faces. All the surroundings were exceedingly beautiful. The statue was wrapped in the folds of the American flag. The weather was sublime and delightful. The soft green grass, the murmuring fountains, the cool shade of the trees, the groups of happy children, the distinguished company present, all served to make the scene impressive and memorable. The delegates wore badges of white ribbon. It was like a field of lilies.

Two spacious platforms had been erected under the kind superintendence of Mr. Crane, Superintendent, and Mr. J. Jerome, the Assistant Superintendent of the Park. Both of these, over which rich canopies were spread, were crowded with distinguished persons. Among

these, on the smaller of the platforms, were Mrs. Morse, Miss Leila Morse, Mrs. Roosevelt, Miss Goodrich, Mrs. A. T. Stewart, Mrs. Cyrus McCormick, and many others. On the other were Governor Hoffman and staff, General McQuade, General Johnson, Colonel Ward; Governor Claflin, of Massachusetts; and staff; his Honor Mayor Hall, Hon. William Orton, O. H. Palmer, R. B. Hoover, Judge Charles P. Daly, Peter Cooper, Marshall O. Roberts, Commissioner Agnew, Wilson G. Hunt, Cyrus W. Field, General T. T. Eckert, Henry Hilton, Dr. C. C. Cox, Cambridge Livingston, Dr. G. B. Loring, Col. E. S. Sanford, Hiram Sibley, J. H. Wade, Dr. Samson, William Cullen Bryant, C. H. McCormick, General J. G. Wilson, Rev. Stephen H. Tyng, and others.

The fine band of the United States, stationed at Governor's Island, kindly placed at the service of the inaugural committee by General Davis, Military Commander of the port of New York, was promptly on the ground. The inaugural committee, Wilson G. Hunt, Esq., Cyrus W. Field, Esq., and General T. T. Eckert, and the officers and orators of the day were all present. It had been hoped that the ceremony of unveiling would have been performed by the President of the United States, who was asked to do so, but who was prevented by other engagements, as appears by the following polite note :

LONG BRANCH, N. J., June 6, 1871.

JAMES D. REID, ESQ., *Chairman Morse Telegraph Committee :*

*Dear Sir :* I am just in receipt of your invitation on behalf of 10,000 telegraphic laborers to be present on Saturday next at the inauguration of the statue in honor of Professor Morse.

Plans made previous to the receipt of your invitation will prevent my acceptance, but do not prevent my appreciation of the services rendered to science and the wants of commerce, trade and travel, by the distinguished man in whose honor you meet. Your obedient servant, U. S. GRANT.

Promptly at the appointed time the band performed according to programme, after which Governor Hoffman, in a full, clear voice, delivered the introductory address, as follows :

GOVERNOR HOFFMAN'S SPEECH.

*Ladies and Gentlemen :*—We are met to witness the completion of a statue erected in honor of an American citizen who is still living. It is a noble monument of the veneration and affection of the Telegraphic staff of the Continent. In the most conspicuous and the most beautiful of the public grounds of the chief

city of this Western hemisphere this statue of Samuel F. B. Morse shall stand for ages. The enduring material of which it is made may, in the long lapse of time, crumble; yet his name will not be lost to the memory of man. By his own works he has secured for it immortality. So long as language lasts it will be spoken and honored.

The faculty of speaking is the gift whereby God has favored man above his other creatures. By it we are enabled to utter to our neighbor our wants, our sufferings, our sympathies, every idea and feeling which arises within us. Anxious to pay to his memory its highest honors, the world has sought, during all history, to discover the name of the inventor of the alphabet. By means of it we were empowered to speak to the eye as well as to the ear, and to transport to the most remote parts of the earth the utterances of mind and heart, in visible and lasting form. Hours, days, weeks, months may elapse before that which we would have spoken to our absent friends, if at our side, can reach its destination, but, thanks to the alphabet, it reaches them at last, fresh and in perfect keeping. The Creator blessed man by giving him the power of language; and through the alphabet how greatly has the blessing been expanded! By it the dead of ages past speak to us to-day, in their written utterances; and by it we speak to generations yet unborn. Centuries and centuries passed away, and this great expansion of the means of intelligent communication was all the improvement to which human invention was equal.

In our day a new era has dawned. Again, for the second time in the history of the world, the power of language is increased by human agency. Thanks to Samuel F. B. Morse, men speak to one another now, though separated by the width of the earth, with the lightning's speed and as if standing face to face. If the inventor of the alphabet be deserving of the highest honors, so is he whose great achievement marks this epoch in the history of language—the inventor of the electric telegraph. We intend that, so far as in us lies, the men who come after us shall be at no loss to discover his name for want of recorded testimony.

In doing Professor Morse, during his life, the extraordinary honor which we are met this day to make complete, we contribute little to his well-earned glory; nevertheless the people of this great city, represented by their mayor, and the people of two states—the state of his birth, and the state of his adoption—uniting in this ceremonial in the persons of their chosen chief magistrates, find great gratification for themselves in this opportunity to testify their appreciation of the honor and the benefits which he has conferred on them and on the country. The Governor of Massachusetts, the native state of Morse, will now unveil the statue, and then William Cullen Bryant will speak to you as he only can speak. How fitting that he who—having before him the letters of the ancient alphabet which Cadmus brought into Greece, has by his great translation, enabled all English-speaking men to realize to-day, in their own tongue, the power and genius of Homer—should be our leader on this occasion in paying a just tribute to one who is his friend, and who, like himself, has, from the pursuits of private life, cast real and enduring lustre upon the American name!

#### THE UNVEILING.

After Governor Hoffman had closed his address, Governor Claflin and the Hon. Wm. Orton threw aside the drapery, and displayed the

statue to the vast assemblage. A tumultuous outburst of applause followed, the band playing the "Star Spangled Banner."

When the applause which followed the unveiling had subsided, William Cullen Bryant, Esq., the venerable poet of America, and life-long friend of Professor Morse, was introduced, and spoke as follows :

ADDRESS OF MR. BRYANT.

There are two lines in the poem of Dr. Johnson on the Vanity of Human Wishes which have passed into a proverb :

" See nations, slowly wise and meanly just,  
To buried merit raise the tardy bust."

It is our good fortune to escape the censure implied in these lines. We come together on the occasion of raising a statue, not to buried but to living merit — to a great discoverer who yet sits among us, a witness of honors which are but the first fruits of that ample harvest which his memory will gather in the long train of seasons yet to come. Yet we cannot congratulate ourselves on having set an example of alacrity in this manifestation of the public gratitude. If our illustrious friend, to whom we now gladly pay these honors, had not lived beyond the common age of man, we should have sorrowfully laid them on his grave.

In what I am about to say I shall not attempt to relate the history of the electric telegraph, or discuss the claims of our friend to be acknowledged as its inventor. I took up the other day one of the forty-six volumes of the great biographical dictionary compiled by French authors, and immediately after the name of Samuel Finley Breeze Morse, I read the words "inventor of the electric telegraph." I am satisfied with this ascription. It is made by a nation which, having no claims of its own to the invention, is naturally impartial. The words I have given may be taken as an expression of the deliberate judgment of the world, and I should regard it as a waste of your time and mine to occupy the few minutes allotted to me in demonstrating its truth. As to the history of this invention, it is that of most great discoveries. Coldly and doubtingly received at first, its author compelled to struggle with difficulties, to encounter neglect, to contend with rivals, it has gradually gained the public favor till at length it is adopted by the civilized world.

It now lacks but a few years of half a century since I became acquainted with the man whom this invention has made so famous in all countries. He was then an artist, devoted to a profession in which he might have attained a high rank, had he not, fortunately for his country and the world, left it for a pursuit in which he has risen to a more peculiar eminence. Even then, in the art of painting, his tendency to mechanical invention was conspicuous. His mind, as I remember, was strongly impelled to analyze the processes of his art — to give them a certain scientific precision, to reduce them to fixed rules, to refer effects to clearly defined causes, so as to put it in the power of the artist to produce them at pleasure and with certainty, instead of blindly groping for them, and, in the end, owing them to some happy accident, or some instinctive effort, of which he could give no account. The mind of Morse was an organizing mind. He showed this in a remarkable man-



manner, when he brought together the artists of New York, then a little band of mostly young men, whose profession was far from being honored as it now is, reconciled the disagreements which he found existing among them, and founded an association, to be managed solely by themselves—the Academy of the Arts of Design—which has since grown to such noble dimensions, and which has given to the artists a consideration in the community far higher than was before conceded to them.

This ingenuity in organization, this power of combining the causes which produce given effects into a system, and making them act together to a common end, was not long afterward to be exemplified in a very remarkable manner. The voyage made by Mr. Morse, from Havre to New York, on board the packet-ship Sully, in the year 1832, marks an important era in the history of inventions. In a casual conversation with some of the passengers concerning certain experiments which showed the identity of magnetism and electricity, the idea struck his mind that in a gentle and steady current of the electric fluid there was a source of regular, continued and rapid motions, which might be applied to a machine for conveying messages from place to place, and inscribing them on a tablet at their place of destination. We can fancy the Inventor, full of this thought, as he paced the deck of the Sully, or lay in his berth, revolving in his mind the mechanical contrivances by which this was to be effected, until the whole process had taken a definite shape in his imagination, and he saw before him all the countries of the civilized world intersected with lines of his electric wire, bearing messages to and fro with the speed of light.

I have already said that this invention met with a tardy welcome. It was not till three years after this, that is to say, in 1835, that Morse found means to demonstrate to the public its practicability by a telegraph constructed on an economical scale, and set up at the New York University, which recorded messages at their place of destination. The public, however, still seemed indifferent; there was none of the loud applause, none of that enthusiastic reception, which it now seems natural should attend the birth of so brilliant a discovery. I confess that I was not without my share in the general misgiving, and although the processes employed were exceedingly curious and highly creditable to the inventor, I had my fears that the new telegraph might prove little more than a most ingenious scientific pastime easily getting out of order in consequence of the delicacy of its construction, not capable of being used to advantage for great distances, and for short ones only suitable for messages in their most abbreviated form.

The inventor, however, saw further than we all, and I think never lost courage. Yet I remember that some three or four years after this he said to me with some despondency, "Wheatstone in England and Steinheil in Bavaria, who have their electric telegraphs, are afforded the means of bringing forward their methods, while to my invention, of earlier date than theirs, my country seems to show no favor." He persevered, however, and the doubts of those who hesitated were finally dispelled in 1844 by the establishment of a telegraph on his plan between Washington and Baltimore. France and other countries on the European continent soon adopted his invention and vied with each other in rewarding him with honors; the indifference of his countrymen, which he could not but acutely feel, gave place to pride in his growing fame, and to-day we express our admiration for his genius and our gratitude for the benefit he has conferred upon the world by erecting his statue.

It may be said, I know, that the civilized world is already full of memorials

which speak the merit of our friend and the grandeur and utility of his invention. Every telegraphic station is such a memorial; every message sent from one of these stations to another may be counted among the honors paid to his name. Every telegraphic wire strung from post to post, as it hums in the wind, murmurs his eulogy. Every sheaf of wires laid down in the deep sea, occupying the bottom of soundless abysses, to which human sight has never penetrated, and carrying the electric pulse, charged with the burden of human thought, from continent to continent, from the old world to the new, is a testimonial to his greatness. Nor are these wanting in the solitudes of the land. Telegraphic lines crossing the breadth of our continent, climbing hills, descending into valleys, threading mountain passes, silently proclaim the great discovery and its author to the uninhabited desert. Even now there are plans for putting a girdle of telegraphic stations around the globe, which, in all probability, will never be disused, and will convey a knowledge of his claims on the gratitude of mankind to millions who will never see the statue erected to-day. Thus the Latin inscription in the church of St. Paul's, in London, referring to Sir Christopher Wren, its architect: "If you would behold his monument look around you," may be applied in a far more comprehensive sense to our friend, since the great globe itself has become his monument.

All this may be said and all this would be undeniably true, but our natural instincts are not thus satisfied. It is not the name of a benefactor merely, it is the person that we cherish, and we require, whenever it is possible, the visible presentment of his face and form to aid us in keeping the idea of his worth before our minds. Who would willingly dispense with the image of Washington as we have it in painting and sculpture, and consent that it should be removed from the walls of our dwellings and from all our public places, and that the calm countenance and majestic presence with which we associate so many virtues should disappear and be utterly and forever forgotten? Who will deny that by means of these resemblances of his person we are the more frequently reminded of the reverence we owe to his memory?

So in the present instance, we are not willing that our idea of Morse should be reduced to a mere abstraction. We are so constituted that we insist upon seeing the form of that brow beneath which an active, restless, creative brain devised the mechanism that was to subdue the most wayward of the elements to the service of man and make it his obedient messenger. We require to see the eye that glittered with a thousand lofty hopes, when the great discovery was made, and the lips that curled with a smile of triumph when it became certain that the lightning of the clouds would become tractable to the most delicate touch. We demand to see the hand which first strung the wire by whose means the slender currents of the electric fluid were taught the alphabet of every living language—the hand which pointed them to the spot where they were to inscribe and leave their messages. All this we have in the statue which has this day been unveiled to the eager gaze of the public, and in which the artist has so skillfully and faithfully fulfilled his task as to satisfy those who are the hardest to please, the most intimate friends of the original. On behalf of the telegraphic workers of the Continent, who have so nobly and affectionately provided it, I do now present it to the authorities of the city of New York for perpetual and loving care.

But long may it be, my friends—very long—before any such resemblance of our illustrious friend shall be needed by those who have the advantage of his acquaint-

ance, to refresh the image of his form and bearing as it exists in their minds. Long may we keep with us what is better than the statue—the noble original. Long may it remain among us in a healthful and serene old age. Late, very late, may He who gave the mind to which we owe the grand discovery to-day commemorated, recall it to his more immediate presence that it may be employed in a higher sphere and in a still more beneficial activity.

After the applause which followed Mr. Bryant's address had subsided, his Honor, Mayor Hall, was received with hearty cheers, and spoke as follows :

REPLY OF MAYOR HALL.

Although Morse lives, New York enshrines him. She commemorates him as the scientific associate of her departed Fulton, whose statue must before long from yonder observatory height overlook the river first conquered by steam.

One middle State city loves to remember how her citizen Franklin modestly passed the portals of the temple of electrical science ; a southern city how her citizen Whitney developed a cotton empire ; a western city how her citizen McCormick presented to agriculture its greatest boon ; and adjacent eastern cities gratefully recall how their citizens Morton and Jackson blessed humanity, and how Elias Howe lightened the toil of the poor. The genius of these Americans changed the atmosphere of social life, which now is not in any aspect the same as it was to the elder generation of this Union. Their genius blessed food, raiment and locomotion. But New York cherishes more proudly and gratefully the thought that the genius of her citizen Morse put all those inventions into world-wide service, and is fast bringing together all the peoples who were dispersed at the Tower of Babel.

The city of New York pledges herself to the donors who make her their trustee, to guard with pride this statue of her honored citizen ; of him who achieved indeed eminence among her artists, and won respect and love in her social life before he was awarded those special honors which the civilized world now render him, and which this day's ceremonies so appropriately emphasize.

Governor Hoffman announced that Mr. Cyrus W. Field would read dispatches he had received :

WILSON G. HUNT, Esq. :

Please present my sincere regrets to Professor Morse and to your committee that I am unable to be present to-day, having just reached home from the South. I should be delighted to contribute in any way to the honor of so great and good an American.

GEO. F. RANDOLPH, *Governor of New Jersey.*

I have another dispatch from a neighboring village, London, dated June 10, two minutes past 8 P. M. It was received here at five minutes to four :

C. W. FIELD, Central Park :

In the name of the Anglo-American Company I feel proud to join in doing honor to Professor Morse, who has so largely contributed to the development of telegraphing, and facilitating instantaneous communication between different nations of the world.

HAMILTON, *Chairman.*

The exercises closed by an invocatory prayer, by Rev. Stephen H. Tyng, D. D., rector of St. George's, New York, and with the singing of the doxology by the assemblage, to the accompaniment of the band. As the sound of 10,000 voices went up into the pure summer air, to the accompaniment of the rustle of the leaves of the overshadowing trees, the scene was grand, impressive, and memorable. Between the parts of the exercises the fine band of Fort Columbus gave appropriate music.

Dr. C. C. Cox, of the Congressional Memorial Committee in the "Morse Memorial" volume, issued by Congress, is stated to have said, in an address in the Hall of Representatives: "I refer not so much to the event in Central Park, where the rare spectacle was presented *of a living man beholding, amid the plaudits of an admiring multitude, the unveiling of his own monument!*" Frank Leslie's *Weekly* made the same egregious error. Mr. Morse was incapable of such an indelicacy. He remained in utter seclusion all day and did not leave his house until evening to attend the reception at the Academy of Music. Men of refinement and modesty would justly have marveled had they seen him in such a place.

#### REMARKS OF THE PRESS.

From a large number of able notices the following are selected as representative :

The most important event of the century found a fitting voice June 10th in the N. Y. Central Park. There was no booming of cannon, no torchlight demonstration, no gathering of the criminal class for deceptive show; but there was the undemonstrative outpouring of those citizens who are always, in all lands, their country's pride—namely, the intelligent and the moral section of the population. In every important particular the unveiling of the statue of the living Professor Morse yesterday was as consistent with the well-studied proprieties of the event as have been any of the demonstrations within the recorded past. In the very nature of the occasion there was nothing to excite the unintellectually vulgar.

During all the time devoted to fitting orations there was not a single occasion upon which the speaker could be charged with having violated the higher atmosphere of the august occasion. The addresses from Governor Hoffman, William Cullen Bryant, Mayor Hall, and the others, were purely pertinent to the great occasion, and were, therefore, well received. At no time have the deservedly prominent men of the city and country found themselves in attendance upon a public occasion when they could more fittingly have said, "I am here as a duty; the dignity of the occasion finds its assertion, not in my presence, but in the event which caused it to be." And all that still but speaking nature, touched by art, could add to the appropriateness of the demonstration was but the clean cut sward, the rich, green spruce, the oak and exotics now flourishing there; an evidence that Nature's hand was upraised in the work, and that springtime bloomed and was glad. These were the conditions, these the associations, these the surroundings which marked the event.—*New York Herald*.

Usually the world realizes its obligations to its truly greatest and most useful men only when they have gone; and atones for neglect of them during life by posthumous honors. But Professor Morse has the rare good fortune not only to see his invention fully availed of on a wider scale and with more important results than in his fondest imaginings he could have hoped for, but to know that his own merits are recognized in proportion as his discovery has been utilized. If the applause of one's fellows is, next to that of one's own conscience, the greatest source of human felicity, Professor Morse must be to-day the happiest of men, for the honors paid to him are as genuine and sincere as they are notably well deserved and universally approved. There is no set-off or drawback in the services that he rendered to his species. Most great discoveries carry mischief in their train to adulterate the public benefit they confer. But Morse's contribution to the conveniences and achievements of the age was good unmixed and benefit unadulterated. New York honors herself in honoring her most useful citizen. *Had Central Park been made for no other purpose than to afford fit surroundings for a Morse statue, the price and acknowledgment for the service he rendered to humanity would hardly have been too great.*—*Brooklyn Eagle*

The commemoration exercises of the Morse statue on Saturday afternoon will long be remembered by the multitude that witnessed them. All things conspired to make them imposing and attractive; the beautiful Park clad in its richest verdure of early summer, the lovely weather, the perfect order of the crowd, and the presence of distinguished men, the representatives of commerce, learning, science and art. It could hardly have been called a pageant, but it was something beyond a holiday show or a military parade, and the moral significance of the testimonial expressed itself in the addresses of the speakers, wherein there was not a word of undiscerning eulogy, but only a hearty recognition of exalted merit. To what was said all the nations of the earth will cordially respond; for in the praise that is rendered to the benefactors of mankind there is no envy, and England and Germany will render as warm tributes to Morse as America has rendered to Herschel and Humboldt.—*N. Y. Evening Post*.

## CHAPTER LII.

## THE RECEPTION.

'Men of every faith and nation  
Honor, love, revere, admire  
One who sought not adulation  
When he chained the electric fire."

—*Rosa V. Jeffery.*

AS it became evident that a large concourse of delegates would come to New York to be present at the inaugural ceremonies, it was deemed a most appropriate opportunity to offer to Professor Morse, who, from motives of delicacy, could not be present at the inauguration of the statue, a public reception on behalf of the telegraphers of the American continent. Ascertaining that such a proposition would be agreeable to him, it was promptly determined to engage the Academy of Music for that purpose, to have it properly decorated, and connected with the telegraph lines of the country by the use of one of the original Morse registers.

It was desired to make the occasion worthy and commemorative. It was felt, however, that it would be impossible to divest it of deep solemnity. In the nature of things it would be the last public occasion on which the venerable Professor, now laden with years, could expect to see or be seen by his telegraphic children. The following committee was appointed to make the necessary arrangements and to whose energy and skill the complete and gratifying success which attended them was eminently due.

## COMMITTEE OF ARRANGEMENTS.

Gen. Marshall Lefferts, Chairman; John Horn, Jr., W. K. Applebaugh, J. W. Burnham, William I. Reid.

## ACADEMY COMMITTEE OF RECEPTION.

W. K. Applebaugh, J. B. Page, J. W. Burnham, Charles Willis, F. H. Marsh, J. B. Oltman, W. C. Chapman, A. H. Watson, W. I. Reid, M. C. Lefferts, E. S. Sanford, Jr., Gerritt Smith.

The committee of arrangements and reception managed their duties admirably. The spacious building was packed from pit to dome without the slightest confusion. On the platform were a large number of the most prominent and influential citizens of New York, and numerous representative men from other states. As Professor Morse's venerable form appeared on the platform, a loud burst of enthusiastic welcome greeted him, the whole audience rising, and by cheers and waving of handkerchiefs testifying to its heartiness. Professor Morse gracefully acknowledged the salutation and seemed much affected by it. In the front of the platform was the speaker's stand, on either side of which was a magnificent vase of flowers. Near the speaker's stand stood a small table, bearing the first telegraphic register ever employed on actual service on the continent, and which was kindly loaned by Mrs. Alfred Vail, of Morristown, N. Y.

Promptly at a quarter to eight Hon. William Orton took the chair, and called on Rev. Howard Crosby, Chancellor of the New York University, to utter the opening invocation.

Mr. Orton thereupon arose, and after a welcoming cheer, spoke as follows :

## ADDRESS OF HON. WILLIAM ORTON.

Twenty-eight years ago a citizen of New York succeeded in obtaining an appropriation from Congress, to enable him to test the utility of an invention which was considered of such slight importance and its prospects of success were deemed so doubtful, that private enterprise was unwilling to risk the small sum needed to give it a trial. The petitioner was an artist. He was poor. It is not more strange that success was long delayed than that he succeeded at all.

During the final debate on the appropriation, the inventor and his invention were treated with derision, and an amendment was formally offered and deliberately entertained by the chairman, who refused, on appeal, to rule it out of order, directing the expenditure of one-half the sum in experiments with Mesmerism, under the direction of the Sec-

retary of the treasury; and it was also suggested that Millerism was entitled to share in the appropriation.

But, finally, after four weary years of patient waiting and persistent entreaty, the importunity of the artist was rewarded by an appropriation of thirty thousand dollars.

The petitioner for that appropriation is the honored guest of this occasion; and the purpose for which he sought it was to test the practicability of the Electric Telegraph.

The appropriation was expended on a line between Baltimore and Washington, which was completed in 1844, and, after what was considered a thorough trial, was abandoned by the government, with the official announcement that its receipts could not be made to equal the expenses.

Such a declaration, from such a source, could not fail to result in discouragement to the inventor, as well as to those who were considering the propriety of investing capital in a larger experiment. Companies were formed, however, which succeeded in extending lines to Philadelphia, New York, Boston, Buffalo, and other cities, so that by 1850 the practicability of the telegraph had been successfully demonstrated although it was several years later before its success, financially, was regarded as established. The telegraph, as a successful business enterprise, is, therefore, the growth of the last twenty years. What other product of human ingenuity ever reached such proportions and developed such results in so short a time?

Almost the entire world is now embraced within the network of its lines.

Europe possesses 450,000 miles of wire and 13,000 stations; America, 180,000 miles of wire and 6,000 stations; India, 14,000 miles of wire and 200 stations; and Australia, 10,000 miles of wire and 270 stations; and the extension throughout the world is at the rate of 100,000 miles of wire per annum. There are, in addition, 30,000 miles of submarine telegraph wire now in successful operation, extending beneath the Atlantic and German Oceans; the Baltic, North, Mediterranean, Red, Arabian, and China Seas; the Persian Gulf, the Bay of Biscay, the Strait of Gibraltar, and the Gulfs of Mexico and St. Lawrence.

More than twenty thousand cities and villages are now linked in one continuous chain of telegraphic stations. The mysterious wire, with its subtle influence, traverses all civilized lands, and passes beneath oceans, seas and rivers, bearing messages of business and friendship, and constantly, silently, but powerfully, contributes to the peace, happiness and prosperity of all mankind.

In but few instances have statues been erected to living men in token of the gratitude of their fellows for benefits conferred, enjoyed and appreciated. Indeed, gratitude is rarely a settled conviction pervading the public mind, and persisting in conferring honor where honor is really due. It is sometimes merely an infectious sentiment which breaks out in public demonstrations toward the favorite of an hour, who is praised to-day, blamed to-morrow, and is finally forgotten. Popular fancy is notoriously capricious. Frenchmen erected and then demolished the statue of Louis XIV. On its site was reared the column of Austerlitz to commemorate the achievements of the first Napoleon, and to perpetuate the glory of France. But a few weeks ago the latter was torn from its base in obedience to popular clamor, and the broken fragments of its beautiful bronzes were scattered about the Place Vendome. But Frenchmen are not exclusively capricious — nor Parisians the only Image Breakers. A century ago loyal New Yorkers erected a statue of George the III, at Bowling Green. Six years later, indignant patriots tore down the leaden effigy, converted the material into bullets and fired them at the soldiers of their king.

These historic incidents are not cited for the purpose of raising doubts concerning the permanency of the work, whose completion we have witnessed to-day. The statues of Kings George and Louis, and the column of Vendome were destroyed because, in the judgment of those who did it, they typified Wrong! because the glories which they illustrated had been achieved through oppression and suffering, and the devastation and ruin which mark the track of War.

Our work, on the other hand — although in honor of a man — commemorates an achievement which, in the infancy of its results, has already conferred inestimable benefits upon the people of more than half the globe, without having occasioned a pang of sorrow to a single human being.

If he is entitled to be esteemed a benefactor who makes two blades of grass to grow where but one grew before,— with what honors shall we crown him through whom wars have been postponed and shortened — peace promoted and extended — time annihilated and distance abolished — and all the highest and noblest faculties of man multiplied, extended and enlarged? Wonderful Art! Most fortunate of Artists! The most beautiful creations of the pencil will utterly fade away and workman and his work be alike forgotten. The printed page may be destroyed and the great deeds recorded be remembered no more. The granite and bronze this day unveiled will yield their atoms one by one till not a trace remains. But the fame of this Artist and the won-

der of his Art will go down the ages with Civilization and Christianity till "the earth shall be filled with the knowledge of the glory of the Lord as the waters cover the sea."

ADDRESS OF DR. GEORGE B. LORING, OF SALEM, MASS.

THEME—THE TELEGRAPH AND INTERNATIONAL INTERCOURSE.

In attempting to discharge the duty which your committee has assigned me this evening, I am oppressed and weighed down by the magnitude of the occasion. This is not an hour for discussion, but for congratulation, for joy, for gratitude to God that he has endowed one of his children with faculties capable of unfolding the mysteries of His creation. There is neither wisdom, nor knowledge, nor eloquence equal to the simple fact before us—to that achievement of our own day, which sends the thought and sentiment of this assembly throbbing in an instant throughout the civilized world, and calls around the distinguished inventor a grateful multitude, of every kindred, and name, and tongue, under heaven—a congregation which no man can number. The most appropriate topic to-night is the invention; the most delightful spectacle is the venerable form of Morse himself: the most eloquent word is the click of that little instrument, whose voice goes hence to Cathay and farthest Ind., proclaims to all who have ears to hear every new-born joy and sorrow, and converts a continent into a mere pleasure ground for friends whom no distance can now divide.

And this is not all, sir. You may enlarge as you will, and call about you the profoundest speculation, in all its variety, upon social and civil problems, upon "international intercourse and commerce," upon diverse faiths, and modes of government; but above all arises the thought that through instant communication men may now become one if they will—inspired each moment by the best sentiment, led like one family up to the highest and best endeavor.

The world will never forget James Watt, who marshaled his fiery champions to "bloodless triumphs, not for the destruction, but for the service of mankind;" nor Franklin, who dragged the lightning down from heaven; nor Morse (loud cheers), who harnessed it to his chariot of peace; nor Fulton, the earnest and thoughtful, who triumphed over winds and tides; nor Field, the untiring and indomitable, who, uniting the two great forces of steam and magnetism, bound by a chain instinct with life, the two great nations of the earth together for "international intercourse and commerce," which may be the beginning of man's triumph over all causes of strife, and his progress toward the most humane and Christian civilization.

Sir, I would not expect too much. But I ask this distinguished assembly who are with me on this platform, men who have given our country a high renown in arts, and science, and letters,—I ask them to remember the power of great attainment to secure the attention, and win the affection of mankind. How the scholars and philosophers of the ancient days drew all men about them, and made their age immortal! How Raphael and Michael Angelo set an age of art! How Shakespeare and Milton fixed an era of letters! How the Puritan planted his great protest on the shores of Plymouth; and how there has sprung up generation after generation of men from his time to our own, whose work in establishing a republic of human freedom and equality, has warmed the hearts of the people and weakened the grasp of the tyrant! It cannot be possible, then, that the

achievements of scientific investigation, applied to man's mental and material condition, and especially to human intercourse, can fail to occupy his best thought and call for the highest endeavor. While every important public event reaches instantly the popular ear, and a popular response is as instantly given, the general mind must be powerfully drawn toward those things which concern most immediately the welfare and prosperity of the community. For the benefit of trade, commerce, interchange of thought, all the arts of peace, are the great inventions for transport and communication especially designed, and so long as the condition of the markets throughout the world is known hourly at the great centers of trade, and the last declaration of the statesman and the newest thought of the scholar are borne to the ends of the earth almost as soon as uttered, it must be the industry and thought of the world which receives the largest share of our attention. Under cultivation like this, the popular demand is that war, if it comes at all, shall be short and decisive, and that peace shall be long and honorable.

And then, sir, what a world-wide fraternity this constant communication naturally creates. The chilling influences of time and distance are all gone. Yesterday's disasters, wherever they may have occurred, thrill and pain us to-day, as a message of sorrow from our nearest neighbor. All mystery and doubt with regard to passing events and their influences are ended; the events occur, are received, weighed, set down in a moment, and in a moment we pass on to the next. Nations are brought to each other's thresholds—and ambassadors can utter each day the voice of the government to which they belong, and communicate the reply from that to which they are sent. The boundaries of states and empires may remain the same, their tongues may differ, their social and civil conditions vary; but united as they are into an international community intimate with each other's wants and necessities and interests, how can they long remain antagonistic?

To the spot where I now stand, from the Pacific seas eastward across a great continent, and westward through the great exchanges, the currents of trade now flow incessantly. And it is not too much to believe that as the American people increase in numbers and wealth, and their means of communication multiply, they will control the channels of trade, and that in the adopted city of the great inventor of the magnetic telegraph, will gather that concourse of merchants who shall hold in their hands the exchanges of the world. Along paths like these shall the American people advance to their well-earned position among the nations of the earth, and realize that international intercourse which honor and justice can create.

And now, Mr. President, I congratulate the telegraph laborers of this great continent upon the great success of this occasion; I congratulate the city of New York, that to her has been given the opportunity to do honor to a distinguished son of Massachusetts, born beneath the shadow of that shaft which records the early valor and patriotism of that ancient commonwealth; and I congratulate that son upon the distinction he has achieved and upon the respect and esteem which wait upon him, as upon all the good and just, amidst the shadows which fall upon the evening of life.

After Dr. Loring's address, Mr. Orton announced that the band would play the Morse Telegraph March, composed expressly for the

occasion by band-master Wiegand, and which was received with great applause.

ADDRESS OF GEORGE W. SAMSON, D. D.

THEME — THE TELEGRAPH AND LITERATURE.

Poets are prophets, because they are philosophers. The law of the universe is harmony; and the heart that feels its beauty must be guided by an intellect that sees its truth. It was natural that Pythagoras, the leader in Grecian idealism, should have anticipated by two thousand years the discovery of Copernicus; that Lionardo, the master artist, should have conceived, three centuries ago, the theories of modern geology; and that Goethe, the most spiritual of poets, should have announced the true scientific principle of classification in natural history. The forecaste of reason in Newton and Faraday is nothing else than the creation of a happy fancy. The poet is prophet, because he is philosopher.

From Homer to Milton, the epic poets have conceived that the sunbeam, Aurora's flash, and the lightning's bolt are messenger-vehicles of superior spirits. The bolder dramatists, from Æschylus to Shakspeare have imposed on the credulity of their readers with the picture of sprites that could "put a girdle round the world in forty minutes." The poet's dream in our day is realized; the highway girdling the earth is found in the telegraph wires; and the chariot of the gods is the one common agent detected in the sunbeam, the aurora, and the electric flash.

The poet is master in literature as well as prophet in science. The new power for the exchange of thought, early foreshadowed by the poet's fancy, must, now that it is realized, have an effect commensurate with the cause from which it results.

Lord Bacon looked for the day when, to the stores of digested principles, gathered first in civil, and, second, in natural history, a third department, namely, literary history, should be provided. The idea of Lord Bacon is a profound suggestion. As all science begins with collated facts in nature, and all poetry with the incidents of individual human experience, so all literature begins in journalism. The ancient rulers of Egypt and India, as of modern China, had a cherished *literati*, whose sole employ it was to gather, to collate, and to digest chronicles of every important passing event. The journalists of advancing civilized nations are the lineal successors of these ancient chroniclers. As from those ancient store-houses Moses and Herodotus drew their material for history proper, so from the same exhaustless fountain the poets themselves have drawn.

Lord Bacon's idea of literary history was a part of his inductive system; which made the substratum of every thing worth preserving to be gathered from wide-spread observation of existing realities. If there is any gift from nature, from man, or from the Author of all, that can give new skill to genius in weaving the warp of fact and the woof of fancy into webs of new beauty, to be hung in the Mecca-halls of our nation's growing literature, it will be the boon received from the "Father of the Telegraph." To the proof.

Most, it not all, the great advances made in a nation's literature have sprung from new methods of recording and diffusing the writer's productions. When Cadmus carried letters into Greece, relieving the mind of the bard from the intolerable load laid upon memory, the lyric and ballad towered at once into the epic

and the drama. When printing stood ready to give a cheap heralding to the elaborations of the pen, then the spring of German literature immediately began. So, too, when the telegraph permitted the most distant and instantaneous intercommunication between man and nations, a new inspiration began at once to spring up amid the new life; and journalism and literature have taken on new and most palpably improved features.

*First*, the telegraph has widened the range of human thought and observation. Not journalism alone, as some suppose, has been revolutionized in character by the telegraph. Almost every man engaged in commercial and industrial pursuits will tell you that he has been obliged to begin anew the study of his life's employ. The man of science is now collating, even, the elements of atmospheric changes, and is forewarning the traveler and the merchant what weather to expect on the morrow. The statesman takes no move on the shifting board of party politics all whose changes must take shape from the current of public opinion, till he has heard the echo of the "*vox populi*" along the telegraphic wires. And even the essayist of modern days — who in England's Johnsonian age utterly failed except he were graphic — even the essayist will be left behind by his readers, unless he takes on a completeness in sketching, which may deserve the name of telegraphic.

*Second*, the telegraph has compelled a selection of the special and salient points in every subject reported, and is thus giving a compact and terse frame-work to modern literature. Where are now the four column editorials of the last generation! Where sleep the thick octavos of former days! The sheets of the morning journal have multiplied; but the breaks and new headings make the journalist's page a checkerboard. The folio, and its successor, the quarto, and even their follower, the octavo, are driven from the field by the duodecimo. And, turning from outward to inward marks, what editor, that once could doze in his arm chair, is not, by the stinging application of the electric reports, started into the quick step and into the life, if not the grace of movement, demanded by our hurried age. The writer for the monthly magazine, too, and the heavy-drag quarterly reviewer, have felt the impulse; and short, pithy paragraphs, with the wide life of the world crowded upon a page, is the demand, and therefore the supply of our day.

*Third*, the closer acquaintance which men make by the telegraph, is giving a tone of truer catholicity, and of purer humanity to our literature. Mountains interposed make enemies of nations, because they are a wall of non-intercourse. Error is always partial truth, and bigotry is partial religion. Sectionalism and sectarianism are always local; and rivalries and jealousies, the strife of the pen and of the sword, arise from misunderstandings between distant disputants, who, if neighbors, would be of one mind. Every agent which brings men into virtual proximity, makes men more truly one. The telegraph, in more than figure, rends the rocks asunder, and even realizes the celestial vision, "There is no more sea." He must be a heedless observer, who does not see the growing nearness of thought and sentiment into which, first the railroad and steamship, and now the telegraph is bringing the states of our Union with each other; and even the mother-land with her daughter of the Western continent. Mrs. Trollope could not be repeated by Dickens; nor would Dickens have written as he did twenty years ago, had he lived in the days of the perfection of the telegraph.

*Fourth*, the power of the human mind over the elements of nature, culminating in the telegraph, is giving a tone of higher spirituality to our literature. It was no

chance that caused the first message over the telegraph wire to be these words: "What hath God wrought?" For two reasons, the telegraph is making literature more spiritual. A new metaphysical element is silently at work, correcting the heartless materialism of our day. As Franklin intimated, the physical world opens a new and border region between the contending hosts of idealism and materialism; a common highway, on which men of different mold are meeting, and are there finding and rejoicing in their kinship. This tendency to unity from comprehensiveness of view, now hastened and rapidly matured by telegraphic interchange of facts on which theories are founded, is becoming wondrously illustrated in the advanced thought of our devotees of natural science as in every past age it has been more slowly developed.

Thus a new world of practical metaphysics is found. It lies in that golden mean that avoids both extremes; in the intermediate field of the physical, which, sufficiently ethereal yet sufficiently palpable, bridges over—as the profoundest minds, from Aristotle to Franklin, have believed—the abyss which only seems inseparably to divide matter from spirit. Yet more: there is a moral influence on our human nature, awakened by such power on earth as man gains in the telegraph. As the young sage of the earliest times, on the Euphrates, recognized first in his inner consciousness a truth which he could not but declare in the expression: "There is a spirit in man, and the inspiration of the Almighty giveth them understanding," and as then, his keen eye, strained northward, caught before others around him the confirmation of that inner conviction at sight of the first slight movement of the rising storm-cloud, when, in substance, he exclaimed, "God is coming to speak in the whirlwind! men see Him not, because they see not the bright light in the clouds!" so every eye that now scans to its depths the profound of the physical world, brought nigh by the agency of the telegraph, believes, and, therefore, to be honest, avows his belief in a Spirit greater than the electric force, curtained behind in the pavilion of the sky. And again yet more: just in proportion as man gains the power to sway the elements of the physical universe, just in that proportion does he find his own likeness, in some attributes at least of his character, to the Supreme Author of all; and to that extent he yearns the more to be, in all his nature, conformed to the image of his Maker. The telegraph is pre-eminently an agent which has introduced more spiritual elements into our literature.

To-day we have come to acknowledge as a community our debt of gratitude to the inventor of the greatest instrument of power over earth which the ages of human history have revealed. The comprehensive thought which formed to-day's programme saw that every interest of our humanity clusters around the power working through the telegraph. No great man ever stood alone. No man is a great man who does not feel himself a finite creature, an humble member of a numberless insect family, each one of whom is indebted to his fellow, and all dependent on a common Father, author and giver of all. The inventor of the Telegraph has, as his chief attribute, this recognition of his common humanity and of his infant-like dependence. But as the child is "father to the man" so the "Father of the Telegraph" has this double relation. He is confessedly the follower of men of science who lived before and together with him; and he is and is to be a leader in an age of the world which, in all its features, is to be a "New Era." We have not at all comprehended the animating spring of that new era until we have

considered not only the relation of the telegraph to science and art, to commerce, and national defense, but also to literature and journalism, to civilization and christianity.

We are wont to think and say that Republics are tardy and inappreciative of true genius; and especially is it a maxim that Republics are ungrateful. Say, rather, that Republics are careful to scan professed superiority, and are surest to give the full measure of perpetuated praise to merit that stands the test of trial.

Not too early, not too late, did triumph come to America's greatest inventor. Time had already begun to silver those locks, now like Hermon's snow the white that at once veils and reveals the green beneath. The Father of the Telegraph was already gray before the first pæan in his praise arose. Is it not enough—it is enough—that such an ovation as this of to-day has come while yet the patriarch lingers on the verge of that bourne which to him is but the portal to the eternal temple of true glory.

#### THE FAREWELL WORD.



Mr. Orton now announced that the hour of 9 P. M. had arrived, and that all the wires of America were connected with the instrument before him. It was a sublime thought, that the touch of a finger on a tiny key, in the New York Academy of Music, would so soon vibrate

throughout the continent. The audience seemed to see the 10,000 anxious faces looking down on the instruments in every town of the new world, waiting the expected sound. It caused intense silence. Miss Sadie E. Cornwell, a skillful operator and a young lady of much attractiveness of person and manner, who had been selected to transmit the message, was then conducted to her place by Mr. Applebaugh, and sent the body of the following dispatch, the signature to which it had been arranged that Professor Morse should himself transmit, every operator watching the manipulation in a stillness which was most impressive. The message was as follows.

*"Greeting and thanks to the  
 "Telegraph Fraternity throughout  
 "the world. Glory to God in the High-  
 "est, on Earth Peace. Goodwill  
 "to men: S. F. B. Morse.*

At the last click of the instrument, as Miss Cornwell finished the transmission of the body of the message, Professor Morse, escorted by Mr. Orton, approached the operating table and took his seat. As his fingers touched the key, tremendous cheers rung through the house, but were stopped by a gesture from Mr. Orton. Again that impressive silence fell on the house. Slowly the sounder struck "S. F. B. Morse," the Professor's hand fell from the key, when, as by a common impulse, the entire audience rose, and a wild storm of enthusiasm swept through the house, which was continued for some time, ladies waving their handkerchiefs, and old venerable men cheering as joyously as the youngest. Professor Morse, visibly affected, resumed his chair beside the president, and for several moments pressed his brow with his hands. The whole scene was thrilling and impressive. The tableau furnished a subject seldom awarded to an artist. When the excitement and applause had subsided, Mr. Orton said:

" Thus the Father of the Telegraph bids farewell to his children."



MISS SADIE E. CORNWELL.

The current was then switched off to an instrument behind the scenes. Quickly along the wires came the following responses :

FROM MILWAUKEE.

Milwaukee sends greeting. The heavens declare the glory of God. The firmament showeth His handiwork. Day unto day uttereth the speech, and night unto night showeth knowledge ; your lines have gone out throughout all the earth, and your words to the end of the world.

FROM JACKSONVILLE, FLA.

Greeting: The glory of God, whose hand furnishes the lightning, has been reflected in him who has been honored as His agent in making the lightning the servant of man.

W. H. HEISS, *General Superintendent I. O. Teleg. Co.*

FROM MONTREAL.

The Montreal Telegraph Company rejoices that Professor Morse is securing, in his life-time, the acknowledgments and benefits of the value to the world of his great discovery. May he long enjoy them.

HUGH ALLAN, *President.*

## FROM TORONTO.

The telegraph fraternity of Ontario congratulate Professor Morse, and trust that the statue to-day unveiled may prove an incentive to genius for all time to come.

H. P. DWIGHT, *General Superintendent.*

## FROM QUEBEC, CANADA.

Quebec congratulates Professor Morse on to-day's event.

E. POPE, *Manager.*

## FROM CHICAGO.

A thousand flashing wires to-night  
Meet in one circuit—grand, complete—  
And o'er them, with the lightning's pen,  
We write our father Morse to greet.

But we, dear chief, a circuit form  
Which far excels th' electrician's art.  
Affection's battery warms the line,  
Each "cup" a telegrapher's heart.

Repeating stations there are none;  
Unbroken flows the electric stream  
That bears you this eventful night  
Our love, our reverence, our esteem.

## CHICAGO OFFICE.

## FROM WASHINGTON.

May the God of storms bless you, and make your path on this earth all sunshine.  
After this earth, peace.

ALBERT J. MEYER,

*Brigadier-General, Chief Signal Service United States Army.*

## FROM NEW ORLEANS.

To him whose lightnings have enlightened the world, whose ways are in the sea, whose paths are in many waters—to Morse the telegraphers of New Orleans offer their congratulations. For the fraternity.

DAVID FLANERY.

## FROM PLYMOUTH, MASS.

The Old Colony sends you joyous and kindly greeting. May your laurels be ever green as the memory of the Fathers, and your fame as enduring as Old Plymouth Rock.

C. C. DOLEN, *Manager.*

## FROM LOUISVILLE, KY.

Kentucky, whose jurists near a quarter of a century since first vindicated your legal title against all pretenders to the immortal fame as the inventor of the electric telegraph, to-day proudly rejoices to see the whole civilized world in affirmation of her judgment so unanimously and enthusiastically award you a place among the noblest benefactors of mankind. *Seruis in colum redeas.*

## FROM WASHINGTON.

The capital of the nation, the scene of his earliest triumphs, sends greeting to

the father of the telegraphic fraternity. May the "circuit" of his fame thus completed never be broken.

On behalf of this office allow me to congratulate you and your assistants upon the success of Professor Morse's feat. It passed south on every wire, and I have two registered copies taken in presence of the whole newspaper representatives at the capital.

To GENERAL T. T. ECKERT, *Superintendent.*

C. A. TINKER.

FROM PHILADELPHIA.

The world's great benefactor—Professor Morse—famous in art, distinguished in photography, and immortalized in the telegraph.

E. L. WILSON, *Secretary.*

ABRAHAM BOGARDUS, *President.*

FROM CHARLESTON, S. C.

From the far South we send back the kindly greeting of our father in telegraphy, and with our brothers of North, East and West uniting in making up the circuit of praise to him whose genius devised and whose patient energies worked out this the grandest invention of the nineteenth century.

JOHN D. EASTERLIN, *Manager.*

FROM OTTAWA, ONTARIO.

The operators of the capital of the Dominion congratulate the Father of the Telegraph on the inauguration of his statue, and trust he may be spared many years to look with just pride on that token of the esteem and affection of his numerous telegraphic children.

N. W. BETHUNE, *Manager.*

FROM SAN FRANCISCO.

The telegraphers of the Pacific coast send greeting and the heartiest congratulations to the Father of the Telegraph.

FROM PITTSBURG.

All honor to the inventor of the electric telegraph. He needs no monument of brass or bronze to perpetuate his memory. It will live while the electric telegraph keeps pace with time.

FROM MEMPHIS.

As ancient Egypt accredited to the statue of Memnon the poetic honor of giving oracles to the Nile by heralding the Sun in his coming with strains of sweetest melody, we of modern Memphis may congratulate yourself that the statue of Intelligence and Truth goes to all the generations that are to succeed us. In this spirit the telegraph craft of Memphis most heartily congratulate you, sir, on the inauguration of the Morse memorial.

JAMES COLEMAN, *Superintendent.*

FROM CINCINNATI.

The telegraphers of Cincinnati rejoice that Professor Morse lives to witness the honors this day conferred upon him, and express the hope that he may be spared many years to see the future triumphs of the "art communicative."

FROM MOBILE, ALA.

Mobile desires to join the fraternity in other States and countries in paying tribute to to-day's happy event in your honor, and to add our congratulations to the Father of the telegraphic world.

## FROM HALIFAX, N. S.

Nova Scotia, fully recognizing the genius and worth of Professor Morse, enters heartily into the rejoicings of the occasion. The President and Executive of the Nova Scotia Electric Telegraph Company, in conjunction with the officials and employees of the Western Union Telegraph Company at this section, request me to convey to the venerable Professor their sincere regards and best wishes, together with the hope that the day and its object may long be commemorated.

W H. WISWELL, *Cashier, etc.*

## FROM HAVANA.

*Al Ilustre Professor Morse :*

El contro telegrafico de la Habana, recibe con entusiasmo el telegrama que se sirve dirigirle al eminente Professor Morse, amigo de la humanidad y de la civilizaci on debe llamaros des de hoy el mundo scientifico pues sin el ruido de la fama sin los alardes patrioticos de la politicaniel estridente fragor de los combates habeis dadc a la humanidad y a la civilizacion magores dias de inmarcesible. Gloria que otras attelas del progreso humano recibid pues la cordial felicitacion que en nombe del curpo telegrafico Cubano os derige.

E. DE ARANTAVE.

The following dispatches were received later in the night :

## FROM THE HONG KONG CHAMBER OF COMMERCE.

PRESIDENT CHAMBER OF COMMERCE, N. Y. :

The Hong Kong Chamber of Commerce compliments its sister organization of New York on the successful completion of telegraphic communication, which now extends more than two-thirds round the globe, and brings China within speaking distance with the American Republic. Professor Morse, who is your guest this evening, has lived to see one of the greatest triumphs of telegraphy, and the Hong Kong Chamber join you in doing honor to one whose name will always be associated with this great work. For the Hong Kong Chamber of Commerce.

NOEL BLAKEMAN.

SAN FRANCISCO, June 10, 1871.

*To Professor S. F. B. Morse, New York :*—The undersigned, for themselves and the telegraphers on the Pacific coast, unite in the general congratulations on this memorable day.

May you live to see your work completed, and when time and space shall have been annihilated, receive in person the first message, the beginning of which, passing through earth and air and sea, shall have circled the globe before the conclusion shall have been written.

JAMES GAMBLE,

*General Supt. Pacific Division, W. U. Tel.*

GEO. S. LADD,

*Assistant General Supt. Pacific Division.*

VICTORIA, V. I., June 10, 1871.

*To Professor Morse, New York :*—On this occasion of honor to the distinguished services which you have rendered to science and mankind, I gladly avail myself of the opportunity afforded to me to render my tribute of respect and admiration.

A. MUSGROVE,

*Governor British Columbia.*

ELKO, NEV., June 10.

*Professor S. F. B. Morse, New York:* — It is with sincere pleasure I add my congratulations to those of the thousands who this day join in honoring the man to whom the world owes so much.

FRANK BELL,

*Resident Supt. Pacific Division.*

PORTLAND, OREGON, June 10, 1871.

*To Professor Samuel F. B. Morse, New York:* — Space is annihilated. The far Northwest salutes. Franklin discovered for Morse to utilize. Generation after generation will thankfully cherish the memory of their benefactors.

O. P. PLUMMER,

*Dist. Supt. Pacific Division.*

VICTORIA, V. I., June 10, 1871.

*To Professor Morse, New York:* — Job, 38th chapter, 35th verse:

Canst thou send lightnings and bid them from afar  
To carry back the Message, Here we are?  
Thus from the lightning cloud Jehovah spake,  
And Job thus questioned dared not answer make.  
The years by thousands since have rolled their course  
Adown the ages, till the days of Morse,  
Who hears the echo from the vaulted sky,  
And back with lightning answers, Here am I!  
To-day o'er earth the scattered nations all,  
Obedient to Professor Morse's call  
With lightning harnessed and no longer free,  
Flash back the answer, Father, here are we!

F. H. LAMB,

*District Supt. Pacific Division.*

FROM THE BOMBAY CHAMBER OF COMMERCE.

*To the Chamber of Commerce, N. Y.:*

The Chairman desires to express through you to Professor Morse his appreciation of the great services rendered to the world by his invention for improving the method of communication by electric telegraph in all quarters of the globe.

BOMBAY CHAMBER OF COMMERCE.

FROM THE SINGAPORE CHAMBER OF COMMERCE.

*To the Chamber of Commerce, N. Y.:*

This Chamber desires to share in the honor done to Professor Morse for his eminent service in telegraphy, and present their sincere congratulations and good wishes.

SINGAPORE CHAMBER OF COMMERCE.

Mr. Orton now introduced Gen. N. P. Banks, who would address them on the Telegraph as an Element of the National Defenses.

ADDRESS OF GENERAL N. P. BANKS.

One of the most eminent contemporaries of the First Napoleon describes him, in the preliminary operations of his great battles, as sitting under cover in fire, his watch in one hand, the other deep in the pocket appropriated to snuff, giving

orders, receiving reports, until the moment his forces began to move, when he fixed his eyes in one direction, dispatching couriers, intercepting messengers, until he received the information, impatiently awaited, that a position had been carried, an outpost taken, a height firmly held by the designated corps. Then he quietly returned his watch to its pocket, discontinued snuff, conversed pleasantly even jocosely, with his officers, and confidently waited the issue of the contest. The fortunes of the day had already been decided; the battle was over, the enemy annihilated; the victory complete when his orders were executed. This they called "*La grande guerre.*"

It was his invariable habit to inspect in person the position of his forces. When he did this his armies were invincible. The slightest relaxation of this duty imperiled their success. Such negligence at Birnstein threatened the success of that great campaign which culminated in the victory at Austerlitz, and it is well known that his inability to perform this duty at Waterloo was a principal cause of the crowning defeat which terminated his career.

His victories were achieved while his troops were the instant subjects of his orders. When he entered upon the distant campaigns of Egypt, Spain, and Russia, where his personal influence upon his troops was imperfectly maintained, his power waned and his empire was overthrown. He could no longer stand watch in hand, counting the moments when the eagles of France were to be crowned with victory. The actual situation could not be reconciled with his ideal conceptions. There was one power wanting. It was that almost supernal power which the genius of Morse afterward revealed to an astonished world. It was the use of the electric telegraph as an agent and engine of war.

"He would have changed the face of the world, when in Egypt," he said, but for the capture of his vessels by Sir Sidney Smith. The error of the French admiral was, after weeks of indecision, in standing out to sea, instead of running into the Egyptian ports. An earlier development of the genius of Morse and the honorable enterprise of Field, might have changed this passage of human history.

Soldiers in every age have sought a solution of the problem of telegraphic communication. The Roman generals were able to spell words and form simple sentences by the aid of fires made of different substances. The American Indians marked their war path by signal lights upon mountain summits. The French in Algiers constructed nocturnal telegraphs of colored lanterns. Long after the invention of the electric telegraph by our great countryman, the Signal Corps of the American army employed flags by day and flaming torches by night for the same purpose. The historic phrase "ALL IS QUIET ON THE POTOMAC!" was first transmitted in this manner from the Upper Potomac by the summit of Sugar Loaf Mountain in Maryland to the capitol at Washington. Frequent repetitions afterward made this sentence a subject of thoughtless levity; but there was a period when it greatly relieved the anxious hearts of all the rulers of the country.

The electric telegraph was first thoroughly successfully tested as an agent of war, in the contest between Italy and Austria, in which France was an ally of Italy; and it is not too much to say that the independence and unity of Italy is in a great measure due to the influence of the telegraph, then first made subservient to the uses and necessities of war.

In the great struggle which has just closed between Germany and France, the electric telegraph was employed in every important act, from the declaration of

war to the proclamation of peace. Diplomacy abandoned its turgid dispatches and protocols, for the sharp, concise, comprehensive style of the telegram. The hostile emperors communicated with the nations they defended, by telegraph. So far as the events of this war were concerned, the journal of the civilized world were conducted with the aid of the telegraph. The final union of the German states was effected by the telegraph. It is scarcely irreverent or extravagant to say, that prayers and thanksgiving were offered through its instrumentality. During the military operations of both armies, field lines were laid with the facility of an amateur surveyor, in pacing the grounds of a base ball club. The marvelous combinations by which the victorious Germans imprisoned army after army in the fortresses of France, and hurled the remnants of her defeated forces upon the territory of neutral states, until unhappy France was left for the moment, without an armed man for defense, were effected by the telegraph. It was the genius of Morse that made such combinations possible. Needle guns, chassepots, breech-loaders and the mitrailleuses, are dangerous instruments; but the electric telegraph is the only deadly weapon.

In our recent memorable struggle for the preservation of free government, the telegraph performed an important and patriotic part. The telegraph, railway and steamship, the grandest re-enforcements which applied science has given to the art of war, were never so thoroughly and triumphantly utilized, as a means of national defense. Those who served in distant parts of the country, where the telegraph was impracticable or impossible, best comprehend its importance. The momentary suspension of telegraphic communication, between the capital and the loyal cities of the North, excited general consternation. It was the constant telegraphic communication from the government and army, that reassured the people, bound the loyal States together, and stimulated civil and military authorities to greater exertions, by the almost limitless contributions of men and money to the cause of the Union. Throughout the contest, it was the chief medium between the government, the army, and the people.

It was, in truth, an electric nerve that united them, consolidated their power, inspired them with courage and hope, and finally led them to victory. It was the trusted agent in all great movements, civil or military; the foundation of every triumph, partial or general. Thirty million people were united by new and unaccustomed ties; electric chains of celestial fire, flashes of ethereal and supernal light, touched, thrilled, instructed, fortified, illumined every soul. It was the chord of the national heart. Overburdened by sorrows, it might have been broken, but with this support it was always ready for greater sacrifices, and beat with higher and nobler aspirations for the cause of universal liberty. The humblest citizen of the republic will remember it as the instrument that, morning, noon and night, renewed the determination and courage of the people, and every soldier will gladly attest to the great aid it gave the defenders of the nation, from the satanic assault on Sumter to the surrender of the Confederate armies to General Grant, which ended the war.

There are sensations in life to which we can never become accustomed. The ocean is a spectacle we never witness without new conceptions of the majesty of nature; and every thing that is grand and beautiful in life excites fresh sensations of delight which kindle within us higher and nobler aspirations. Who can receive an electric telegraph without emotion of this character? Whence comes it? What

tidings does it bring? By whom inspired, and to what end? Reflection, memory, give no clue to its source or contents; instinct is at fault—imagination gives no relief. There is no point or quarter of the globe from which it may not have been sent, no event in the circle of life to which it may not refer. Through what devious and unknown courses has it passed? Over what mountains, beneath what seas? Across what deserts, by what dark defiles, has this magic messenger, borne on electric lines and impelled by we know not what mysterious power, made its silent way through crowded cities and populous states, its purport and object unknown except to the writer and operator; its secret held sacred and inviolable by all the world, unless, perchance, some congressional committee should have been seized with unslaked thirst for the possession of "person and papers." Who can receive such an apostle of intelligence without a new sense of responsibility, and a renewed dedication of time and life to the principles of private and public duty.

I have the honor to represent elsewhere the city which gave birth to the creator of the electric telegraph, the discoverer of the laws which control it, and the inventor of the mechanical processes which give it power. He drew his first breath from the pure atmosphere of Bunker Hill. It was well that the city which first successfully contended for universal liberty should have given birth to the creator of that power whose great mission is the diffusion of universal intelligence. We ask no indorsement of his capacity or character. The grand mission to which he was appointed, and the glorious manner in which he has accomplished it, speak to us for him.

"Great offices will have  
Great talents. God gives to every man  
The virtue, temper, understanding, taste,  
That lifts him into life, and lets him fall  
Just in the niche he was ordained to fill."

August and fortunate man! the benefactor of his race; the illustrious representative of the age in which he lives; who is permitted by Divine Providence to recognize and enjoy the fruits of his labors; to receive the unpurchased and unreserved homage of mankind; and at the close of his career, to find in the harmonies of the universe the path to immortal fame!

After some fine orchestral music by the band, Rev. H. M. Gallaher, of Brooklyn, was introduced.

ADDRESS BY REV. H. M. GALLAHER.

In the crypts of St. Paul's cathedral, London, these words are cut in the rock, over the dust of the great architect: "If you ask for his monument, look around you." The like thing may now be said of him whom to-night we desire to honor.

If you ask for HIS monument, look, not alone at the statue of bronze to-day unveiled to the people, but look at this multitude, each soul of which has been helped by his invention; and look also without at the statue, more enduring than brass, the myriad wiry lines which net and traverse your city, and stretch along your road beds, and slope up your hillsides, and underlie your rivers and harbors and penetrate every town in your land, and carry daily messages to every reader in the community; look at those harps of a thousand strings on which your great

guest has played so long and well, beginning, twenty-seven years ago, with the divine words, "What hath God wrought;" — these are his monument, seen of all men and in all places.

The Telegraph, Religion and Civilization! Of these I am to speak. But how can one adequately discuss them in the brief division of time allotted to me, in half a score of minutes tell of these three great subjects, which are really bounded, as the American boasted his country was, "on the east by the rising sun, on the north by the aurora borealis, on the west by the procession of the equinoxes, and on the south by the Day of Judgment! This would be as surprising as the wonders of the telegraph itself. One can give but a passing glance and be done.

As to the connection of the telegraph with the world's civilization, it is not difficult to see that its work and help have entered into our daily life, and mingled with the joys and sorrows, the success and failure of our existence, and penetrated the obscurest ramifications of our business. By it alone come to us the immediate news of the world — from Europe and from far Cathay, from the battle fields and parliaments of nations, from the islands of the sea and from the uttermost parts of the earth. Paris is flaming with the oil-fed fire of her insurgents, and we read the particulars while the fire is still burning. Space is annihilated! We are next door neighbors to the Czar of Russia, and we talk, face to face almost, with the Brother of the Sun, the celestial emperor of the "Heathen Chinee." Panting Time toils after the telegraph in vain, and the angel of the Apocalypse is the messenger of the lightning, who stands, one foot on Valencia Bay and one foot on Newfoundland, and cries — "Time shall be no more!"

The love and affection of father and child — or, rather, mother and child, for the mother always loves more than the father, and ye American women, strong-minded as ye are, with all your faults I love ye still — the love of mother and child, husband and wife, friend and friend, is ministered to by the telegraph, as it carries messages of recovery and prosperity, sends tidings of safe arrivals after stormy voyages, brings joyful news of escapes from moving accidents by flood and field.

Through it the mightiest interests of the commercial world are transacted; goods bought and sold, pushed forward or kept back, in that city in Europe or in this city in America. Grim-visaged war has discovered in it its most efficient auxiliary, great commanders have found much of their greatness in it, and the dignity of senates and senators has been ruffled by its revelations.

It is the deadly enemy of crime, and should be called the chief of all police. No fleeing of the criminal on iron roads or stealing to far off islands will evade its silent but terrible pursuit. It is the avenging deity of the Greeks, whose feet are shod with wool. The atmospheric reports which foretell the coming storm and arrange the flight of ships or the preparations of pleasure parties, are only possible by the telegraph. No fire can break forth in our city, no mob collect, no accident occur, no pugilist meet to do his beastly battle, in which the telegraph has not a hand, and is the head and front of the offending. In these and in a hundred other ways it has entered into our civilization, and penetrated our daily life, and become of the first necessity unto us.

Imagine some of the inventors of the olden time — Roger Bacon, Faust, Franklin, Fulton — revisiting the glimpses of the moon, and gazing at the telegraph as it did its wondrous work! How would the spirit of Guttenberg, who gave us movable types, the plague of ignorance, superstition and king-craft, rejoice at this

amazing method of transmitting the sense of his printed words. How would the soul of Franklin, who tore the sceptre from the king of Great Britain and the lightning from the skies, exult to behold what has come of his first little efforts to control the lightning. "Of what use is it?" they said to him, when he spoke of his electrical discoveries, and he answered, "Of what use is a child?" And here is the child of Franklin full grown in the man Morse. "What hath God wrought?"

How the spirits of these men who toiled so persistently to make reason and the kingdom of God prevail, would rejoice as they saw this triumph of the telegraph, with its thousand iron arms embracing the round globe, carrying the sigh of love and the song of pleasure, and the cry of pain and the threat of hate, and the order of arrest and the news of escape, and the command of war and the tidings of victory, its ocean cable flashing these thoughts from continent to continent, the hand of Morse grasping the brazen bolts of great Jove himself, and hurling them to bear his errands with more precision and a thousand fold more celerity than Mercury, the fabled messenger of the Grecian Gods. How they would gaze — those old inventors — at this last and fairest child of science, born of a Yankee, who outstrips Puck in his boast, "I'll put a girdle about the earth in forty minutes," and who gives a new reading to the old adage, necessity is the mother of invention, but a Yankee is its father.

With our Religion, also, as well as our Civilization, has the telegraph much to do. The telegraph itself is a preacher of righteousness, for it is day after day showing us the unity which should exist among men, and proving to us the brotherhood of humanity. It is blessed with the blessing of the peacemaker. More than once has it prevented war, and if it had been known and used in 1812, there could have been no armed contention between this land and the mother country.

Often and often has it been like the angels of the Incarnation, the bearer of glad tidings of Great joy, and in the struggles to introduce and establish it, in the unbelief and hostility its inventor and itself encountered, and in its perseverance in spite of all obstacles and its final triumph, it is the very counterpart of Christianity itself. It is a vivid illustration of the Christian's prayer, for what is prayer but the spiritual telegraph of the soul. We send our words to heaven as we send our messages to Valencia, without knowing in either case how they are transmitted; and if the Master now walked with us as He walked the plains of Shinar long ago, perhaps we would hear Him say, "Behold, the kingdom of heaven is like the lightning's message." The telegraph seems to be the fulfillment of prophecy, as the fiery iron horses of our railroads appear to fulfill these words of the prophet: "The chariots shall rage in the streets they shall jostle one against another in the broad ways — collisions on the Erie broad gauge, perhaps — they shall seem like torches, they shall run like the lightning." So the wide-extending, earth-embracing metal arms of the telegraph appear to make plain the language of David: "Their line is gone out to all the earth, and their words to the end of the world."

Is there not some hint, also, in the wise and patient way in which men have tracked and tamed this swift and subtle thing called lightning — so subtle as to strike to death, and leave no trace of its blow, so swift as to travel in a single second a distance almost equal to that which separates the earth and moon — is there not, I say, some hint in the mastering of this of the greatness that belongs to man, the immortality which is his?

When we behold this transmission of thought, winding along our valleys, outstripping our great hills and mountains, diving beneath our rivers, tracing the sinuosities of our highways and stretching away through the unseen caves of ocean, shall we not say, despite Darwin and his ape ancestry, "Thou, O Lord, hast made him but a little lower than the angels, and hast given him dominion over all the works of Thy hands."

And to end, let us hope that the further advance and the completion and perfection of all science will be but the proof and fulfillment of the word of God. That the sciences which are now apart, and often antagonistic, shall one great day be gathered together and held in by one Religion. That as a girl gathers the scattered pearls of her necklace on a new or firmer string, so may we look for the day when the Lord of all shall collect the divided sciences of the world on a new and strong binding of Religion, and say, as He draws each to its place, "This pearl is History, and this Art, and this pearl is Poetry, and this Law, and this Science, and all are united and held together in Religion," and the motto of our states has become the legend of all the sciences and arts of earth, "E pluribus unum" — many in one — and that one the love of God and the Religion of Christ.

After the cheers which followed Dr. Gallaher's address had subsided, Mr. Orton introduced Mr. Geo. K. Walcott of the New York staff of the operators of the Western Union Telegraph Company, as the representative of the operating craft in America.

#### ADDRESS OF G. K. WALCOTT, ESQ.

PROFESSOR MORSE: I am honored in representing to-night, the telegraph operators of the continent, and in uttering a few affectionate words to you in their behalf. It is a duty of which I have the right to be proud. The telegraphic staff of America, so largely represented to-night by delegates from every section of its wide area, are not excelled by the laborers of any other field for their skill, intelligence, and fidelity. To represent them is no light task and no mean honor.

When the movement for some public demonstration of our regard for you was first made, very few of us anticipated a response so prompt and so successful. But as the plans developed, every man connected with the craft seemed touched by a common enthusiasm, and as, in all parts of the country, the thousands of young men and women joyfully inclosed their dollar to send to Mr. Reid, every one inserted also an affectionate "God bless you," to Professor Morse. One of our number, in the inspiration of the act, accompanied his tribute with the following lines:

"Father of all the Telegraphs," of thee we say,  
That the great sun which rules each coming day,  
As round the world it hastens in its course,  
Gleams on Earth's wires the well loved name of Morse,  
Come, then, ye people whom his skill hath blessed,  
To him be now your gratitude expressed;  
And you, ye workers of the electric fires,  
Sending the world's wants out on the mystic wires,  
Let us unite and meet the generous call,  
To "hang his likeness on the Earth's green wall."

And there, to-day, in New York's beautiful Park it has been placed to speak of you when both we and you shall have passed away.

Your sun of life, Professor Morse, is now nearing the horizon ; with us — with most of us — it has yet to reach the zenith. Rest assured, however, that the work which you so long ago begun, and over which you have so devotedly watched, will be left in faithful hands ; that the work entrusted to us, and which has been faithfully performed during your life, even so will it be performed when you shall have passed away.

And now, sir, in behalf of the operators who are here assembled — in behalf of the thousands of operators throughout the United States who to-night are resting from their day's labor ; in behalf of the numerous operators who at this very moment are bending over their instruments, sending and receiving from all parts of the known world, over wires stretched through valleys, over the mountain tops, buried in the deep, deep sea, their messages of joy and sorrow ; in behalf of all these, and with no unmeaning phrase or empty salutation, with pride that I am honored thus to stand in their stead and represent their affection ; with gratitude that thus, in the closing years of a long and honored life, so many of us are permitted to meet and honor you, in the hope that many other years may yet be given you, and that each succeeding year will be brighter than its preceding one, and in token of our high regard and deep affection for you, I do now offer you this right hand, and may God bless you, and have you ever in His holy care and keeping.

Mr. Orton, in introducing the next speaker, said :

I would do injustice to myself and to you did I not acknowledge that to the gentleman who will now address you we owe very largely, if not wholly, the success of this day's ovation, and which you would probably never know did I not make the statement. I now introduce to you, Mr. Reid, who will address you on behalf of the ladies of the telegraph.

ADDRESS BY MR. J. D. REID.

I thank you for this hearty salutation. It comes to me as the interpretation of a mutual joy. I would, indeed, be wanting in ordinary sensibility did I not feel, as this day's delightful exercises close, a throb of genuine exultation. It means to me the termination of most delightful toil. It means to us all the fruition of a most filial duty. I feel proud, to-night, that while the eyes of this venerable man and father still gleam with much of their youthful fire, although the twilight radiance of a better world is fast silvering his head for its brighter glory, the sons and daughters of the telegraph have this day honored themselves in doing Professor Morse most deserved honor. I feel glad that there is one man whose fame is so complete and whose character is so assured that his compeers are not afraid to plant his monumental likeness on the earth's green wall, and place the laurel upon his living brow, which shall be green for evermore.

Before entering upon the special subject assigned me, you will bear with me while I make one or two necessary statements.

It is a duty I owe to truth and to myself that I now state, and which I do with much pleasure, not wholly free from envy, that the origin of the movement which culminated to-day is due to another and not to me. The first suggestion of a testimonial to Professor Morse on behalf of the telegraphic craft came from Mr. R.

B. Hoover, of Alleghany City, Pa., who now sits beside me, and his name must forever be connected with to-day's work. My part has been to give his desire direction and nurse it to success.

I hold in my hand a paper which I regard as one of the most wonderful of modern times. There, sir, is the record of a subscription, wholly spontaneous, covering sixty feet of solid nonpareil. It bears the name of almost every messenger, operator, and telegraphic officer on the continent. The British Provinces have vied with the United States in the heartiness of this tribute. It is a splendid record of love, which speaks with silent but most potential eloquence. As I look upon it to-night, and then on the fair host before me, I feel like saying, "If any man traduce the telegraphic craft of the American continent, shoot him on the spot." (Great applause.)

One word more. There sits the old builder who erected the base of the statue erected to-day. As the last block was settling to its place, he took from his pocket his companion testament, wrapped a New York morning paper around it and thrust it in. As the granite rested down to its place, it inclosed forever that which makes the humblest life monumental, and which Professor Morse will regard as no mean part of the base on which his effigy now rests.

And now let me perform my duty to the "Ladies of the Telegraph."

1. I claim that Professor Morse, though not a woman, has much of the womanly element in his nature. In this he resembles all truly great men. They carry the soft touch of the mother's hand upon them. Their minds are so formed that they clutch some darling thought, travail with it to the birth, and nurse it to fruition. So with the telegraph. It was the child of poverty and tears and suffering. But when born it was full of growth. There it stands, complete as at the first. In Mr. Morse's character and temperament, also, if I may be allowed to say so in his presence, there is a purity and delicacy which justify me in my claim. I know no higher praise, than to say of any man he carries his manhood with womanly grace.

In this connection I take the liberty of reading a letter, which the intimacy of my relations with Professor Morse permitted me to see, and which I used the freedom to retain. It is a proper part of this occasion:

3 DELAHAY STREET, GREAT GEORGE STREET, S. W., }  
LONDON, 10th May, 1871. }

MY DEAR SIR: I read with real gratification that a statue is about to be erected in New York, which, whilst it will perpetuate a faithful likeness of yourself, will be a monument of the great things which you, at the head of American telegraph engineers, have done for the science. Such a memorial will be of world-wide interest, for you belong, not to America alone, but to the world. While congratulating you on this mark of well-deserved respect and esteem on the part of American telegraphists, and regretting that it was not made more *international*, allow me to say that there are two memorials of you which will be of equal permanence. The one is in the hearts of those who know you personally, the other is in your well-known electro-magnetic telegraph, which will last as long as telegraphy itself lasts. Believe me, very truly yours,

ROBERT SABINE.

PROF. S. F. B. MORSE.

2. I claim that the telegraph itself possesses the characteristics of woman. And

I do her no dishonor when I place her with the telegraph in a most wonderful felicity of speech. I will not be so ungallant as to insist on any resemblance in its length. Yet it is true of both, that there is no speech nor language where their voice is not heard.

The telegraph is like woman, also, because along its slender wires passes the soft, warm current that keeps the world intact. What a miserable world would this be without woman and without wires!

Strange as it may seem, I was once mistaken for a poet, and asked to write a poem for a social union, whose membership was wholly of men. The incongruity made me serious, and thus I began :

I have often thought of Adam — lonely master of the world —  
 With his bare skin trousers dirty, and his unkempt hair uncurled.  
 And often wondered what our fate, had it been in the plan  
 That Eve should not have been woman, *but only another man!*  
 (Explosive laughter and cheers.)

'Tis a dismal contemplation, yet seems very clear to see,  
 That you could not have been you, and I could not have been me!  
 (Renewed laughter.)

No, sir. We need woman. We need our mothers and sisters and wives and daughters to keep us pure, and sweeten and ennoble our lives. How many a strong man, when sorrow weaves its dark cloud above him and the big tears gather in his eye, walks out into the dark night, and, beneath the peace of the stars, looks back on childhood's years, when all was radiance and joy. In that quiet hour you may hear him say :

My mother! Manhood's anxious brow  
 And sterner cares have long been mine;  
 Yet turn I to thee fondly now,  
 As when upon thy bosom's shrine  
 My infant fears were gently hushed to rest,  
 And thy soft murmured prayers my slumbers blest.

It seems forcing illustration to compare so sacred a relation with the telegraph, yet had that slender thread which bound the new world to the old during these last winter months broke, there would have been such grief that the basin of the Atlantic would have been needed to have held the world's tears.

3. I claim that the telegraph is essentially woman's friend. It unites earth's homes. It keeps the wandering child within call of the mother's voice. When joy or grief comes to any household, the parted ones can, by its mysterious bonds, laugh or weep together.

There seems to have been something of a feeling of this recognition of what the telegraph was to be to woman, when Miss Ellsworth ran to tell the news of the congressional aid which built the first line. Still more seemed it prophetic instinct when she claimed to send the first message. And now look on these bright faces before me, and tell me what the telegraph has done for them! Are you not proud, Professor Morse, that your family are not all boys? (cheers.) It is not my business here to speak of woman's rights, but here is a sphere pre-eminently hers. In its nature it benefits *her*. In her nature she becomes and adorns *it*. Take care, President Orton! Some time you may have to sleep — like Stanton — in the War Office, to keep a woman from taking the Presidential chair.

I feel proud to-night that I appointed the first woman who ever performed tele-

graphic duty on the American continent. I feel very glad also that the last dollar received for this day's ovations was given from the first month's salary of a noble-hearted girl!

But I must cease. I have but one word more. Professor Morse, I am supposed to-night to represent women. Now, my venerable friend, imagine me, for once, sweet of lip and bright of eye as ever flashed from beneath a curl or broke a heart. And let me give you, right in this presence, what none but woman can give, and which I give on her behalf, that symbol of love, that token of affection which is the most eloquent and purest of all earth's sounds—a kiss. (Uproarious laughter and cheers, which lasted for some time.) Ladies! you may pay me what I have now given for you at your leisure, and I will acknowledge all in the *Journal of the Telegraph!*

#### THE SONG.

One of the most charming features of the evening was the singing of Miss Antoinette Sterling, who sang the beautiful, never-fading ballad of "Auld Lang Syne." It was rendered with most felicitous pathos, expression and power, and added very largely to the delight of the occasion. Miss Sterling had to return to the platform in response to loud plaudits which rung out from the delighted audience, and which she gracefully acknowledged.

Governor Hoffman having been called from the city, Chief Judge Charles P. Daly, who had kindly consented to take his place, introduced Prof. Morse in the following appropriate address:

#### ADDRESS OF HON. CHARLES P. DALY.

I rejoice that the lateness of the hour enables me to compliment the occasion by compressing what I have to say within the limits of a telegraphic despatch. The oldest, the most widely diffused, and the most venerated of all statues among the Greeks, was the one erected to the god Hermes, the divinity, who, in the ancient mythology, was believed to facilitate human intercourse; whose protection and influence was necessary to successful journeying upon land or sea, and through whose instrumentality those who were widely apart were able to communicate with each other. A square marble pillar simply, surmounted by a human head, in all the public places and in most of the private dwellings of Athens, symbolized this divinity of an active migrating and commercial people.

The Romans, as you know, changed his name to Mercury, as he was the patron of merchants; and, with wings upon his cap and his feet, they represented him as the messenger of the gods—the great telegraphic operator of antiquity—the William Orton of Olympus. (Laughter.)

If we should, therefore, ladies and gentlemen, be told that we have, for the first time in this republican country, raised a statue to a living man, we may answer that we have only continued an ancient divinity, by preserving and perpetuating in the Central Park the form of our modern Hermes.

The direction of his mind toward an invention affecting every part of the globe,

came to Professor Morse from a paternal source, for *his* father was the father of American geography. His distinguished parent was the author, in 1784, of the first geography written and published upon the continent of America, to improve which he afterward made personal journeys over our then imperfectly developed country, that he might describe it more accurately in connection with the other parts of the earth, which resulted in a more enlarged work, of such surpassing excellence, that it was not only published in England, a rare honor in that day for an American book, but was also translated into the languages of France and Germany. We have, therefore, ladies and gentlemen, the spectacle of the father devoting his life to making mankind more accurately acquainted with the globe which they inhabit, and the son following it up by an invention to facilitate the intercourse of mankind over every part of it.

If I am right in my recollection, the name of Morse is derived from an old Celtic word signifying *hero*, and certainly none to whom the term is applied can be more deserving of a statue than one who lay a world under obligation by some great discovery or invention. Professor Morse is one of that illustrious body of human benefactors, and we do ourselves honor, and not him, by the memorial unveiled to-day; because we show that in his own age, during his life and in his own country, the greatness of his achievement was appreciated. So far as he is concerned we can do him no honor, for his name is embalmed in his invention, and will be as perpetual as civilization itself. (Cheers.)

I said, ladies and gentlemen, that I would make a telegraphic speech, but find that I am exceeding the boundary. So I will come at once to the pith and point of my address by saying that I introduce, with great pleasure, to this immense audience, Professor Morse.

As the venerable Professor arose to respond, the whole vast audience broke into a wild warm cheer of salutation. It was a moment of intense interest. The venerable presence, his quiet and refined bearing, the feeling of relationship between himself and the audience, the thought that this was to be the parting word, all rendered the scene solemn and stirring.

#### PROFESSOR MORSE'S ADDRESS.

*Friends and Children of the Telegraph:* When I was solicited to be present this evening, in compliance with the wishes of those who, with such zeal and success, responded to the suggestion of one of your number that a commemorative statue should be erected in our unrivaled Park, and which has this day been placed in position and unveiled, I hesitated to comply, not that I did not feel a wish in person to return to you my heartfelt thanks for this unique proof of your personal regard, but truly from a fear that I could use no terms which would adequately express my appreciation of your kindness.

Whatever I may say must fall far short of expressing the grateful

feelings, or conflicting emotions, which agitate me on an occasion so unexampled in the history of inventions. Gladly would I have shrunk from this public demonstration, were it not that my absence to-night, under the circumstances, might be construed into an apathy which I do not feel, and which your overpowering kindness would justly rebuke.

But where shall thanks begin, if, looking through all intervening instrumentalities, the Great Author of the gift of the telegraph to the world be not first of all acknowledged. "Not unto us, not unto us, but unto God be all the glory."

When I consider that He who rules supreme over the ways and destinies of man, often makes use of the feeblest instruments to accomplish His benevolent purposes to man, as if, by grandest contrast, to point the mind with more marked effect to Him as their author, I cheerfully take my place on the lowest seat at His footstool.

It is His pleasure, however, to work by human instrumentality. You have chosen to impersonate, in the statue this day erected, the invention rather than the inventor, and it is of no small significance that in the attitude so well chosen, and so admirably executed by the talented young sculptor whose work presents him so prominently and so favorably before you, he has given permanence to that pregnant and just sentence which was the first public utterance of the telegraph: "What hath God wrought."

Little did that young friend, twenty-seven years ago (and whose presence here to-night I most cordially greet), in the artless innocence of a devout heart, dream of the far reaching effect of that first telegram which she indited, upon him who transmitted it. While as if by inspiration she struck the key-note of the invention, placing its real author upon the throne, it at the same time struck a responding chord within this bosom which still vibrates to temper with its ringing note, any proud aspiration of a selfishness that, unchecked, might be disposed to exclaim: "Is not this great Babylon which I have built, by the might of my power?" Yes, little did that young friend dream that she had thus furnished me a substantial retreat from the conflicting elements, which public and private praise at home, and the gratulations of foreign nations, stir into activity in the human heart unless is kept in just prominence the Supreme Author of the gift.

You have chosen to impersonate in my humble effigy, an invention which, cradled upon the ocean, had its birth in an American ship. It was nursed and cherished not so much from personal as from patriotic pride. Forecasting its future, even at its birth, my most powerful stimulus to perseverance through all the perils and trials of its early days—

and they were neither few nor insignificant—was the thought that it must inevitably be world-wide in its application, and moreover, that it would everywhere be hailed as a grateful American gift to the nations. It is in this aspect of the present occasion that I look upon your proceedings as intended, not so much as homage to an individual as to the invention “whose lines” from America “have gone out through all the earth, and their words to the end of the world.”

In the carrying out of any plan of improvement, however grand or feasible, no single individual could possibly accomplish it without the aid of others. We are, none of us, so powerful that we can dispense with the assistance, in various departments of the work, of those whose experience and knowledge must supply the needed aid of their expertness. It is not sufficient that a brilliant project be proposed, that its modes of accomplishment are foreseen and properly devised; there are, in every part of the enterprise, other minds, and other agencies to be consulted for information and counsel to perfect the whole plan. The Chief Justice, in delivering the decision of the Supreme Court, says, “it can make no difference whether he” (the inventor) “derives his information from books or from conversation with men skilled in the science,” and “the fact that Morse sought and obtained the necessary information and counsel from the best sources, and acted upon it, neither impairs his rights as an inventor nor detracts from his merits.” The inventor must seek and employ the skilled mechanic in his workshop, to put the invention into practical form, and for this purpose some pecuniary means are required, as well as mechanical skill. Both these were at hand. Alfred Vail, of Morristown, New Jersey, with his father and brother, came to the help of the unclothed infant, and with their funds, and mechanical skill, put it into a condition creditably to appear before the Congress of the nation. To these New Jersey friends is due the first important aid in the progress of the invention. Aided, also, by the talent and scientific skill of Prof. Gale, my esteemed colleague in the University, the Telegraph appeared in Washington in 1838, a suppliant for the means to demonstrate its power. To the Hon. F. O. J. Smith, then Chairman of the House Committee of Commerce, belongs the credit of a just appreciation of the new invention, and of a zealous advocacy of an experimental essay and the inditing of an admirably written report in its favor, signed by every member of the Committee. It was, nevertheless, thrown aside among the unfinished business of the session; and now commenced days of trial. Years of delay were yet before it. It was not till 1842 that it was again submitted to Congress. Ferris, and Kennedy, and Winthrop, and Aycrigg, McClay,

and Wood, and many others in the House, far-seeing statesmen, rallied to its support, and at length, by a bare majority, the bill that was necessary was carried through the ordinary forms, and sent to the Senate, where it met with no opposition and was passed the last night of the session.

Now commenced a new series of trials, to which it is unnecessary here more than to allude.

To Ezra Cornell, whose noble benefactions to his State and the country have placed his name, by the side of Cooper and Peabody, high on the roll of public benefactors, is due the credit of early and effective aid in the superintendence and erection of the first public line of telegraph ever established.

Notwithstanding the success of the experimental essay, another important step was necessary ere the invention could demonstrate its vast utility. It was not until the skill and experience of the best Postmaster-General that had ever held that office, the Hon. Amos Kendall, were brought into requisition, that, amid many discouragements, the various companies were organized, and in the hands of such enterprising men as Sibley, who united the Atlantic and Pacific, and Swain, and Wade, and a host of determined men whose names would read like the pages of a dictionary, this vast country, from the northern boundaries of Canada to the Gulf of Mexico, and from the shores of the Atlantic to the Pacific, were webbed with telegraphic wires. (Applause.)

Another grand stride was yet to be taken ere international communication could be established.

In October, 1842, the first submarine telegraph cable was laid by me in one moonlight night, in the harbor of this city, which proved experimentally the practicability of submarine telegraphy, and from the result of this success I ventured, the year after, in a letter to the Secretary of the Treasury, to predict the certainty of an Atlantic Telegraph. It was then believed to be a visionary dream; and had the individual carrying out of so bold an enterprise depended upon me alone, it might still have been a dream. But at this crisis another mind was touched with the necessary enthusiasm, admirably fitted in every particular, by indomitable energy and perseverance and foresight, as well as financial skill and influence, to undertake the novel attempt. To Cyrus W. Field, more than to any other individual, belongs the honor of carrying to completion this great undertaking. Associating with himself Cooper, and Taylor, and Roberts, and White, and Hunt, and Dudley Field, and others on this side the Atlantic, and, two years later, Peabody, and Brett, and Brooking, and Lamson, and Gurney, and Morgan,

and others in Great Britain, making the ocean but an insignificant ferry by his repeated crossings, undaunted by temporary failures and unforeseen accidents, he rested not till Britain and America were united in telegraphic bonds—the Old and the New World in instantaneous communication. (Cheers.)

If modern progress in the arts and sciences have given unprecedented facilities for the diffusion of the Telegraph throughout the world, back of all are the former discoveries and inventions of the scientific minds of Europe and America, Volta, Oersted, Arago, Schweigger, Gauss and Weber, Steinheil, Faraday, Daniell and Grove, and a host of brilliant minds in Europe, with Professors Dana and Henry, in our own country, in the past, and the more modern discoveries and inventions of Thomson, of Whitehouse, of Cooke, of Varley, of Glass, and Canning, and numerous others. These all, in a greater or less degree, contributed to the grand result.

There is not a name I have mentioned, and many whom I have not mentioned, whose career in science or experience in mechanical and engineering and nautical tactics, or in financial practice, might not be the theme of volumes, rather than of brief mention in an ephemeral address.

To-night you have before you a sublime proof of the grand progress of the Telegraph in its march round the globe.

It is but a few days since that our veritable antipodes became telegraphically united to us. We can speak to and receive an answer in a few seconds of time from Hong Kong, in China, where ten o'clock to-night here is ten o'clock in the day there, and it is perhaps a debatable question whether their ten o'clock is ten to-day or ten to-morrow. China and New York are in interlocutory communication. We know the fact, but can imagination realize the fact? But I must not further trespass on your patience at this late hour.

I cannot close without the expression of my cordial thanks to my long-known, long-tried and honored friend Reid, whose unwearied labors early contributed so effectively to the establishment of telegraph lines, and who in a special manner, as Chairman of your Memorial Fund, has so faithfully, and successfully, and admirably carried to completion your flattering design.

To the eminent Governors of this State, and the State of Massachusetts, who have given to this demonstration their honored presence; to my excellent friend the distinguished orator of the day; to the Mayor and city authorities of New York; to the Park Commissioners; to the officers and managers of the various, and even rival telegraph

companies, who have so cordially united on this occasion; to the numerous citizens, ladies and gentlemen; and, though last, not least, to every one of my large and increasing family of telegraph children, who have honored me with the proud title of *Father*, I tender my cordial thanks. (Applause.)

At the close of Professor Morse's address, which was listened to throughout with the deepest interest, and was delivered in a clear, steady voice, in which there was no evidence of feebleness or decay, on invitation from Mr. Orton, Rev. Dr. Ormiston uttered the benedictory prayer, and the services ended.

When the exercises closed, a large number of persons availed themselves of the opportunity to shake hands with Mr. Morse, and near midnight the Academy doors were closed and the great day ended. It was a remarkable circumstance that near midnight, as the great audience were leaving the Academy, a magnificent auroral display appeared in the sky, as if the elements were in joyous sympathy with the occasion, and lighted their electric fires on that tranquil summer's night to testify their approbation.

## CHAPTER LIII.

## DEATH.

"Death should come  
Gently to one of gentle mould, like thee.  
As light winds, wandering through groves of bloom,  
Detach the delicate blossoms from the tree."

—*Bryant.*

WHEN Professor Morse appeared at the reception at the Academy of Music, New York, he had passed his eightieth year. His natural powers were still vigorous. There was still upon him much of the bloom and vivacity of life. His fourscore years lay lightly and gracefully upon him. His heart was young and his eye undimmed. Yet as he bade his telegraphic children good night after, with clear and steady voice, delivering his address, his life seemed complete. The reception services had the appearance and the impress of a farewell. That thought pervaded the vast assembly, found expression in the remark of the presiding officer, and gave the occasion an impressiveness never to be forgotten. A few months after that event his sole surviving brother, Sidney E. Morse, died. This visibly affected him. From that date it was easily perceivable that his own vigor declined. He was seldom afterward seen out of his own home. He was subject to neuralgia of the head and the attacks became more and more severe.

On one occasion only did he again appear in public. It was on the occasion of the inauguration of the statue of Benjamin Franklin in Printing House Square in front of the City Hall, New York, January 17, 1872. With evident propriety he had been selected as the one living man, above all others, to unveil the statue of the man who, a century before, had caught the lightning and revealed its nature. The day was bitterly cold. As he ascended the steps leading to the plat-

form, and his venerable form rose before the immense multitude, while his long white hair was blown about by the keen winter wind, cheers rent the air. The sight was most impressive. No two men had more deeply engraven their names on the history of human progress. No two forms could more properly stand, as they always will in the memory of man, side by side. Professor Morse was ill and weak and his voice was tremulous as he spoke :

FELLOW CITIZENS: I esteem it one of my highest honors that I should have been designated to perform the office of unveiling this day the fine statue of our illustrious and immortal Franklin. When requested to accept this duty I was confined to my bed. But I could not refuse, and I said "yes, if I have to be lifted to the spot." Franklin needs no eulogy from me. No one has more reason to venerate his name than myself. May his illustrious example of devotion to the interest of universal humanity be the seed of further fruit for the good of the world.

Having uttered these words he was driven home to die.

There can be little doubt but that the exposure of his head during the ceremony of unveiling the Franklin statue aggravated the neuralgia under which he had been suffering. Great pain ensued under which he gradually succumbed. He bore it patiently, however, and now looked out on the future with the sublime faith which had always characterized him. It now shone with gentle but intelligent lustre as he exclaimed to his pastor, Rev. Dr. William Adams, not long before the lamp of his life went out, "Doctor, the best is yet to come!"

It is not necessary that all the details concerning the days preceding his decease be given, and for which he had for some time been in quiet, cheerful, undisturbed expectation. A few weeks before that event I met him in his elegant study. He was reading with moist eye and absorbed interest, Hanna's life of Christ. He was filling his heart with the glory of a life which had beautified, sweetened, and refined his own.

As the light of his life began rapidly to wane, he was attended with the most affectionate assiduity by the members of the family, who kept up a most loving correspondence with those who could not be present. These are full of that sacred tenderness which makes publication, notwithstanding all their purity and beauty, seem indelicate. A few ex-

tracts we are permitted to give. One of these, dated March 30, has the following :

He is fast passing away. It is touching to see him, so still—so unconscious of all that is passing—waiting for death. He has suffered much with neuralgia of the head, increased of late by a miserable pamphlet by \*. Poor, dear man! strange that they could not leave him in peace in his old age. But now all sorrow is forgotten. He lies like a quiet infant. Heaven is opening to him with its peace and perfect rest. The Doctor calls his sickness "exhaustion of the brain." He looks very handsome. The light of Heaven seems shining on his beautiful eyes.

Yesterday morning was Eddie's (his youngest son) birthday and he brightened up and kissed him repeatedly. A sketch by his niece, Miss Mary Goodrich, for Eddie, was brought into the room, when he at once called for his spectacles, looked at it attentively, and expressed his admiration. Almost the last thing he noticed was something connected with the art he loved.

*Monday, April 1.*—This morning he seemed for a few moments quite bright, looked round, noticed Mrs. Morse, put up his mouth to be kissed and stroked her face in his affectionate way. Then he kissed Eddie. He knew us all. But it was the last flicker of conscious life. He soon sunk into slumber and lay calm and beautiful as an infant. He will soon enter his rest "and be with Christ." The expression of his face is peaceful and heavenly. He seems already to belong to the other and better world—not to this.

Shortly before his decease, as one of the physicians tapped upon his breast, a gleam of consciousness induced the remark: "This is the way we telegraph, Professor." "Very good, very good," was the reply as if in pleased recognition of the pleasantry of the allusion. These were the last words he uttered.

"A mirthful man he was—the snows of age  
Fell, but they did not chill him. Gaiety,  
Even in life's closing, touched his teeming brain  
With such bright visions as the setting sun  
Raises in front of some hoar glacier  
Painting the bleak ice with a thousand hues."

At last the pulse which for more than eighty years had maintained its beat ceased. He died as dies the summer day in peacefulness and

beauty. In the grief which its announcement brought to the writer of this he wrote in the *Journal of the Telegraph* as follows :

UNTO THIS LAST.

In the ripeness and mellow sunshine of the end of an honored and protracted life, Professor Morse, the father of the American telegraph system, our own beloved friend and father, has gone to his rest. The telegraph, the child of his own brain, has long since whispered to every home in all the civilized world that the great inventor has passed away. Men as they pass each other on the street say, with the subdued voice of personal sorrow, "Morse is dead." Yet to us he lives. If he is dead it is only to those who did not know him.

It is not the habit of ardent affection to be garrulous in the excitement of such an occasion as this. It would fain gaze on the dead face in silence. The pen, conscious of its weakness, hesitates in its work of endeavoring to reveal that which the heart can alone interpret, in a language sacred to itself, and by tears no eye may ever see. For such reason, we, who have so much enjoyed the sweetness of the presence of this venerable man, now so calm in his last sacred sleep; to whom he often came with his cheerful and gentle ways, as to a son, so confiding of his heart's tenderest thoughts, so free in the expression of his hopes of the life beyond, find difficulty in making the necessary record of his decease. We can only tell what the whole world has already known by the everywhere present wires that on the evening of Tuesday, April 2, Professor Morse, in the beautiful serenity of christian hope, after a life extended beyond fourscore years, folded his hands upon his breast, and bade the earth, and generation, and nation he had honored, farewell.

Among the many public notices of Prof. Morse's death, the following from the New York *Evening Post* struck us as peculiarly felicitous and true :

The name of Morse will always stand in the foremost rank of the great inventors, each of whom has changed the face of society and given a new direction to the growth of civilization by the application to the arts of one great thought; that it will always be read, side by side with those of Gutenberg and Schœffer, or Watt and Fulton. This eminence he fairly earned by one splendid invention. But none who knew the man will be satisfied to let this world-wide and forever-growing monument be the sole record of his greatness.

Had he never thought of the telegraph he would still receive, in

death, the highest honors, friendship and admiration can offer to distinguished and varied abilities, associated with a noble character. In early life he showed the genius of a truly great artist. In after years he exercised all the powers of a masterly scientific investigator. Throughout his career he was eminent for the loftiness of his aims, for his resolute faith in the strength of truth, for his capacity to endure and to wait, and for his fidelity alike to his convictions and to his friends. His intellectual eminence was limited to no one branch of human effort, but in the judgment of men who knew him best, he had endowments which might have made him, had he not been the chief of inventors, the most powerful of advocates, the boldest and most effective of artists, the most discerning of scientific physicians, or an administrative officer worthy of the highest place and of the best days in American history.

We believe this to be a just estimate of Mr. Morse's greatness, and yet never was greatness veiled beneath so simple and unobtrusive and unasserting a form.

#### ACTION OF CONGRESS.

In the House of Representatives Mr. Cox, of New York city, offered a concurrent resolution, which was agreed to, declaring that Congress has heard with profound regret of the death of Professor Morse, whose distinguished and varied abilities have contributed more than those of any other person to the development and progress of the practical arts, and that his purity of private life, his loftiness of scientific aims and his resolute faith in truth render it highly proper that the Representatives and Senators should solemnly testify to his worth and greatness.

Hon. Fernando Wood, of New York city, gave a brief history of the legislation under which Professor Morse's invention was practically tested in the United States. He (Mr. Wood) was a member of the Twenty-seventh Congress, to which Professor Morse made application for aid to test his invention. It was in the winter of 1842 and 1843 when Mr. Morse came to Washington in a state of pecuniary dependence, broken down by disappointment and almost entirely discouraged. With great difficulty the proposition appropriating \$30,000 was got through the House by a vote of 89 to 87. It was with great pride that he (Mr. Wood) found his name recorded in the affirmative, and he was to-day the only living member of either house who voted in favor of

the bill. With that small appropriation the first wires were stretched between Baltimore and Washington, which tested and proved the entire practicability of the invention which Professor Morse had struggled so long to make a practical success. Mr. Wood closed his remarks as follows :

Aside from his intellectual endowments, Professor Morse was no ordinary man. I have seen him in the palace of the Tuilleries, and at the court of St. James, surrounded and admired by royalty, the same gentle and modest citizen that he was when he trod the streets of Washington poor and obscure. He has bequeathed to the world his own monument that will live through all ages. Among the benefactors of mankind he will stand the highest and greatest of all.

#### STATE OF NEW YORK.

ALBANY, *April 6.*—The Senate Committee to draw up resolutions relative to the death of Prof. S. F. B. Morse, reported the following :

*Resolved,* That the Senate have heard with profound regret of the death of Samuel F. B. Morse, whose achievement of science in rendering the electric telegraph of practical usefulness has constituted him one of the greatest benefactors of the human race, and that they recognize this official expression as eminently due to his memory.

*Resolved,* That we remember with pride, that, while a citizen of this State, his thought conceived and skill formed the art which has marked a new era in the progress of civilization.

*Resolved,* That the career of Prof. Morse through all the discouragements which beset him is the pride of this his adopted State, and that these resolutions be entered upon the Journal of the Senate, and that a copy thereof, duly certified, be transmitted to the family of the deceased.

WM. B. WOODIN,  
H. C. MURPHY,  
D. P. WOOD,

*Committee.*

The resolutions and similar ones by the legislature were unanimously adopted.

STATE OF NEW YORK, EXECUTIVE CHAMBER, }  
ALBANY, *April 3, 1872.* }

*To the Legislature :*

The telegraph to-day announces the death of its inventor, Samuel F.

B. Morse. Born in Massachusetts, his home has for many years of his eventful life been New York. His fame belongs to neither, but to the country and to the world; yet it seems fitting that this great State, in which he lived and died, should be the first to pay appropriate honors to his memory. Living, he received from governments everywhere more public honors than were ever paid to any American private citizen; dead, let all the people pay homage to his name.

#### MASSACHUSETTS.

*Resolved,* That the Legislature of Massachusetts has learned, with profound regret, of the decease of Samuel Finley Breese Morse, the distinguished inventor of that wonderful system of electric telegraphy which is conferring unspeakable blessings upon the whole human family.

*Resolved,* That, born upon our soil, and under the very shadow of this capitol, his name will ever be associated by the people of this State with that of another of her illustrious sons, who demonstrated to the world the existence of that mighty but subtle agency, which the genius and skill of his peer and successor has brought under subjection and made subservient to the will of man.

*Resolved,* That with the regrets his death has occasioned are mingled emotions of joy and gratitude that he was permitted by Him in whose hands are the issues of life and death, to attain to the full age allotted to man upon the earth, and that he was thereby enabled to witness the complete triumph of the work to which his life was consecrated—a privilege which has seldom been enjoyed by the world's greatest benefactors.

*Resolved,* That his Excellency the Governor be requested to transmit a copy of these resolutions to the family of the deceased, with the assurance of the sympathy of the people of this Commonwealth in the loss they have sustained.

#### THE WESTERN UNION TELEGRAPH COMPANY.

NEW YORK, *April 3, 1872.*—A meeting of the Board of Directors of the Western Union Telegraph Company was held at the office of the Company, 145 Broadway, to-day, to take action relative to the death of Professor Morse. A committee consisting of Ezra Cornell, Hiram Sibley, Sir Hugh Allan, Cambridge Livingston, Dr. Norvin Green, Edward S. Sanford and William Orton, were appointed to prepare suitable resolutions expressive of the feelings of the Company at the decease of Professor Morse. The following resolutions were adopted:

*Whereas*, The Board of Directors of the Western Union Telegraph Company have learned of the death of Professor Samuel F. B. Morse, the father of the American telegraph system, whose name has become justly identified with the establishment of the telegraph throughout the world, therefore,

*Resolved*, That we mourn with the entire civilized world the loss of one of the great benefactors of the age, and we grieve for a friend and associate whose purity and simplicity of character and kind and gentle nature have endeared him to our memories. While his great achievement will continue to bless and benefit the enlightened races of mankind, the memory of his personal worth will ever remain in the hearts of all who have had the good fortune to know him.

*Resolved*, That we unite in the universal expression of sorrow which is this day being transmitted to and echoed back from all quarters of the earth by means of his transcendent achievement; and we hereby tender our earnest sympathy to the family of our friend.

*Resolved*, That this Board will attend Professor Morse's funeral in a body.

The following circular was issued :

OFFICIAL.

NEW YORK, *April 4, 1872.*—To all telegraph Superintendents and Managers in the United States and Canada. All that is mortal of the venerable and venerated father of the American telegraphic system, Prof. Samuel F. B. Morse, will be consigned to the grave on Friday, April 5th. No expression or outward exhibition can give fitting evidence of the sorrow which his death has occasioned among those connected with the telegraph, or within the reach of its influence, not only in America, but throughout the world, but in token of respect to his memory, some symbol of mourning should be exhibited at all telegraph stations on the day of burial. A simple rosette, or a bit of crape will suffice.

WILLIAM ORTON, *President.*

At a meeting of the Directors of the New York, Newfoundland and London Telegraph Company, similar resolutions were passed.

OPERATORS' MEETINGS.

These were numerous throughout the country and were participated in by representatives from all telegraph companies. At Nashville, Tenn., New Orleans, La., Louisville, Ky., Cincinnati, O., St. Louis, Mo.,

and numerous other places, resolutions of much feeling and eloquence were passed.

NATIONAL ACADEMY OF DESIGN.

The National Academy of Design of New York passed the following resolutions :

*Resolved*, That, in common with the rest of the world, it becomes our painful duty to recognize the passing away from among us of Prof. Samuel F. B. Morse, our first President—we may almost say the very founder of our institution—a man endeared to many of us by still closer personal ties, the last of a trio of painters from whom have preceded during the past century the three perhaps most remarkable inventions of the age, in their wide-spread and still spreading influence upon mankind, for Fulton, Daguerre and Morse are names which will hereafter associate themselves in the minds of men to a very remote stretch of time. He would be bold indeed who should venture to predict the enormous result that may yet grow out of these seeds even beyond their present development, or attempt to unveil all the possibilities of growth that yet be hid in the womb of time. We cannot but feel some pride in the share which study of our common profession must have had in developing those faculties with which he wrought the great telegraphic plan that makes his name forever famous. And though he has secured such a lasting name by other than the pursuit of that art which he set out in life, had he confined himself thereto, there is little doubt among the best judges in art matters but that he would even there have left his among the roll of names that were not born to die. We desire to mingle our sorrows with those who were nearest and dearest to him in sympathy and condolence with their grief, and may he rest in peace.

*Resolved*, That we will attend the funeral of our deceased brother academician, and that these resolutions be entered on the minutes, and a copy of them be transmitted to the family.

NEW YORK ARTISTS' FUND SOCIETY.

The Artists' Fund Society adopted the following tribute to his memory :

NEW YORK, *April 9, 1872*.—The members of the Artists' Fund Society, called to say a last farewell to their reverend friend and benefactor, Prof. S. F. B. Morse, would express their deep sorrow, relieved by a kind of sacred joy, when they remember his pure and faithful charac-

ter, his successful labors for the arts of our country, his great achievement as an inventor, his Christian example, his happy and completely finished life, and his peaceful, triumphant death. Early devoted to art, he brought to its pursuit a cultivated mind, conscientious study, and sound practice, leaving works of high excellence, and proving that he was only withdrawn from the greatest success as an artist by the absorbing claims of his famed invention.

We are indebted to him for the foundation of the Academy of Design, for his firm championship of its independence, and for an example of a solid, simple and permanent method of execution in harmony with the works of the great masters of painting. We recall with affection his parental kindness as a master in art, his never-failing interest in all that pertained to our profession, his wise counsel to our Society, and his generous gift to its fund. We offer our earnest sympathies to his bereaved family, and invoke for them the highest consolations. By order of the Board of Control.

JOHN F. KENSETT, *President.*

ALEXANDER LAWRIE, *Secretary.*

#### CHAMBER OF COMMERCE.

The Chamber of Commerce of New York passed the following resolution :

*Resolved,* That the members of this Chamber have learned with sorrow and regret of the death of Professor Samuel F. B. Morse, a gentleman whose name has become cosmopolitan, and whose great scientific invention — "wrought by God," as he gratefully acknowledged — has electrified the whole world by giving to our globe a nervous system of far-reaching and quick intelligence which has astonished mankind by its marvelous activity and power in the dissemination of ideas and the advancement of commerce and civilization. As an American citizen and inventor of eminence, we will cherish and respect his memory. His fame belongs to all nations, and will shine forth illustriously in the galaxy of man's great benefactors. As representatives of mercantile interests, which have so largely reaped the benefits of his skill and perseverance we acknowledge our indebtedness to him, and we hereby respectfully tender to his widow and family our sincere sympathies at this time of their bereavement.

#### NATIONAL MEMORIAL CELEBRATION.

WASHINGTON, *April 4, 1872.* — A large meeting of citizens of Wash-

ington was held here this evening to take action in relation to the death of the late Professor Samuel F. B. Morse. Arrangements were made to obtain the use of the hall of the House of Representatives for imposing memorial services. The Secretary of the Navy offered the Marine Band for the occasion, and the Washington Choral Society volunteered their services.

The following resolution was unanimously adopted :

*Resolved*, That the people of the United States be requested to meet in their respective cities, towns and villages on the evening of the 16th day of April, at eight o'clock, to give expression to the loss sustained by the world in the death of Professor Samuel Finley Breese Morse, and to hold simultaneous communication by telegraph with the assembly of the people's representatives and the citizens of Washington, convened for the like purpose in the capital of the nation.

On the 16th of April, a memorial service was held in the Hall of the House of Representatives. A crowded audience attended. Speaker Blaine presided, assisted by Vice-President Colfax. President Grant and cabinet, the Judges of the Supreme Court, together with the Governors of many of the States, occupied seats on the inner semicircle. In front of the main gallery was an oil painting of Professor Morse, and around the outer frame of the portrait was the words of the first message, "What hath God wrought."

After prayer by Rev. Dr. Adams, of New York, addresses were delivered by Speaker Blaine and by Hon. J. W. Patterson, of New Hampshire; Hon. Fernando Wood, of New York; Hon. J. A. Garfield, of Ohio; Hon. S. S. Cox, of New York; Hon. D. W. Voorhes, of Indiana, and Hon. N. P. Banks, of Massachusetts.

Messages from all parts of the world were also read by Cyrus W. Field, Esq., paying warm tribute to the memory of the deceased. Similar meetings were held in all the chief cities, to whom the free use of the telegraph lines were given for mutual direct communication between each other.

The Common Councils of Brooklyn, Troy, and other cities passed eloquent tributes to Prof. Morse's memory, and appointed delegates to attend the funeral services.

## PROFESSOR MORSE'S FUNERAL.

The funeral services in honor of Prof. Morse were held Friday, April 5th, at Madison Square Presbyterian Church, New York, preceded by a prayer at the house in West Twenty-second street, where only the relatives and intimate friends were in attendance. The communion table was covered with the choicest flowers arranged as crosses, crowns, and wreaths, one beautiful cross of rare, white blossoms, being a tribute from the young ladies of Rutgers' College.

At 11 o'clock the funeral procession entered the church in the following order :

Rev. Wm. Adams, D. D. ;

Rev. Francis B. Wheeler, of Poughkeepsie, Pastor of the church which Professor Morse attended when at Poughkeepsie.

Corpse.

Pall-Bearers :

William Orton,  
Daniel Huntington,  
Peter Cooper,  
Cambridge Livingston,

Cyrus W. Field,  
Charles Butler,  
John A. Dix,  
Ezra Cornell.

The family.

Governor Hoffman and Staff.

Members of the Legislature.

Directors of the New York, Newfoundland and London Telegraph Company.

Directors of the Western Union Telegraph Company and officers and operators.

Members of the Academy of Design.

Members of the Evangelical Alliance.

Members of the Chamber of Commerce.

Members of the Association for the Advancement of Science and Art.

Members of the New York Stock Exchange.

Delegations from the Common Councils of New York, Brooklyn, and Poughkeepsie, and many of the Yale Alumni.

The Legislative Committee, comprising Messrs. James W. Husted, L. Bradford Prince, James C. Osgood, Samuel J. Tilden, Severn D. Moulton and John Simpson.

The casket was partly opened, exposing the features of the deceased. Flowers were strewn over it, and in the center was the following inscription :

SAMUEL F. B. MORSE,  
Born April 27, 1791,  
Died April 2, 1872.

Dr. Prime wrote of the dead inventor :

Morse in his coffin is a recollection never to fade. He lay like an ancient prophet or sage, such as the old masters painted for Abraham or Isaiah. His finely chiselled features, classic in their mould and majestic in repose; his white hair and flowing beard; the death calm upon the brow that for eighty years had concealed a teeming brain, and that placid beauty that lingers upon the face of the righteous dead, as if the freed spirit had left a smile upon its forsaken home—these are the memories that remain of the most illustrious and honored private citizen that the new world has yet given to mankind.

After the audience was seated the choir sung the hymn "Asleep in Jesus, blessed sleep," both words and music being favorites of the deceased. The following address was then delivered by Dr. William Adams :

#### ADDRESS.

Two days ago a funeral procession filed through our streets with muffled drum, flags draped with black, and every sign of public woe, bearing the remains of one whom we all loved and honored to their last resting-place. As the pageant went by, men said such is the end—life all over, and like a vapor vanished away. Not so. The fidelity and loyalty of the Christian soldier are not lost and cannot pass away, but have entered as permanent properties into the life and history of his country.

Pre-eminently true is this of the distinguished man, whose death has brought us together at this hour. If it be true that no man dieth to himself, emphatically true is it, that the death of such a man is like the fall of an oak in a grove, creating a wide chasm, and bearing many vines and trees and boughs with it to the ground. Deep as are the sorrows in the home circle, and in private intimacies, occasioned by this event, his death cannot be regarded but as a public bereavement. We sorrow not alone; millions have shared the shock. One is awed by the thought that no sooner had death come to this dear and honored friend, than by means of the instrument which his genius had perfected, the intelligence was sobbed beneath the billows of the western ocean, across

the continents eastward and westward, and simultaneously was the topic of remark and the occasion of grief in London, Paris, Rome, Vienna, Berlin, St. Petersburg, Syria, Egypt, India, China, Australia, Japan, and in every part of the civilized world. We say, in familiar phrase, he is dead; but in the best sense he lives still, and will live forever, in forms of usefulness which are intimately related to the concord, the welfare, and the advancement of the whole human race.

The highest forms of heroism are those with which good men devote themselves with patient toil and self-sacrifice, to the accomplishment of objects which look only to the welfare of the race. Milton, in his day, mourned that the world was so intent on admiring its military destroyers, that it had no time to honor its benefactors, who were laying the foundations of human improvement. Seldom does it occur that inventors are permitted to see and enjoy the full results of their success. Like others of his class, Professor Morse, at the beginning of his experiments, was no stranger to trial and opposition. Those who saw him in that upper turreted room of the University, where, like the "Tuscan artist on the top of Fesole," he gave himself to midnight thought and study, will never forget the patience of his faith and hope. To him was allotted the rare privilege of seeing the complete success, and enjoying the full honor and reward of his great invention. He lived to be crowned with more honors and insignia from the different governments and crowned heads of the world, than ever were allotted to any citizen of our republic. Merit, sooner or later, draws lustre from reproach; as the clouds, which in the morning veil the sun and darken its early career, arrange themselves at the hour of its setting, taking and reflecting glory from its descending rays.

A few days before his decease, in the privacy of his chamber, I spoke to him of the great goodness of God to him in his remarkable life. "Yes, so good!" was his quick response, "and the best part of all is yet to come." Spared to see more than eighty years, he saw none of the infirmities of age either in mind or body. His delicate taste, his love for the beautiful, his fondness for the fine arts, his sound judgment, his intellectual activity, his public spirit, his intense interest in all which concerned the welfare and decoration of the city, his earnest advocacy of Christian liberty throughout the world—continued unimpaired to the last. With perfect health, in full possession of every faculty, urbane and courteous, there was no infelicity of temper or manner, such as sometimes befalls extreme age. Surrounded by a young family, he was their genial companion and friend, sympathising in all those pleasures and innocent things which give a charm to home.

The greatness which consorted with sages was associated with that simplicity, which attracted little children to his arms. In particular qualities he had many equals and superiors, but in that rare combination of excellences which, like the harmony of colors in a finished picture, made him what he was, he was unrivaled. So that for these many years he has seemed to me a personification of manly beauty, haloed with the glory which God gives to the hoary head, found in the way of righteousness.

So I come to speak more distinctly of our friend as a disciple of Jesus Christ. Peculiar opportunities have I enjoyed for forming a judgment of his Christian character. Religion with him was something more than a thin varnish over his own pictures, designed to bring out their light and shade. It was wrought into the very substance of his soul and life. His convictions of truth were very discriminating. He was a proficient in theological literature. As a worshipper in the house of God, he evinced that magnetic sympathy with the preacher which every pastor feels, though he cannot describe. Especially did he kindle into enthusiasm at all words which aimed to honor and glorify his divine Lord. Distinct impressions have I of particular occasions when he gave utterance, with special emphasis, to his religious emotions. Last autumn he was occupied officially, with many of our fellow-citizens, in acts of attention to the representative of the royal house of Russia. At the holy communion in this church next ensuing, an occasion in which, for domestic reasons, he felt an extraordinary interest, at the close of the service he approached me with a more than usual warmth and pressure of the hand, and, with a beaming countenance, said: "This is something better and greater than standing before princes."

His piety had the simplicity of childhood. Will his household ever forget the heartiness and reverence of their family worship? Will those who have so many years seen him in this house of God, ever part with the image of his earnest devotion?

He was a true, modest, humble, happy disciple of Jesus Christ. So was he even from his youth. His departure corresponded to his life. All was calm, dignified, and beautiful.

Farewell, beloved friend, honored citizen, public benefactor, good and faithful servant. While thy eulogy shall be pronounced in many languages by thy fellow-men, this, I believe, was your own highest aspiration—to have your name written in the Lamb's Book of Life. There it will shine above the brightness of the firmament and as the stars for ever and ever.

At the conclusion of the services at the church, the remains were

taken to Greenwood Cemetery and deposited in the receiving vault. We close with two able articles which express the best national sentiment respecting the position and work of Professor Morse.

#### THE LESSON OF A LIFE-TIME.

The name of Morse has been so long among the great names of America that it has had a historical significance. And yet, now that we know the great inventor lies dead, we feel as if there was a wide gap in our national life. All the comforts and blessings that an earthly existence can give to the poor breathing body seem to have fallen to Morse. He lived long after the appointed time. His years were crowned with reverence and honor and fortune. He breathed the incense of that fame that so rarely comes to men in their own time. It was the happy fortune of Morse to live into that calm, reverential, heaven-tinted twilight of old age, when even envy departs, and we feel at peace with our generation and with God

Morse was, perhaps, the most illustrious American of his age. Looking over the expanse of the ages, we think more earnestly and lovingly of Cadmus, who gave us the alphabet; of Archimedes, who invented the lever; of Euclid, with his demonstrations in geometry; of Galileo, who solved the mysteries of the stars; of Faust, who taught us how to print; of Watt, with his development of steam, than of the resonant orators who inflamed the passions of mankind, and the gallant chieftains who led mankind to war. We decorate history with our Napoleons and Wellingtons. But it was better for the world that steam was demonstrated to be an active, manageable force, than that a French Emperor and his army should win the battle of Austerlitz. And when a Napoleon of peace, like the dead Morse, has passed away, and we come to sum up his life, we gladly see that the world is better, society more generous and enlarged, and mankind nearer the ultimate fulfillment of its earthly mission, because he lived and did the work that was in him.

The story of his life is told elsewhere. The results of his life are known to all men. The lesson we gather from it is as old almost as human genius and human ambition. Effort, disappointment, derision, detraction, envy, strife, that deferred hope that maketh the heart sick, weariness, fainting by the way, almost despair—is it not written again and again in the history of men who are called upon to serve their fellow-men? Do we envy those who win the fame and glory of Morse? Let us think of the others who had perhaps this heaven-inspired and far-reaching spirit, and who failed in their struggles. When we see the

argosy, laden with the stuffs and gems and spices of the East, and think of her angry voyage and the safe arrival in port, should we not think of those who sailed amid breezes as auspicious only to shiver and rend and sink? We honor Morse because he succeeded. When men who succeeded as Morse, suffer as he did, we can feel that their triumphs were fully earned. We see in this man's life what can be done by patient, resolute endeavor, courage, cheerfulness, belief in his mission. We see in his career the success that patient merit will always win when sustained by honor and courage. The life of Morse is full of lessons, but this, if we learn it truly, is the most precious of them all.—*New York Herald*.

#### THE FATHER OF THE TELEGRAPH.

If it is legitimate to measure a man by the magnitude of his achievements, the greatest man of the nineteenth century is dead. Some days ago the electric current brought us the intelligence that S. F. B. Morse was smitten with paralysis. Since then it has brought us the bulletins of his condition as promptly as if we had been living in the same square, entertaining us with hopes which the mournful sequel has proven to be delusive; for the magic wires have just thrilled with the tidings to all nations that the father of telegraphy has passed to the eternal world. Almost as quietly as the All-seeing eye saw the soul depart from that venerable form, mortal men, thousands of miles distant, are apprised of the same fact by the swift messenger which he won from the unknown—speaking, as it goes around its world-wide circuit, in all the languages of earth.

Professor Morse took no royal road to this discovery. Indeed, it is never a characteristic of genius to seek such roads. He was dependent necessarily upon facts and principles brought to light by similar diligent, patient minds, which had gone before him. Volta, Galvani, Morcel, Grove, Faraday, Franklin, and a host of others had laid a basis, of laws and theories upon which he humbly and reverently mounted and arranged his great problem for the hoped-for solution. But to him was reserved the sole, undivided glory of discovering the priceless gem, "richer than all its tribe," which lay just beneath the surface, and around which so many *savans* had blindly groped.

He is dead, but his mission was fully completed. It has been no man's fortune to leave behind him a more magnificent legacy to earth, or a more absolute title to a glorious immortality. To the honor of being one of the most distinguished benefactors of the human race, he added the personal and social graces and virtues of a true gentle-

man and a Christian philosopher. The memory of his private worth will be kept green amid the immortelles of sorrowing friendship for a life-time only, but his life monument will endure among men as long as the human race exists upon earth.—*Courier-Journal, Louisville, Ky.*

## DEAD!

Thrill it down the electric wire,  
 Far and near, to town and mart;  
 Flash that word in prisoned fire  
 Through the world's enlightened heart;  
 Where the pallid North reposes,  
 Where the avalanche is born;  
 Whisper it unto the roses  
 Blushing round the "Golden Horn;"  
 Send it South from Scotia's mountains—  
 From her eagle's misty nest—  
 To the spray of Persian fountains,  
 Breaking on the bul-bul's breast  
 To the royal Adriatic  
 Venice on her ocean throne—  
 And through spice-groves aromatic,  
 Southward to the torrid zone!  
 He has written us a story  
 On the earth in pulsing lines  
 From our northlands, bleak and hoary,  
 To where the blue Marmora shines,  
 Through the deep track of the ocean,  
 Flashing past the coral isles,  
 Viewless, voiceless, without motion,  
 Thrills his fame down countless miles.  
 Men of every faith and nation  
 Honor, love, revere, admire  
 One who sought not adulation  
 When he chained the electric fire  
 Who, discouraged and defeated,  
 Bore it with a patient grace;  
 By no boastful pride elated,  
 When he conquered time and space  
 Faithful spirit, all undaunted,  
 Toiling, undismayed, for years,  
 Till along the wires enchanted  
 Greetings joined two hemispheres!  
 Sage and hero, loved of nations  
 Lo! thy dauntless soul has found  
 The lightning's mystic habitation,  
 Where its lurid bolts are bound! — *Rosa Vertner Jeffery.*

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# IN MEMORIAM.

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## CHAPTER LIV.

WILLIAM ORTON.

“Nothing can we call our own, but Death ;  
And that small model of the barren earth,  
Which serves as paste and cover to our bones.”

—*Shakespeare.*

**T**HIS volume closes in deep shadow. Its work was supposed to be done when the record of the death and obsequies of Professor Morse was written. Over that demise there was less the sense of grief than of perfected honor. The lustre of fourscore years had melted into the sunset of a day, complete and golden, over which the serene night had come with almost welcome shadow and rest. Scarcely, however, had the manuscript which recorded it passed from the hand of the penman, before death claimed another victim. This time he came at what seemed the high noon of the life of a man whose brilliant telegraphic administration seemed to mark him as the necessity of his times, who was in the zenith of his powers, and who, with imperial vigor, had, during ten formative years, directed the policy and infused his own vitality into one of the sublimest trusts ever given to the direction of mankind. William Orton, President of the Western Union Telegraph Company, after a few hours' unconscious struggle with death, died in New York, April 22, 1878.

The life of William Orton, whose Presidency of the Western Union Telegraph Company is now historic, and whose management forms one of the finest and purest records of our American commercial affairs,

has been, almost ever since he entered its contests, in some respects, phenomenal.

Mr. Orton was born June 14, 1826, in Cuba, New York. His father was a teacher and from him he derived his earliest education. While yet a boy, he left home and supported himself by working in a printing office in Angelica, N. Y. Eager for a more complete education he used his first earnings to secure admission to the Normal College at Albany, N. Y. In a single term he obtained a diploma. His subsequent examination before the State Board of Education at Albany was one of the best. For a few months thereafter he taught school, purchasing his books of Derby & Co., Geneva, N. Y. In these purchases he soon attracted the attention of George H. Derby, the head of the firm, and, in 1850, accepted a clerkship under him. In 1852 he was married to Miss Agnes J. Gillespie, daughter of James Gillespie, Esq., of the Bank of Geneva, and removed to Buffalo where he formed a partnership with J. C. Derby and Eugene Mulligan, under the style of Derby, Orton & Mulligan, Publishers. The house was soon after transferred to New York, under the name of Miller, Orton & Co. In 1857, Mr. Orton became managing clerk for W. A. Townsend & Co., 46 Walker street, afterward James G. Gregory & Co., and in this charge developed a marked and exquisite taste in book making, was spoken of as the embodiment of industry, and known as a thorough hater of all vicious literature.

In all of these occupations there entered a certain intensity of devotion, a mental focalization, an energy of movement, as of one conscious of entering the field where the battle of life was to be fought, and who had determined to lead and win.

In 1860 he entered the primary political meetings of his ward in New York city. Here his nature was thoroughly touched and roused. He found in political discussion congenial elements and stimulus. Controversy fired his blood and stirred his higher faculties. Silence to such a man was impossible. His voice, naturally strong and resonant, was soon heard in debate. By the vigor and perspicacity of his speech, the loftiness of his tone, and the bravery of his utterances, he, at once, became marked for public life—and influential. In 1861 he was elected

a member of the Common Council of New York. By his political foresight and ability as a clear and terse debater he made the minority in the Council powerful. He was made chairman of the committee on national affairs, and a member of the committees of finance and streets. At the same time, beginning to comprehend the measure of his own powers, he commenced the study of law, the fundamental principles of which he quickly grasped, and which resulted in his admission to the bar of New York in the spring of 1867, while acting as Vice-President of the Western Union Telegraph Company. In 1862 as Collector of Internal Revenue in New York, and, in 1865, as Commissioner of the same department at Washington, his mental force, acumen, and reach shone out with new and remarkable conspicuity. His treatment of questions of law in the administration of this new and, at that time, somewhat chaotic service, was so clear, vigorous, and elemental, that Salmon P. Chase, one of the most gifted of the legal minds of the country, sought his counsel, and, until his death, gave him his warm friendship. Hugh McCullough, Secretary of the Treasury, held him also in the highest estimation, and accepted his resignation with marked regret. In all of these positions, which were full of struggle, early begun, and chequered with many misfortunes, a sublime manliness and moral force baffled all obstacles and educated him for the largest and loftiest responsibilities.

The circumstances attending the entrance of Mr. Orton into telegraphic life have already been given. The writer entered office with him at the same period. His desire to conquer all details, and to be minutely conversant with every department both of routine and of the technicalities of the service, was eager and vivid. The writer had something to do in the inspiration of an ambition in connection with the service which afterward fired his life. He was also useful in imparting to him the knowledge of some of the more elementary features of the telegraph, and to which in a letter of peculiar tenderness and delicacy he bore testimony in after years. But to a mind like his, no lengthened sessions were needed to exhaust the stock of practical knowledge which the writer was able to impart, but which he felt it necessary to know. A hint, a pencilled diagram, the statement of a principle, and the lesson was learned never to be forgotten.

It was, however, on his election to the Presidency of the Western Union Telegraph Company, that Mr. Orton entered a sphere where he found the fullest scope for his peculiar powers. In a preceding chapter, written at a time when the thought of a record like that which now finds a necessary place in these pages was unusually remote, the circumstances attending his assumption of that post have been fully given. They were full of peril. They demanded the highest moral courage and skill. He entered its duties pale from an acute sickness, yet without dread. The carmine flush which his election made to pass over his whitened face, was the recognition of a work for which he felt himself equal, and an elevation which he at once recognized as the pivotal opportunity of his life. To show the magnitude of the task to which his life was now devoted, a word or two, although already said, is necessary.

Up to the close of 1863 the capital of the Western Union Telegraph Company had been based upon a more or less just estimate of the value of its property. At that period the capital was about \$11,000,000. The company was on a tidal wave of success. The shares of its stock sold freely at 200 or twice its par value. At one period they rose to 225. It was a period of the insanity of success. Under such circumstances the Board of Directors met, and, not without some sturdy opposition, declared a stock dividend of 100 per cent. It seemed a splendid achievement thus, by a breath, to create \$11,000,000.

It was not long, however, before the added millions became a millstone, the full weight and drag of which was not felt until after years. It was first fully realized when the leading telegraph companies came to form, with the Western Union, a great compacted company. It was then found that to settle the representation of capital on a just basis, many millions of stock, in excess of what would have been necessary had that hundred per cent dividend not been declared, had to be issued. And thus it came that instead of an easily handled capital of, at most, \$25,000,000, a swiftly coming era of shrinkage and broken values had to be confronted with one of \$41,000,000. It was just at this period, when the amalgamation of the leading lines of the country piled up this immense capital, that Mr. Orton was called to sit down in the chair of official direction.

The very first step to be taken was in some respects the most difficult. The making of dividends had, in a very distinct sense, to be subordinated to the claims of public duty. A year or two before a demand had been made to reverse this principle, and by a high tariff, even at the cost of a reduced volume of business, increase the revenues. That was the policy of rapacity, narrow, selfish, impossible. It was necessary now that a nicely drawn line be found, on one side of which property would find adequate protection, and on the other, the public receive free from oppressive exactions the benefits of a system not unnaturally regarded as above the ordinary level of human enterprises, and having a mission sacred to the highest sense of public honor. This elevated telegraphic administration from the ledger to principle; from questions of simple profit and loss to considerations of citizenship.

From this time forth Mr. Orton became a recognized force in the great industries of the world. The Western Union Telegraph Company had become national. It touched society everywhere. No other enterprise entered so thoroughly and penetratingly into the activities of the nation. This was so evident to him, that, in a profound sense of the honor and the responsibility of the trust, his devotion took on a new intensity, the full measure of which few fully knew or could be made to understand. It was energetic, successful, brilliant, conscientious. But it was so frequently exhaustive of himself as to be painful. With a frame of singular susceptibility, with a kind of contempt for food or physical helps, he often outraged nature and had to suffer her revenges. Scarcely a year passed without his being brought, more or less, face to face with death. His brain was large, fine, alert, of exquisite physical vitality and delicacy. His perceptive faculties were like the realm of his work, electric and vivid. His memory and power of classification was marvelous. His intellect had that peculiar action, especially when in the presence of men of lower moral power or of more cautious or sluggish perceptions, which made him, at times, resemble a lion, roused from his prey. No friendships checked the denunciation of a plan against which his judgment was thoroughly opposed. On such occasions, with a kind of grand egotism in which vanity had no place, few men have ever so impressed others with the lofty honesty of his con-

victions. There was no fret or worry in this self-assertiveness, although in a man less able, it would have been, at times, intolerable. It was not obstinacy. It was as far removed from vanity as from weakness. It was the cannon ball rushing to the target. It was an imperial brain acting through an imperial will. In all his intercourse he carried a broad, comprehensive, quick decision, and a felicitousness of epigrammatic statement, which made it a delight.

But this phenomenal exhibition of personal power, though heroic and brilliant, had its shady side. Although as year by year he came out of some eminent bodily peril with apparently increased physical ability, his frame enlarging and seemingly gathering the elements of a healthier life; with the fire a little less intense; with the conservatism which comes by years adding dignity and increased power of administration; with a fine broad humor bursting through the attritions of official life like gleams of sunshine; yet no one could watch him closely, especially in his moments of comparative relaxation, without the conviction that the mind which worked so intensely, and which was, indeed, its normal condition, was in constant danger of eclipse either by death or loss of power. He, himself, was conscious of it. So much was this so that for some time previous to his decease he never left the city for a day without leaving a blank check to be filled up in favor of his family in the event of his death. All his arrangements were made, and all his work was done, with that possibility in view.

Mr. Orton's last service for his company was a mission to Albany to oppose, before a committee of the Senate, a bill which required the substitution of iron for wooden poles in the city of New York. The field did not seem one to afford scope for the display of any unusual ability or range of discussion. Yet competent judges aver that never had his fine powers of description, his Lincoln-like humor, his accurate knowledge of even the technicalities of electric science, his legal acumen, a finer or more interesting field. Seating himself before the committee, with a quiet consciousness of power, most marked by its unconsciousness, and in a manner so unlike the usual gladiatorial methods of such occasions, his address had all the charm of a scientific lecture, and was instructive, entertaining, and exhaustive. With calm,

clear, terse statement, and with the inexorable logic of scientific law and the results of actual experience, he gave to his hearers a new lesson in natural philosophy, which was listened to with a keen sense of intellectual enjoyment. Every judgment was convinced, and he left behind him a feeling of the highest satisfaction and respect. On his return home, however, on the Friday evening preceding his death, he felt wearied, and complained of great exhaustion. It was the premonition of a period the shadow of which was already showing to him its dark disc upon the wall.

On Saturday afternoon, April 20, Mr. Orton presided over a meeting of the International Ocean Telegraph Company, and was animated and cheerful. In the evening he went to the rooms of the Union League Club, of which he was an active and interested member, where he remained until 11 o'clock. Here he met his family physician, Dr. Baner, to whom he spoke with a keen sense of delight in reference to his expected trip to Europe, whence he expected to sail during the first week in May, and for which the Company had tendered to him a furlough of three months. He was, for once, to leave business behind him, and, free from every care, smell the fresh air of the Oberland Alps. He was brimming with fun and story, and gave free vent to his humor.

The day following was Easter Sunday. It was a day of great brightness and beauty. Not a cloud obscured the sky. The air was balmy, fragrant with the bloom of flowers, and redolent with the song of birds. Accompanied by his entire family he attended service at the Church of the Holy Apostles, of which he was a vestryman, and partook of the communion. The offerings of the day were so liberal as to cover the entire indebtedness of the church, and which greatly pleased him. The odor of beautiful flowers and the strains of triumphal music expressive of the joy which marks the Easter morning, gave to the services a sense of high enjoyment. Every thing conspired to make the day delightful and memorable. In the afternoon he rode with a friend through Central Park, and enjoyed the brightness of nature, which on that day had on her fresh summer garments, as if conscious of the great event of which the day was commemorative. At the evening meal he referred in terms of pleasure to the delightful

character of the whole day. Not a shadow fell to indicate the eclipse which was so soon to shroud that happy home in the deepest darkness of earthly sorrow.

Toward nine o'clock he complained of a feeling of exhaustion, such as he had felt on the Friday previous, and, on being urged, retired to rest. Between ten and eleven o'clock he was taken with nausea and vomiting, and said, "My head is paining me again," and at about eleven o'clock was stricken with apoplexy and immediately sank into a comatose state, accompanied with stertorous breathing. Medical aid was at once summoned and the usual remedies administered, but without avail. After remaining in a state of insensibility until seven o'clock the following morning, April 22, he died, in the presence of his entire family.

When the announcement was made an hour or two afterward on the bulletins of the city papers, society seemed staggered. Throughout the Western Union building there was almost universal silence and dismay. Mr. Orton had so identified himself with every department of the service, and had, by his strongly magnetic nature, so touched individual life, that there arose a silent wail of personal bereavement from every heart. The messenger boy carried the sense of loss with him as he hastened on with his message through streets that were full of shadow to him. In the stages and cars, and as men met on the sidewalks, the sudden death of a great citizen was talked of with subdued voices. It was felt how strong had been the influence of a single noble life. And so it was everywhere. As the news flew over the wires to England and the Pacific, and into the offices of the Continent, the same sense of sorrow and bereavement was enkindled. Few men had so stirred so many hearts with so strong affection.

The announcement of Mr. Orton's death was made the occasion of many just and tender tributes to his memory by the press of New York. With a somewhat hasty judgment, however, his decease was referred to as the result of a kind of unreasonable self-immolation. "Killed himself by labor" was a verdict which obtained general currency and acceptance. Referring to his large salary and to the sacrifice of himself, it was asked "Did it pay?" By one writer Mr. Orton

was represented as a man "unable to take repose," and who, failing to curb the impetuosity of his life, lost it.

These estimates of Mr. Orton's death give a false idea of the man. His health was never robust. The sicknesses of his early manhood were severe and protracted. His brain, which was large and dominating, was one of great delicacy and of immense vitality. This made it, in all his sicknesses, the center of suffering. With a will assertive and imperious, Mr. Orton thought strongly on all subjects. Such a brain as his required vigorous physical support from his body to supply the waste of its peculiarly high nervous action. Unfortunately, as is not uncommon with men of high intellectual capacity, his mind and work so dominated and held him, that the alimentary necessities of his body were undervalued or forgotten. It was not unusual for him to return from some important mission, where his highest faculties were demanded, famished for want of food, and physically exhausted. His frequently recurring periods of suffering was, in part, the result of this forgetfulness of the necessities of his lower nature.

The leading trait in Mr. Orton's character was so predominant as to be the key alike to his life and death. A conscientiousness, as imperious as it was profound, was the ruling element of all his mental faculties.

With a limited sphere of duty this quality might not have placed undue strain upon his physical organization. But the office in whose harness he died was of vast responsibility, and involved innumerable phases of jurisdiction which required the highest mental qualities, and the utmost vigor and decisiveness of administration. No one unacquainted with the history of the last ten years of the Western Union Telegraph Company can understand the full meaning of the enormous task which its management imposed and which his high conscientiousness greatly intensified. Although delegating much of this burden of administration on his able associates, Mr. Orton never relaxed, and could not conscientiously abate, the keenness of his personal vigilance over the minutest details. In health, this splendid arena for the exercise of his unquestionably great ability, was a source of supreme enjoyment. To direct the operations of a gigantic system of communica-

tion throughout a continent stirred his ambition, and men everywhere recognized the brilliancy of his power. But when the body, revenging itself for neglect, demanded rest, the high conscientiousness of the officer saw no release from duty, and fought against the weakness which kept him from his great trust. If Mr. Orton made a mistake in this, it was one of grand fidelity, which, perhaps, an age which had become familiar with public crime in high places needed to restore confidence in human honor.

Mr. Orton had his powers tasked in other directions. His office, which he attended closely from ten to six, was besieged day after day by those who sought his counsel, needed his sympathy, or looked to him for aid. He welcomed all, and by a friendly surrender of his time, was compelled to encroach on his home hours for the completion of his official work. Like many other great workers, also, Mr. Orton valued the night hours as congenial to exact thought, and thus few nights passed without important work being accomplished. His evening hours were often largely devoted to political consultation and correspondence with men of the most exalted position and influence. Mr. Orton extracted from his official labor and from studies helpful thereto, and from conversation political and general, as keen an enjoyment as others derived from amusements, for which he had but little taste.

And with all this labor he had become of late years full of the most delightful humor. His fund of anecdote seemed to become increasingly copious. He made a board meeting full of sunshine, and often lifted up a heavy question by a grotesque illustration. He gave no evidences on such occasions of a man "incapable of repose."

The truth was that Mr. Orton at 51 had completed his work. How complete that was none know so well as his living associates. The hardest contests had all been fought and gained. His task was done. He entered his rest with his armor on, but with the battle nobly fought and gallantly won. His death was largely due to previous attacks of malarial fever which were invariably attended with great cerebral excitement and suffering, and which left him exposed to the attack which terminated his life.

Mr. Orton at the time of his decease was a member of the New York

Board of Trade and Chamber of Commerce, Director of the North Western Mutual Life Insurance Company, Rapid Transit Commissioner, and President of several telegraph companies.

Of Mr. Orton's character, and its influence on his great work, the opportunity to dwell upon it is inviting, but the time has scarcely arrived to give it a full and just portraiture.

He was a man of rare executive capacity. He thought as accurately as quickly. He made combinations rapidly. His mind was mathematical and logical. He was fearless in pronouncing and maintaining his convictions, and in politics and in business was a born foe to mere expediency or timid policies. He wrote and spoke with facility and fluency, but never diffusely; indeed his language seemed to be telegraphically compressed. In domestic and social life he was a lovable man, and at home or with friends his nature was a yielding one.

To those who knew Mr. Orton intimately, and had the opportunity of seeing beneath the colossal strength of his intellectual nature, something of the tenderness of his more private life, the secret of his power with men was well known. Beneath a severe aspect and an imperious will, he had a gentleness which was beautiful, dignified, touching, and refined. He erected no big barriers to hinder approach to him. The humblest boy in his employ could find his way to his desk and be sure of respectful attention. He courted this feeling of his accessibility to his working force.

Mr. Orton's sense of justice was a marked feature of his character. When it became necessary to reduce the salaries of the employees of the Western Union Company, he insisted on striking twenty-five per cent from his own. "No man shall look me in the face and ask why I took a hundred from him and did not touch my thousands," he said. This trait of his character gave strength and dignity to his administration.

One of Mr. Orton's orders was known to be that the right of appeal to him was to be unquestioned. A New York daily in speaking of this trait in Mr. Orton said: "Not long before he died a little Irish girl of interesting appearance asked the ushers to let her see Mr. Orton. He was very busy, but said: 'Very well; let's see who she is.' The little

one walked up to him and said: 'Mr. Orton, they have shut me out of the rooms up-stairs so I can't sell my apples. They say you have made a rule against it all over the new building. Your men know me, and buy of me if I could only get in up there. What can I do? I have been selling to them two years in the old building.' Mr. Orton gave her a pass to sell everywhere except in the operating room. The little girl was in tears yesterday at the news of his death."

This was but an illustration of his general habit. His helpfulness was always ready to friends or strangers in distress, and the extent of his charities was exceptionally large, although without publicity or parade. No matter how low or degraded, any man whom he had once known in better days could get audience as quickly as the highest dignitary in the land. Only a short time before his death he found a little boy who had lost one arm and a leg, begging at a station of the Elevated Railway. He gave the lad half a dollar, sent him to Mrs. Orton for a suit of clothes, and procured him a place as gate tender, at \$20 a month.

Such a nature was necessarily endearing and magnetic.

Among the many public notices of Mr. Orton's death the first and in some respects the best was an appreciative and warm testimonial from the New York *Evening Mail*, a portion of which is as follows:

It has been our own honor and privilege to know William Orton. A truer, more judicious, or more helpful friend no one could have. He has risked and suffered much in the cause of friends — some of them among the highest men in the land. His was no "fair weather" friendship, but one that grew warmer and stronger as its objects became involved in difficulties, troubles, or even disgrace. He was a peacemaker. No one knew better how to give the "soft answer that turneth away wrath," to restrain impulsive folly, to strengthen faltering purposes. We have more than once seen the strong man who never faltered melt in tears when some near friend had gone or had been overwhelmed with misfortunes.

William Orton was one of the few "self-made men" whom we have known, who did not, in some way, make us regret the lack of creative ability. His career was a long and hard struggle, early begun, checkered with misfortunes and abounding in all manner of contests. What is generally called "education" in its highest branches, did little for him. But the elements of manhood, moral power and physical vigor that were in him, were a formative force that baffled obstacles and defeats and gave him an education for the highest responsibilities of life, such as universities and libraries cannot impart. If we ever knew a trained athlete for the struggles that lay across the whole pathway of a constantly ascending career, he was the man.

We have known him thoroughly. If there was a weak side we never found it. We did find him a man with the pluck of a soldier, the honor of a knight, the breadth of a statesman, and the executive characteristics that are not found in any other man whom we know. His ways were clean and noble. His aims were high and honorable. His actual performances were great. Had he not labored for the vast interests intrusted to him with unwise devotion, he might have filled higher stations — we have often thought him capable of the highest. A faithful citizen, a most kind and tender husband and father, a sincere believer in Christ—he rounded out a noble career, the memory of which will be fragrant long after the most successful of money-getters and place-hunters have found a merciful oblivion. He was true to all his trusts, to all his friends, and to himself. What grander success could any great brain, strong will, and pure heart, win in the battle of life?

Rev. T. Dewitt Talmage said of Mr. Orton :

The wires of the Western Union Telegraph Company never thrilled with a more sympathetic message than when this week they announced the death of William Orton. The master hand that had played on that instrument whose keyboard is in Broadway, New York, was silent. The world knew not that he was sick until he was dead. From the most animated electric life, he has gone to lie down in the village cemetery. Nay, his spirit flashed quicker than electric message, to the throne of God. He was one of the mightiest men in New York city. He had the energy of ten ordinary people. High souled, generous! In great cares never forgetting to be the complete gentleman. I never saw a better conjunction of urbanity and force. He was invaluable as a coadjutor, but a terrible man to run against. It was not strange that he so suddenly departed. He was the most overworked man in New York.

The fall of William Orton, last Sunday night, should be a warning to all overworked men. But most prominently do I wish to bring before you our debt of gratitude to this wonderful man. What he did for this country can be better judged by the coming historian than by us. He was the martyr of American telegraphy! We get so used to the click of the electric apparatus, that we do not realize how near its operators stand to the interests of society.

Mr. Orton showed me on a map how these telegraph wires encircle the whole earth. The mightiest human hand on that fulcrum of power, was the hand of William Orton.

Again, the life and success of William Orton should kindle hope in every struggling young man. He fought his way up by the best of weapons, his own right hand. From teaching a country school he rises to being the instructor of a nation. Congresses and cabinets respected his opinion. He was as fine a specimen of a self-educated man as the world ever produced. William Orton started at the foot of the ladder and reached the very tip top!

But I have not reached the climax of William Orton's character. He was a Christian. He had only time to cry "My head! my head!" but when a man lives aright, we can afford to let him pass out of the world without further testimony. What a lesson for the business men of the world! William Orton kneeling at the chancel rail to take Holy Sacrament! Tell it in all the cities of American commerce, that William Orton's life ended with the sacrament! Saturday at his office, Sunday in church, Monday in Heaven! Business men, you will keep his memory

fresh. Years will go by, replacing and crumbling the reputations of many men, but long after this generation has passed away, will be found undimmed upon the page of time the name of honorable, busy, trustworthy, martyr, christian William Orton.

In the New York *Times* appeared the following interesting record :

Mr. Orton was remarkable for the earnest frankness of his convictions. He was sincere, outspoken, and utterly free from hypocrisies. Two or three weeks before his death he attended a convivial gathering, and, with a small party of gentlemen, sat very late in the parlors of an up-town club house, discussing various topics. One of the party made a light remark concerning the Christian religion. Mr. Orton turned a look of inquiry upon the speaker, who repeated his statement and then invited a reply. Mr. Orton, with great deliberation and gravity, said : " I am diffident in the expression of my own religious convictions. But it seems to me that the Christian religion has survived all the philosophies of the ages. In all the teachings of all the moralists who have ever lived I have found nothing so well adapted to the needs of man as the religion taught by Jesus Christ, both as regards this life and the life to come. By it multitudes of noble men and women have lived and died. In default of any better system of religious faith and practice, I must adhere to this." This calm utterance, which seemed to be necessary, considering what had gone before, would have been commonplace under other circumstances. The occasion and the surroundings gave it a certain impressiveness which some of Mr. Orton's friends recall with feeling, now that he has gone.

In a vein equally affectionate, the Brooklyn *Eagle* wrote as follows :

Years ago, a young school teacher in one of the Eastern States had for a salary a nominal sum per month and the privilege of boarding round. A fever brought him to death's door, and the trustees considered their engagement with him canceled. He was stricken down in the house of an old farmer, whose wife proved to be a devoted, self-sacrificing nurse, doing more than doctors to bring the patient back to health. A friendship was formed between the young man and his benefactors which was cemented by an affection, on both sides, equal to the delicate and noble service rendered to him. The venerable couple would not hear of remuneration for their kindness, and he came up out of the very valley of the shadow of death without the strength or prospect of labor. After a long period of convalescence, spent in the home of his benefactors, he got a chance again to labor as a teacher. Eventually he entered on business, and the old gentleman and lady died in a green old age. Years afterward, as a man of affairs and fortune, the former schoolmaster visited the village where so much sickness and so much kindness had made a graphic chapter in his personal life. He learned that an adopted daughter of his old friends, to whom in lieu of having no offspring of their own, they had devised the homestead, had married an excellent merchant of the village, but that business embarrassments and a resolution to be fully honorable in their settlement, had made the sacrifice of the homestead imminent. He bought the place and gently compelled the young lady and her husband to keep on living there, nor would he let them pay any thing to him for the privilege. His aid enabled them to start again even with the world. They soon began to prosper, and, with a self respect that was most creditable and characteristic, they would not

allow the gentleman of whom we are writing to have the deed of the homestead made out in their names. A short time afterward, they insisted on beginning to repay, in installments, the several thousand dollars he had advanced to them in their emergency. He protested, but to no purpose, and in the course of time they repaid him every cent of it, and all the concession they would make to the gentleman's sensibilities was to comply with his indignant demand that interest should not be returned on the sum he was made to take back against his wish. To-day that self-respecting couple are thriving in plenty and honor on the old family farm. To-day their benefactor lies dead, and the greatest corporations in the land, all society, and the government of the nation mourn him as one whose integrity was spotless, whose administrative genius was of the first order, whose name came to eminence and honor round the world, and whose patriotism, courage, executive ability and magnificent energy, purity and fidelity made his life fragrant and made his memory royal and redolent with example and inspiration among men. Those whom he benefited, in this one instance of many similar instances of effective and unheralded benevolence, shall be nameless. But he by whom they were benefited and over whom the metropolis and the country bend with blessings on his career and in love for his character was named William Orton.

Unnumbered articles similar to these everywhere appeared. Even on the Pacific slope the papers were full of affectionate appreciation and regret, and dispatches of condolence and esteem were sent from all parts of the country and from England.

Immediately on the announcement of Mr. Orton's death, after the first stunning silence and sorrow it produced had been partially lifted, measures were taken to give suitable expression to the high esteem and affection in which he was held. The first demonstration of this character came from San Francisco. On the same afternoon a meeting was convened, of which James Gamble was chairman, and George S. Ladd secretary. His memory was very fresh on the Pacific coast. He had only recently returned from thence after successfully adding the Pacific railroad company's system of lines to that of the Western Union, and laying the basis for the development of other important interests. He left behind him there, as everywhere, the aroma of nobility. The following resolutions, presented by D. O. Mills, seconded by William Ashburner, were unanimously adopted. The committee were Frank Jaynes, W. H. L. Barnes and John J. Sabine :

*Resolved*, That in the life, labors and honors of William Orton, as displayed in an extended career of public duty, private enterprise and official distinction, we recognize all the traits and qualities of intellect and character which can adorn

a useful citizen and a leader in commercial circles, and which made up a true and permanent reputation among men.

*Resolved*, That we recognize in him a man of great natural powers, disciplined and developed by wide experience and by untiring diligence, and applied to manifold and diversified uses in public stations of conspicuous responsibility; that in all his commercial relations with his fellow men, he displayed the widest comprehension of all facts and considerations important to be taken into account, possessed a luminous and penetrating insight into the intricacies and obscurities of the most complex systems of business, and a manifest fairness and justness in all his dealings, and that all these qualities have for many years adorned his administration of the affairs of the great corporation over which he presided, and drew to him the concurrent favorable attention of the public.

*Resolved*, That we recognize with satisfaction the high moral qualities which illustrated William Orton's career; his justice, his kindness to his associates and subordinates, his fidelity to his trust, to society, to government, to religion and to truth; and that in all these respects he was and is worthy of our respectful veneration.

A copy of the resolutions was directed to be sent to Mr. Orton's family in testimony of deep sympathy with them in their great bereavement.

#### WESTERN UNION TELEGRAPH COMPANY.

The Board of Directors of the Western Union Telegraph Company, after ordering the executive offices draped in the evidences of mourning, met at noon, Tuesday, April 23. There were present, Norvin Green, Edwin D. Morgan, Robert Lennox Kennedy, Moses Taylor, Augustus Schell, Harrison Durkee, Cornelius Vanderbilt, James H. Banker, Chester W. Chapin, Alonzo B. Cornell, Hamilton McK. Twombly, George W. Pullman, William K. Thorn, Cambridge Livingston, Oliver H. Palmer, Edwards S. Sanford, Samuel A. Munson, David Jones, Joseph Harker, Samuel F. Barger.

Dr. Norvin Green, Vice-President of the Company, now President, presided, and opened the meeting with the following address which was uttered with much feeling:

**GENTLEMEN:** You are assembled on a sad occasion. The Board of Directors have been hastily and informally summoned to take proper and becoming notice of the great loss this company and the country have sustained in the sudden and unexpected demise of our beloved President.

William Orton is no more. He departed this life at his residence in this city, attended only by his loving family and two personal friends, on Monday morning, the 22d of April instant, at 6:55 o'clock.

To-day the multitudes of the universe are reading the death of this great and good man. Telegrams of condolence from distinguished men, and accounts of meetings held in his memory all over the land are pouring in upon us. It behooves this board, with whom he was so intimately associated, and to whom he has rendered such faithful and unremitting service during the twelve best years of his life, to pay a fitting tribute to his memory and to place upon its records a due appreciation and acknowledgement of his great and good qualities as a man, his true and unflinching devotion as a friend, and his energy, fidelity and usefulness in protecting and advancing the best interests of the company which he so long and faithfully represented and so ably and honorably administered.

During these twelve years I have been his most intimate associate in business, and I am proud to have ever ranked him as my personal friend. There has never been a ripple upon the smooth tide of our friendship. Our different views were so far harmonized that no issue between us was ever brought to the attention of the Board or of the Executive Committee. They served more to cement than to divide our personal friendship. I desire here to bear testimony that in all my life I have never known a truer, more generous, sympathetic, or faster friend.

As a husband and a father his family relations were beautifully affectionate and tender. No man loved and enjoyed his family more; nor have I ever seen more tenderly affectionate and adoring wife and children.

Of his public services I need not speak; and of his special service and devotion to this company, in which he sacrificed his life, I will leave you to speak through such committee as you shall designate.

Judge O. H. Palmer said:

MR. CHAIRMAN: It has been my good fortune for the past twelve years to enjoy the friendship of Mr. Orton, and for several years of that time have sustained intimate personal and official relations with him. I learned to love him while he was at the head of a rival company and at a time when we were both engaged in a contest to determine which should prevail. It was his high and honorable bearing in that contest—his contempt of subterfuges and tricks—his frank, manly action even in the conduct of a bitter business warfare, that endeared him to me. And when that contest was ended, the sinews of war under his control having failed, it was my first duty as well as pleasure to do all in my power to secure for the company with which I was connected the benefit of his ability and service. The record of that service is before you. I need only refer to it. It is a better eulogium than it is in my power to pronounce. His heart as well as his head was given wholly to the work, and he is to-day a martyr to his enthusiasm in the enterprise in which he was engaged, and which he determined should crown his life labor.

His mind was peculiarly constituted and admirably adapted to the duties of his position. He was quick, discriminating, clear and comprehensive. He not only comprehended at a glance the principles involved in the complex and difficult questions presented to him for solution, but became master of all the intricate details. Although tenacious of his opinions when deliberately formed, yet he never failed to treat with respect the opinions of those who differed from him. He had no offensive pride of opinion, and never hesitated, when convinced by reason

and argument that he was in error, to follow the logic of truth. His mind was exceptionally fair and just. He was not a diplomat in the common acceptation of that term. He scorned the art of dissimulation, but went directly for the mark he wished to hit. He carried a large window in his heart and always relied for the accomplishment of the objects he had in view upon the justice and strength of his case. He presented his views frankly, even bluntly, and with a force and power which gained for him profound respect and admiration.

I am sure I express the heartfelt sympathy of this Board in lamenting the great loss we have sustained by his death and in paying this feeble tribute to his memory. It is a great loss, not only to us, his immediate associates, to the Company whose interest he so ably and zealously protected and defended, but to society, to New York, and to the nation. Our sorrow is augmented when we refer to his bereaved and stricken family. He was their pride, hope, and support, and his demise to them is like the going out of their own life and leaves them sorrowful and desolate. God alone can sustain them in this hour of their great affliction.

Judge Palmer then offered the following resolutions:

WHEREAS, By the death of Mr. Orton, for twelve years President of this Company, we have lost a friend endeared to us by long, intimate and agreeable association, whom we have learned to esteem no less for his high moral worth and sterling character than for his great and recognized ability; and

WHEREAS, While we deeply lament the loss of so able and distinguished an officer thus suddenly removed by death, we sorrow still more for the parting from so true and cherished an associate.

*Resolved*, That we extend to his afflicted family, bowed under this visitation of God, our heartfelt sympathy, and that in testimony thereof a copy of these resolutions be forwarded to them.

*Resolved*, That the Executive Committee be requested to procure a suitable portrait of the late President, to be placed in the executive office as a further indication of the respect and honor of the Board.

A. R. BREWER,

*Secretary.*

Telegrams of sympathy were read from D. O. Mills, Director, California; John R. Duff, Director, Boston; Anson Stager, Chicago; Roscoe Conkling, Schuyler Colfax, Henry Weaver, President of the Anglo-American Cable Company, London, and from many other personal and business friends of the deceased.

It was voted that the Board attend the funeral in a body, and that business be suspended in the executive departments on the day of the funeral.

#### ACTION OF THE GOLD AND STOCK TELEGRAPH COMPANY.

At a meeting of the Board of Directors of the Gold and Stock Telegraph Company, held in the executive rooms of the company, April

23, there were present George Walker, Augustus Schell, James H. Banker, William M. Bliss, Tracy R. Edson, George B. Prescott, Henry R. Pierson, William K. Thorn and Dr. N. Green.

On taking the chair Mr. Walker, Vice-President of the Company, made the following address :

GENTLEMEN : For the second time in less than two years, the Secretary of this Company has had to perform the sad duty of calling you together to take notice of the death of your presiding officer. In both cases your President has been stricken by death suddenly, and almost without warning. In both cases you have lost his services while in the vigor of manhood, and in the full exercise of all his powers.

Though Mr. Orton never performed the immediate executive duties of this Company, there has never been an important measure, either of policy or detail, in which he has not been consulted, and his large experience, sound judgment, and readiness to assume responsibility, have always been of the greatest value. In spite of the overwhelming duties which devolved upon him as President of the Western Union Company, he never lost sight of the Gold and Stock Company, its peculiar and varied business, and its distinct though affiliated interests.

As you are well aware, he took the deepest interest in the telephone, and had a growing conviction of the important work which it is destined to do — not only in the distinctive business of this Company, but in the wider field of commercial telegraphy.

Under his administration the two Companies have been drawn more closely together, and the Gold and Stock Company, while losing none of its individuality, has been able in a greater measure than before to avail itself of the benefits of the Western Union alliance. The advantages of that alliance have been signally manifested in the establishment of the telephone business, and in the rapid extension of the field of our commercial news department.

The last considerable service rendered by Mr. Orton to this Company was during his visit to California, when the general plan for consolidating the interests of the Gold and Stock Company on the Pacific coast with those of the District Telegraph Company of San Francisco, was matured and agreed on.

I have been during thirty years of a very busy life associated with many men of ability in many corporations, but I have never in any similar relation, become so warmly attached to any man as to Mr. Orton. I have never, in any other man, met so rare a combination of intellectual power, executive and administrative capacity, clear insight and rapid judgment ; of such unswerving integrity, and unremitting and unselfish devotion to the interests intrusted to him, and, withal, of such a broad and catholic humanity, and of such a constant, generous and tender gift of friendship, as in him.

While we have each and all of us known him intimately, it would require the combined knowledge and experience of us all to do justice to his many excellencies. In every department of the vast telegraph business, in every room of this great building, in every one of the eight thousand telegraph offices throughout this country, there is to-day the shadow of a great and personal bereavement, such

as I do not believe has ever before, in our experience, fallen on so many hearts by the death of a private citizen.

For ourselves as directors and officers of this Company, we shall not cease to miss his presence, mourn his loss, and reverence his example.

At the conclusion of Mr. Walker's remarks, Mr. Augustus Schell offered the following resolutions, which were adopted :

*Resolved*, That in the death of William Orton, its late President, this Company has met with an irreparable loss ; his great intellectual capacity, his large and varied experience, and his peculiar knowledge of the facts and principles which make up the history of telegraphy in this country, being such as are not found combined in any person who has survived him.

*Resolved*, That the members of this Board, while bearing their testimony to his constant and thoughtful attention to its interests, desire especially to express their appreciation of the valuable service which Mr. Orton has rendered, since his occupation of the presidency, in bringing the Gold and Stock Company into closer relations with the Western Union Company, thereby promoting the economy and efficiency of its administration, and, as they believe, rendering an equal service to its more powerful ally.

*Resolved*, That while thus signalling the importance and value of his official relations to the Company, they do not forget, but will ever tenderly remember their personal intercourse with him during many years of associated service. They recall and desire to attest his thorough honesty and directness in the expression of his own opinions, his respect and deference for the opinions of his associates, and his generous and cordial friendship.

*Resolved*, That the members of this Board tender to the widow and family of their late associate their respectful and earnest sympathy in their great bereavement.

*Resolved*, That these resolutions be entered on the minute book of the Company, and a copy of them furnished to Mr. Orton's family.

*Resolved*, That as a mark of respect to the deceased, the members of the Board will attend his funeral services in a body.

JAMES D. REID, *Secretary*.

Similar proceedings were held by the International Ocean Telegraph Company, of which Mr. Orton was also President, and by which appropriate resolutions prepared by Edwards S. Sanford, Cambridge Livingston and James A. Schrymser, were adopted.

The American Electrical Society, of Chicago ; the Electrical Society of the Ohio valley ; the New York Associated Press ; the Expressman's Aid Society ; the operators at Philadelphia, and at many other places, all added testimonials to the high respect and affection which Mr. Orton had excited among all classes.

## GÉNÉRAL MEETING IN NEW YORK.

Perhaps the most significant of these meetings was one called by the General Superintendents in New York, which brought together a very large representation of the New York official and operating force, besides representatives from abroad. It was a meeting characterized by deep solemnity, and by exhibitions of a tenderness of regard such as is seldom seen even in gatherings of this character, and which made the occasion especially memorable. It was held in the room of General Superintendent Van Horne, at 4:30 P. M., April 24.

The meeting was called to order by General Superintendent John C. Hinchman, who, with a voice tremulous with emotion, and under feeling so deep as to compel frequent pauses in the utterance, said :

GENTLEMEN:—This is a sad occasion. We are summoned together to-day to express our sorrow for the death of one who, in his official and personal relations, endeared himself to us all. He was a true friend, a good and just man—an officer whom we could honor, love and obey. Mr. Orton had a great soul. It extended its generous and kindly influence into all the affairs of this corporation, and into all other matters wherein he was interested.

We come together to-day as members of a great family which has lost its chief. We meet here as workers in business common to us all.

There is a tender feeling of sympathy in all our hearts, for no man, woman or child who knew Mr. Orton can forget his great goodness. Let us remember that there are those to whom he was nearer and dearer.

The expression of this meeting will be made known to his sorrowing family whom he loved so well.

I could tell you of many acts of his kindness, and of a thousand things that have come under my observation, illustrating the noble character of this great and good man.

His life is a useful lesson to us all. It shows how a man almost alone and unaided attained by honest and earnest efforts, step by step, important positions of trust and responsibility, and finally the highest position in the gift of one of the greatest corporations in the world.

Gentlemen, I must not further detain you. It is now in order to proceed to business and elect your presiding officer.

General Anson Stager was unanimously elected Chairman, and J. N. Ashley, Secretary.

Upon taking the chair, General Stager said :

I am too much shocked and grieved by the great loss we have sustained, to make any suitable remarks on this occasion, and will have to leave for those present,

who may wish to give expression to sentiments which we all feel so deeply. Having spent part of the day with the family of Mr. Orton, the scenes there have been so distressing, I feel that I cannot do justice to the occasion.

The Chair then designated Messrs. Clarence Cary, James D. Reid, David R. Downer, Albert B. Chandler and C. W. Andrews, as a committee to prepare resolutions expressive of the sentiments of the meeting.

While the committee were out, the meeting was addressed by Mr. George Walker, Vice-President of the Gold and Stock Telegraph Company, who said :

So much has been said, and well said, in relation to our chief officer, that it seems almost impossible to add any thing to the record, or to the expressions of loss which society has sustained in his death. Since the death of President Lincoln, I doubt if there has occurred the death of an American whose loss has made so wide and general an impression upon the country as Mr. Orton's. The responses that have come from all over the country and from over the water, attest to the common feeling and to the common sympathy. Some of these have appeared in the public prints, while many more of them will be confided to and cherished by his family alone.

My acquaintance with Mr. Orton began in 1866. He made a very strong impression upon me at the time ; though the qualities for which he has since been distinguished, were, perhaps, less marked than subsequently. The occupancy of a great position, and the exercise of important functions, have strengthened the native qualities which he possessed. His presentations of the views of the Western Union Telegraph Company at Washington, in the contest so long carried on here with the advocates of a government ownership and management of the telegraphs, a contest in which I, at one time, participated as a representative of that Company, were replete with learning, and marked by all the vigor and earnestness which distinguished every important action of his life.

Of his personal qualities it would be impossible here to fully give expression. He had a great tenderness of heart, the greatest consideration for all those with whom he had intercourse, the greatest respect for men as men, that I have met in any man invested with so large power. The mourning for him over the whole country is the result of the high personal respect which intercourse with him everywhere inspired.

At the conclusion of Mr. Walker's remarks, Mr. Clarence Cary reported the following preamble and resolutions, which were unanimously adopted :

Inasmuch as William Orton, for eleven years past President of the Western Union Telegraph Company, and the acknowledged representative of the triumph of the electric art in its relation to the public service in America, has, at the very prime of life, when the powers of body and mind attain their fullest development, vigor and power, been taken away suddenly by death, it seems due to his meomry

that those who knew and loved him should, so far as it is possible to do so, place on record the feelings and sentiments which his decease and the recollection of all he has been to us so vividly and powerfully awaken.

Every stronghearted man who has shown the courage and wisdom to do a vast public service is, in a marked sense, the property of his age, and a gift to mankind. Mr. Orton was, however, not only all of that, and that too in its best and brightest sense, but he was our own, the ever approachable friend, the big brother of the craft, the just and generous dispenser of authority, the strong, the true, the gentle-hearted color-bearer of the telegraphic army of the American continent. His well-known order securing the right of appeal to him for the humblest in the ranks, his recognition of every true prerogative of labor, the mingled tenderness and force with which he exercised authority, placed him in the van of the great administrators of the industries of the world.

Because of all this, we, who have been privileged to perform our daily duties in the proximity of a presence whose absence to-day burdens every heart with sadness, do make the following record :

*Resolved*, That in the life of the late William Orton we recognize an example of character unsullied by moral weakness, a man who ever fearlessly spoke the truth, who hated shams, who rebuked superficiality by the thoroughness of his own work, who believed in the justice of God and was himself just, and who, by never ceasing fidelity and toil in the performance of a great duty left to us the legacy of the memory of colossal character, of honorable, faithful, uncomplaining toil, of a pure and tender heart, which has influenced our own lives and must be long and lovingly remembered.

*Resolved*, That the power of a noble life is seen to-day in the universal affection and reverence which his name inspires, and the grief which his death has evoked. The messenger boy hurrying on his errand, the clerk standing at his desk, the battery man replenishing his cells, the repairer on his beat, the operator at his table, the official of every rank, wherever the click of the telegraphic mechanism which bears the messages of the continent is heard between all the wide realm that spreads itself between the Atlantic and Pacific seas, all mention the name of William Orton to-day with affectionate tenderness and with respectful sorrow.

*Resolved*, That if the value and completeness of a human life is to be measured by the perfection of its work, then we must regard Mr. Orton's work complete and his death a rest for which he was ready, and for which he himself longed. That in this we recognize a truth worth even this illustrious death with all its attendant sorrow, to know that, not in length of years, but in nobility of character and earnestness of purpose, we may give to life a glory and to death a crown.

*Resolved*, That we affectionately tender to the family of Mr. Orton, to whom our late President was so devotedly attached, our deepest and sincerest sympathy, praying for them God's tender grace and abundant consolation.

At the request of the Chair, Mr. J. W. Simonton, General Agent of the New York Associated Press, addressed the meeting as follows :

MR. CHAIRMAN :— Not having the honor to belong directly to the order of telegraphers, I did not expect to be called upon on this sad occasion. But so long had I known Mr. Orton, and so marked was the impression that he made upon

me, that I cannot decline the opportunity which your call affords me, to bear testimony to the transcendent qualities of our deceased friend. Those qualities were well presented by Mr. Walker, and they are fittingly expressed in the resolutions which you have adopted. But when I think of the man who has been stricken down, of the many hearts that bleed, and of the irreparable character of the loss we all mourn, these not unmanly tears render utterance almost impossible for the overwhelming tide of thought which rises to my lips.

It is now twelve years since I made Mr. Orton's acquaintance. Since that time I have had opportunity to know him well; and I do not hesitate to declare that in nearly thirty-five years of acquaintance with most of those who during that period have inscribed their names high upon the roll of our country's fame, I never knew one of whom William Orton failed to be the peer in all that is worthy of our respect, admiration and love. When I say this, I number in the record such men as Henry Clay, Daniel Webster and John C. Calhoun, all of whom it was my fortune to know in their maturing prime. Mr. Orton, though always eloquent in thought and word, was not so brilliant in mere oratory as was Webster or Clay. But he was great as either of them in strong practical sense, subtlety of judgment, directness and precision of thought, singleness of purpose and personal magnetism. Mr. Orton's mental and moral organization may be described as a perfect machine, pervaded and animated by a perfect soul. You may make your mechanism no matter how complete; it may whisper human thoughts across continents and under seas; it may record the spoken words to pour them forth to future generations in the accents of the speaker; it may do any thing which mechanical ingenuity shall demand of matter; but a great, living, generous soul must be added still to constitute a president for the Western Union Telegraph Company. Mr. Orton's exquisite mental organization was such a machine, in its perfect combination, and it received its impulse from the pure, manly, loyal spirit of his grand nature.

To a mind more logical and acute than is given to many men, Mr. Orton added keen perceptive faculties, an intuitive knowledge of legal principles, splendid executive ability, ready diplomatic tact, and the high qualities of broad and liberal statesmanship. Better than all, those attributes were held ever subordinate to that love for the right which made him more just than most men are capable of being. It was this wonderful combination of mental and moral power which won the great success achieved by him, and which commanded our respect and affection. Though Mr. Orton was not bred to the law, I have heard gentlemen distinguished at the bar declare that they distrusted their own judgment when they were unable to convince his. Many years ago when he was called to administer internal revenue affairs for the general government there arose some exceedingly nice legal questions upon which several of the best lawyers in the country disagreed with him. So clear was Mr. Orton's statement of the case, however, that his chief gave him *carte blanche* to test it in the courts, and suggested, as counsel, several gentlemen of the highest standing at the New York bar. "No," said Mr. Orton, "if I employ either of these gentlemen they will view the matter from the stand-point of precedents. I need a younger man, with fresher mind, who will take up the subject without bias, absorb my views and treat them with respect for their own sake." Permitted to have his own way, he selected Mr. Grosvenor P. Lowry whom we all know, and the result signally vindicated Mr. Orton's judgment.

Let me, sir, also bear testimony to the integrity with which Mr. Orton discharged his duties as President. In that capacity I had very many dealings with him. We did not always agree on matters of business, though I am glad to remember in this sad hour that we were always friends. Sometimes I have thought his decisions against me were hard; but I never saw the time when I failed to be sure that he intended to be just. Mr. Orton was unflinching in tender courtesy, exhaustless in manly patience and untiring in devotion to the broadest and most liberal views of duty to all. And to you, gentlemen, let me say what I know from frequent communication with him, that there was no employee of this company so humble that Mr. Orton ever forgot to exact for him all just consideration. To all about him he was loyal, as he challenged loyalty from all who came within his influence.

Alas! he is gone from us; but he has left to us his bright example. To you young men let me commend the emulation of his noble character. More especially do I commend the intense earnestness which was the key of that character, and which gave him his strong convictions, his indomitable energy, power of will and stern integrity. No man, earnest and just as he was, can ever fail of ultimate success, whether in business or in that social life of which Mr. Orton was so lustrious an ornament. Let us so live and act, that when our life's work is done, there may be written upon our tombs that which I know is inscribed upon the monument already raised to him in the heart of each one of us, these words: "He was honest; he was earnest; he was faithful; he was just."

Mr. James D. Reid then said:

I feel it to be a great honor to be associated with these memorial services, but if I have learned any thing in my experience of life, and I have seen sorrow in many of its conditions, it is that deep grief is silent. There is no language adequate for its expression. It has, however, an eloquence of its own which can be heard only in the heart. If I were to undertake to make a speech to you this afternoon with regard to all I feel in reference to William Orton, for whom my love was filial and profound, you must come into my heart. As I stood alone by the side of his coffin on Monday noon, a few hours after death had sealed his face with its placid rest, all I could utter in the intensity of my grief was "I loved you." There was recalled to my mind in that moment of presence with the dead, the language of Byron on the dead Kirkwhite:

"No marble marks thy couch of lowly sleep  
But living statues there are seen to weep.  
Affliction's semblance bends not o'er thy tomb,  
Affliction's self deploras thy early doom."

I felt myself, as I stood there in the presence of death, as the representative of a wide and deep sorrow.

There are times in the lives of men when they incidentally reveal themselves. I have had the good fortune of two such revelations of Mr. Orton. One evening, in my earlier acquaintance with him, before he entered the Western Union service, he told me of having one day noticed a man nervously approaching the bow of one of our river boats, and instinctively recognized a design of self-destruction. Walking up quietly to him he saw in the restless eye confirmation of his suspic-

ions. Kindly drawing him into conversation, the sound of a friendly voice broke the spell of the destroyer, and the man was saved. He did not stop with that, however. He procured employment for him. He was in his service when he died. If there is gratitude in the human heart, there should be one grateful man here to-day. In that act of sustained mercy stood revealed William Orton. He was a saviour of men.

On another occasion, on a Sabbath evening, when seated in his own home, conversation naturally took the direction of religion with its impulses and power. Mr. Orton went to his library, and, opening a book, gave it to me. It opened on one of the many ideal likenesses of Jesus Christ. He said, as, with a peculiar tenderness of voice, he handed it to me, "there is my idea of Christ." The face and form were noble. The eye was large, sad, lustrous, imperial, not unlike his own. There was dignity, power, tenderness in every line. I recognized in that picture Mr. Orton's faith. He revered a character majestic, tender, true and grand. Somehow there shot into my mind a connection between the man and the Saviour of mankind. Mr. Orton's own life was exceptionally true, profound, sad, noble.

I have nothing more to say. I stand with you to-day in the mazes of this deep sorrow. I expect often in the coming years to join with you in looking back to these afflictive days, and, with the English poet, as in his grief he stood beside the disturbed sea and uttered the cry which all humanity recognizes as its own :

Break, break, break !  
 On your cold gray crags, O sea !  
 And oh that my tongue could utter  
 The thoughts that arise in me !  
 And the lofty ships go by  
 To the haven under the hill,  
*But oh ! for the touch of a vanished hand  
 And the sound of a voice that is still !*

Mr. A. B. Chandler, Secretary of the Atlantic and Pacific Telegraph Company, said :

I am entirely unable to give suitable expression to the feelings of my heart on this occasion. What has been said here by others, has been so much more fittingly said than it would be possible for me to say it, that I can only remark that I have known Mr. Orton for twelve years; that he has always commanded my respect, admiration, and affection, to an extent that I can hardly say has been true of any other man. And while our business relations during the last two or three years have been, as most of you perhaps know, not such probably as either of us would have chosen, I have continued my respect and admiration of him, and our personal relations have never been otherwise than entirely friendly. He has hardly been out of my mind a moment since I learned of his death on Monday morning. We all know how great a man he was; we all feel a tender sorrow at his death which is beyond power of expression.

Mr. Charles F. Wood, of Boston, said :

I feel that I am utterly unable at this time to state the result of my long acquaintance with Mr. Orton. I only wish to bear testimony to eleven years of a

life that was just and considerate, while faithfully carrying out the duties of the responsible position that he held. Kind and affectionate, his loss creates a void, personally and in business relations, which we all must deeply feel.

Mr. George G. Ward, Superintendent of the Direct United States Cable Company, in response to a call upon him, said :

My acquaintance with Mr. Orton has been of very short duration. I first made his acquaintance about two years ago. Since then I have had from time to time personal and business relations with him, and have always felt that he was a very kind and just man. His death has affected me very deeply, and I can scarcely express my feelings at the sad loss which it is to us all. The news has been received in London with profound regret and I have received messages by cable tendering sincere regrets and sympathy to his family, his late associates, and the Western Union Company.

Brief remarks were also made by Tracy R. Edson, Esq., and by Mr. Conners, of the book-keeping department of the Western Union Company. The entire proceedings were characterized by deep feeling and impressiveness.

#### ACTION OF THE AMERICAN ELECTRICAL SOCIETY.

At a meeting of the American Electrical Society, held at Chicago, Wednesday, April 24, the following was unanimously adopted :

#### IN MEMORIAM.

The American Electrical Society mourns for one of its most prominent members ; for one who, without the extrinsic aids of inherited wealth or personal influences, had won an honorable position among the foremost men of his age. William Orton was born on the 14th day of June, 1826, at Cuba, Allegany county, New York, and died in the city of New York, on the morning of the 22d day of April, 1878. He was well, though not liberally educated. What he lacked of the technical knowledge of the schools was more than made good by the graces of an affluent genius. Of his virtues, let us specify such as stood out prominently : tenacity of purpose, untiring energy, moral courage, and sympathetic kindness. After a few years devoted to private business, he was induced in 1862, by the distinguished statesman at the head of the treasury department, to enter the public service. He was useful in helping to organize a new revenue system, rendered necessary by the exigencies of war, and his promotion from collector to the office of Commissioner of Internal Revenue, was in the line of a wise civil service. But the true history of William Orton began when he entered upon the career of manager of telegraphic enterprises. In October, 1865, he resigned the office of commissioner to accept the presidency of the United States Telegraph Company, and in 1867, after that had been consolidated with the Western Union Telegraph Company, he became President of the latter. He was now in a position that offered possibilities tempting to a man blessed with great intellectual endowments and

ambitious to be honorably useful. He became now more of a student than ever before, and naturally his researches led him to such sources of information as could collaterally serve a man of affairs. It was at this period he was admitted to the bar. This disciplinary course strengthened and fully equipped an intellect by nature positive and analytical, and was the real secret of the brilliant achievements in subsequent contests with competing corporations and scheming legislators. As these contests continued almost without interruption during a period of ten years, it is well to note here the more memorable results. Congress having under consideration a bill to create a telegraph and postal system in 1869, Mr. Orton published an exhaustive statement on this subject, concluding with reasons why the government should not compete with the people in the operation of telegraphs; and three years later, when the question was up again, he made a new argument before the House Committee on Appropriations. December 6, 1873, he wrote a letter to Hon. J. A. J. Creswell, Postmaster-General, reviewing the arguments of that officer in his report in favor of a postal telegraph law. In January, 1874, he made a most brilliant and unanswerable argument before the Senate Committee, upon a bill entitled "A bill to provide for the transmission of correspondence by telegraph." In this, while upholding the rights of capital, he discussed logically the true functions of government, the whole forming a treatise that will continue to be referred to as an authority. This convinced an unwilling Congress of the impracticability of the scheme proposed, and there the matter ended.

The following companies were brought into the Western Union system through negotiations conducted by him:

Illinois and Mississippi Telegraph Company,

Pacific and Atlantic Telegraph Company.

International Ocean Telegraph Company (Cuba Cable Company, connecting the United States with the West Indies and South America), and the Atlantic and Pacific Telegraph Company.

Under his encouragement and patronage remarkable improvements were made in telegraphic apparatus. Herein he was alike the benefactor of talent and of the community at large, encouraging private industry on the one hand and reducing the cost of telegraphing on the other.

Wherefore we express our profound grief at the loss of so distinguished a friend, and of a citizen of such great ability and capacity for usefulness, and extend our heartfelt sympathy to his bereaved and sorrowing relatives.

JOHN DEAN CATON,  
Z. G. SIMMONS,  
CHARLES H. SUMMERS,  
WM. HENRY SMITH,  
ELISHA GRAY,  
ENOS M. BARTON,  
NORMAN WILLIAMS.

} Committee.

#### THE FUNERAL SERVICES.

The last tribute of respect to the remains of the late William Orton was paid on Thursday, April 24.

Private services were held at his late residence, London Terrace, which were conducted by Rev. William H. Benjamin, pastor of St Barnabas Church, Irvington, New York. The public services were held at the Church of the Holy Apostles, New York.

The attendance was very numerous, including most of the principal officials of the Western Union, International Ocean, Atlantic and Pacific, Gold and Stock, American District, and Direct Cable Telegraph Companies, also of the Elevated Railway Company. A delegation of the Union League Club, of which Mr. Orton was an active and prominent member, was present. The departments of the Western Union Telegraph Company throughout the country were well represented. A delegation of ten from the Philadelphia office, came from that city to be present at the final services. A delegation, also, of the New York messenger corps, who presented a beautiful basket of fresh flowers in token of love for their dead master, was in attendance in uniform, and which was one of the characteristics of the day's services.

It was the largest assemblage of telegraphers since the testimonial to the late Prof. Morse at the inauguration of his statue in Central Park. This general expression of a desire to honor the memory of their late President, was a striking evidence of the universal esteem and affection in which he was held, even by those who had not been brought into personal association or acquaintance with him. Besides these there were in attendance a large number of leading citizens, some of whom had come from a distance to be present.

The casket was met at the door by the officiating clergymen—Rev. Brady E. Backus, Rector of the church; Rev. W. H. Benjamin, of St. Barnabas' Church, Irvington; Rev. Dr. Howland, of the Church of the Heavenly Rest, and Rev. Jarvis Geer, of St. Timothy's Church, Tarrytown—in full robes, and was preceded by them to the chancel. A silver plate on the lid was inscribed:

WILLIAM ORTON,

Died April 22, 1878,

Aged 51 years.

The pall-bearers were: Senator Roscoe Conkling, Col. William Borden, ex-Mayor Vance, John K. Porter, George Walker, O. H. Palmer,

B. R. MacAlpine, John Steward, A. B. Cornell, James H. Banker, E. S. Sanford, J. C. Hinchman, G. B. Prescott, R. H. Rochester, A. S. Brown, and J. B. Van Every. The floral offerings were few, but very beautiful. A pillow of lilies, roses, camelias, and violets, with a crown of similar flowers rising on a stem, entwined with smilax, the gift of the Philadelphia Western Union employees, was placed on the left of the casket. The other pieces were: A broken pillar of tube-roses and violets, from Dr. Norvin Green; an anchor of similar flowers, from Charles F. Wood; a large cross of camelias, roses, and pansies, from Gen. Anson Stager; a smaller cross of pansies and smilax, from Frank Work, and a pillow of camelias and tube-roses, with the word "Rest" in violets, from J. C. Hinchman. The marble baptismal font was filled with lilies and roses, and a basket and two silver vases of white flowers ornamented the communion table, part of which was the gift of the messenger force of the Western Union Telegraph Company.

During the procession to the chancel, the choir chanted a burial canticle arranged by Farrant. Rev. Dr. Howland then read the Lesson, after which the choir chanted the hymn, "Abide with me."

Rev. William H. Benjamin delivered the following extemporaneous address, which was reported, from memory, by the daughter of John C. Hinchman, Esq., an intelligent girl of fifteen, and which was approved by its author:

#### ADDRESS.

There is a time to laugh and a time to weep — a time to speak and a time to be silent; and if ever that time comes, it is now, in the presence of death, and particularly, as in this case, of sudden death. As, however, I have been requested to speak, I shall say a few words.

There are a number of you assembled to-day to witness the last sad rites of love, who knew Mr. Orton in the different relations of business, of social and political life. I need not repeat to you what you know so well, that to know him was to love him. I knew him through still another channel — the world of religious thought, the spiritual life. As I was riding with him last summer among the valleys of his country home, we talked together of those vast problems of life — death and the unknown future — which perplexed him as they do all of us. When I think how those problems are solved for him now, while I am still in perplexity, I am fain to keep silence. At last he is in the presence of the Majesty of Truth, and God has brought to life for him the hidden things of darkness. Only last Sunday he was here in this church, kneeling at the chancel rail, receiving the holy sacrament of the Lord's supper. Our dear friend did much for his Master. Let us

not forget (for he did not), that to be baptized in His Holy Faith and to partake of His Holy Feast are the two things our Lord hath requested that we do "In remembrance of Him."

One thing especially which endeared Mr. Orton to me was the love and tenderness he bore to little children. Mr. Orton's love for children was one of the most touching points of his noble character. It showed the depth and transparency of his thoughts, the purity of his heart. In this he resembled his Master. It is a great thing for a man whose daily intercourse was with men of the world, to preserve the purity of character we find in a sweet and innocent child. Yet *he* did it. Most surely did he keep himself unspotted from the world. I thank God that to me He allowed the privilege of knowing such a man. It was a glimpse of the Christ-life, shadowed forth in a mortal! Those of you who knew him in public life know that he never allowed any thing to stand in the way of his duty to God. He was exceedingly conscientious. He never allowed the dust of political strife or the cares of professional life to interfere with his vision of the throne of love, or his relation to the Divine Court of final judgment. Then the manner of his death! How well it accorded with his life! He needed no preparation. Honest in heart, his life was his preparation. Death found him ready. He died like a soldier on the field of battle. It is the happiest death a man can die.

Mr. Orton lived up to his belief. His delight was in doing good to others; and here again we trace a resemblance to the Great Pattern. In the work which he felt God had given him to do, he acted like his Master, in that he always seemed to say in every department of it, "Lo! I come to do Thy will, O God." If ever man was humbly like his Master, he was, though he would have been the last to have made such an admission. God give us grace and strength to go and do likewise. May He help those who are nearest and dearest to our departed friend to bear patiently the heavy burden He has seen fit to lay upon them. And now may God's inestimable peace, which, because it is perfect, passeth all human understanding, keep our hearts and minds in its great comfort and abounding rest.

At the conclusion of Mr. Benjamin's address, the Rector, Rev. Mr. Backus, recited the Committal service, after which the choir sang, "I heard a voice from heaven." Mrs. Imogene Brown, of St. Bartholomew's, sang "He leadeth me." Mrs. Brown became acquainted with Mr. Orton on board a steamer coming from Europe. "He leadeth me" was his favorite hymn, and she had often sung it for him. When she heard of his death she requested to be allowed to sing it at his funeral, and permission was gratefully granted. It was rendered with great power and beauty, and profoundly affected the audience. Benediction was then pronounced, and the choir sang "Nearer, my God, to Thee," as the casket was borne to the hearse.

The remains were deposited in the ancient cemetery of Sleepy Hollow. There, beyond the box-hedged grave of Washington Irving, un-

der a spreading cedar, on the edge of a gentle slope, looking northward, beside two tiny mounds where his children lay, was gently laid the body of William Orton. After the recitation of Easter Even collect, and the pronounciation of the benediction, the grave was filled, and the floral offerings, earth's last token of love to the departed, were left upon its crest.

Less perishable than the flowers which left a fast decaying glory on the last resting place of a great and much beloved man, were the unspoken benedictions of a vast multitude of mourners who felt that, in the death of this tender hearted and royal nature, there had come a deeper shadow over the horizon of their own hearts, and that one of the bulwarks of the world's honor and fidelity had been forever removed.

Shortly after Mr. Orton's death it became necessary to choose his successor. This was promptly done by the election to the Presidency of his able associate and attached personal friend, Dr. Norvin Green, whose intimate knowledge, extraordinary capacity for labor, strong sense, calm and discriminating judgment, and long association with Mr. Orton in executive duties, made him the only proper incumbent of the vacated chair. It relieves death of some of its darkness to know that one who loved and honored him succeeds him in his great trust.

At the same time of Dr. Green's elevation, there stepped into the Vice-Presidency Mr. Hamilton McK. Twombly, a new man, young, bright, alert, quick-witted, the representative of a vast interest, who at once took charge of the important portfolio of Dr. Green's vacated department, and whose future activity in the management of the Western Union Telegraph Company seems certain and unmistakable.

# AMERICAN TELEGRAPH LINES.

1878.

COMPANIES	Offices.	Em- ployees.	Miles of Pole Line	Miles of Wire.
Atlantic & Pacific.....	528	794	8,853	22,243
Anglo American (Land).....	23	89	1,006	1,180
Aurora and Rising Sun.....	5	5	30	30
Alabama and Chattanooga.....	24	24	295	295
Alabama and Nashville.....	3	3	31	31
Altahoma.....	2	2	38	38
Ashtabula, Youngstown & Pittsburgh.....	14	14	63	63
Alton Bay, N. H.....	3	3	25	25
American, of N. H.....	13	13	80	88
British North American.....	22	22	574	574
Burlington and Missouri.....	17	17	191	191
Black Diamond & Nortonville, Cal.....	2	2	4	4
Burlington and South Western.....	18	19	130	130
Baltimore and Ohio.....	136	341	1,221	1,409
Buffalo, New York & Philadelphia.....	23	23	120	120
Boston Corners and Rhinebeck.....	7	7	35	35
Boston Corners and Poughkeepsie.....	10	10	43	43
Burlington and Lamolille.....	4	4	35	35
Brandon and Sudbury.....	2	2	7	7
Bar Harbor.....	1	1	9	13
Big Sandy.....	2	2	13	13
Bridgeport and Victoria, Tenn.....	3	3	20	20
Cape Breton Coal Co.....	3	3	28	28
Colusa Lake and Mendocino, Cal.....	27	32	260	260
Central Pacific.....	142	212	2,788	4,904
Cheyenne and Black Hills.....	6	6	200	200
Cairo and St. Louis.....	15	20	150	153
Chicago and Iowa.....	18	20	104	104
Camden, Fla.....	2	2	12	12
Columbia and Camden.....	2	2	63	63
Chesapeake and Ohio.....	24	32	421	421
Cattskill and Windham.....	4	4	25	25
Chester and Derry.....	3	3	7	7
Cumberland and Piedmont.....	2	2	20	20
Connecticut River.....	20	20	80	80
Covington and Somerset, Ky.....	18	18	158	158

AMERICAN TELEGRAPH LINES—*Continued.*

COMPANIES.	Offices.	Em- ployees.	Miles of Pole Line	Miles of Wire.
Dominion of Canada.....	368	450	3,656	7,169
Deseret.....	64	65	948	1,109
Deer Lodge.....	3	3	150	150
Detroit, Lansing and Northern.....	34	34	184	184
Darien, of Georgia.....	2	2	34	34
Darlington and Timmonsville.....	3	3	30	30
Ellsworth and Tremont.....	2	2	22	22
Ellsworth and Deer Island.....	4	4	30	30
Florida Tel. Association.....	9	9	155	155
Fayette and Rodney.....	2	2	15	15
Gold Hill, Cal.....	2	2	11	11
Gold and Stock.....	30	216	120	1,193
Grand Tower Mining & Man. Co.....	3	3	25	25
Grand Rapids and Indiana.....	51	51	450	450
Good Intent Tow Boat Co.....	6	6	110	110
Greenville and Columbia.....	15	15	217	217
Great Falls and Conway.....	15	15	71	82
Homer and Minden, La.....	2	2	20	20
Hawkeye.....	24	24	190	200
Hillsboro and Blanchester.....	4	4	21	21
Harrington and Jonesport.....	3	3	17	17
International Ocean.....	22	37	736	1,500
Kesaqua and Iowa.....	2	2	4	4
Lebanon and Nashville.....	2	2	32	32
Little Rock and Fort Smith.....	13	13	168	168
Lumberton and Fayetteville, N. C.....	2	2	35	36
Larabees to Claremont.....	4	7	25	25
Lake Mohunc and New Paltz.....	2	2	6	6
Lake Ontario.....	22	22	146	146
Lexington and Mount Sterling, Ky.....	3	3	33	33
Montreal Telegraph Co.....	1,507	2,337	12,044	20,479
Montezuma.....	6	6	34	34
Merchants' Union, La.....	2	2	75	75
Mineral Range.....	3	3	13	13
McGungie and East Texas, Pa.....	17	17	30	30
McConnellsville Tel. Co.....	1	1	30	30
McArthur and Zaliski.....	2	2	7	7
Marietta and Cincinnati.....	34	56	293	486
Montclair and Greenwood.....	12	12	50	52
Moscow and Somerville, Tenn.....	3	3	14	14
Marion and Scio.....	2	1	7	7
North Western.....	550	1,130	2,100	5,400
Northern Pacific.....	28	28	343	343
New Iberia and Washington.....	7	7	61	61
New Bremen and Botkins, O.....	3	3	15	15
Nevada and Northern.....	7	7	460	460
New York and Midland.....	48	48	360	648
New Jersey Midland.....	19	19	78	160
New Hampshire Co.....	3	4	7	7
Northwestern Ohio Co.....	9	9	69	69
Ocean Tow Boat Co.....	6	6	112	112

AMERICAN TELEGRAPH LINES—Continued.

COMPANIES.	Offices.	Em- ployees.	Miles of Pole Line	Miles of Wire.
Oregon Steam Nav. Co.....	7	7	210	210
Paducah and Elizabethtown.....	14	14	110	110
Perry Tel. Co.....	2	2	13	13
Pensacola Tel. Co.....	14	14	100	100
Pittsburgh and Charlestown.....	10	10	32	32
Port Gibson and Grand Gulf.....	2	2	6	6
Pennsylvania R. R., Penn. Div.....	215	440	1,053	1,900
"    "    N. J. Div.....	181	271	501	1,131
"    "    Erie Div.....	73	119	454	1,052
Philadelphia, Reading and Pottsville.....	297	398	884	1,999
Port Jervis and Milford.....	4	4	24	24
Phonicia and Gilboa.....	6	6	35	35
Poultney and Middletown, Vt.....	3	3	8	8
Puget Sound.....	7	7	54	54
Rock Island and Mercer.....	6	6	26	26
Richmond and York River.....	4	4	38	38
Raleigh and Augusta.....	7	7	77	77
Southern Minnesota.....	23	30	170	170
Suison and Rio Vista, Cal.....	6	6	34	34
Shelby Iron Co.....	2	2	5	5
Santa Clara and Saratoga.....	2	2	13	13
Santa Cruz and Felton.....	2	2	7	7
Saratoga and Schron Lake.....	13	13	85	85
State of Maine Hospital.....	2	2	1	1
South Hadley Falls.....	2	2	1	1
Southern States Coal and Iron.....	2	2	6	6
Snohomish Tel. Co.....	3	3	14	14
Taylorville and Susanville.....	2	2	32	32
Texas and Pacific.....	60	60	324	403
Toledo and Woodville.....	8	8	90	90
Tennessee Coal Co.....	2	2	20	20
Terrebonne and Thiboudeaux, La.....	2	2	4	4
Troy and Union Springs.....	5	5	30	30
Tybee.....	2	2	20	20
United States.....	55	90	3,000	3,000
Union and Spartanburg.....	2	2	30	30
Ulster and Delaware.....	20	20	74	74
Utica and Black River.....	15	15	125	125
Utica and Rome.....	4	4	15	15
Utica, Watertown and Morristown.....	18	20	150	150
Vermont International.....	20	25	147	272
Vicksburg and Greenville, Miss.....	7	7	150	150
Western Union.....	7,672	12,224	77,861	199,022
Western (Hinckley's).....	30	30	105	105
Washington and Ohio.....	7	7	52	52
Woodville and Bayou Sara.....	2	2	25	25
Wilmington and Reading.....	10	10	70	70
Yosemite Valley.....	5	5	65	65
<b>Total.....</b>	<b>12,982</b>	<b>20,402</b>	<b>127,352</b>	<b>285,622</b>

## CHAPTER LV.

## THE SUBSCRIPTION TO THE MORSE MEMORIAL.

NOTHING in the history of the Telegraph is more remarkable than the unanimity with which the proposition to honor Professor Morse was received. The record of the contributors was promised and is now redeemed. It is the most complete list of the telegraphic craft of that period which could be given.

The following gentlemen, chiefly residents of New York, contributed the cost of the granite pedestal and inauguration expenses.

## CONTRIBUTORS.

William Orton, Chief Justice S. P. Chase, Alex T. Stewart, Gen. Joseph Hooker, Marshall O. Roberts, Wilson G. Hunt, William Gulien Bryant, John A. Griswold, S. B. Chittenden, E. D. Morgan, William Kelly,	E. S. Sanford, D. N. Barney, James H. Banker, Marshall Jewell, Lewis Roberts, W. H. Kent, George W. Childs, Gov. Rufus B. Bullock, Clarence Rathbone, Sir Hugh Allan, O. A. Dodge,	Andrew Carnegie, W. E. Dodge, Jr., James Stokes, William E. Dodge, A. A. Low, Augustus Schell, Moses Taylor, Anson Stager, Charles T. Chester, George Granville White,	Alexander M. White, W. B. Dinsmore, Maj. John D. Adams, George H. Thurston, Harrison Durkee Abram S. Hewitt, E. H. Van Kleeck, John Steward, Cyrus W. Field, Peter Cooper.
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## SUBSCRIPTION OF THE OPERATORS — NAMES OF SUBSCRIBERS.

## ALABAMA.

Allen, Mrs. Mary Alston, R. H. Bradley, John Barry, O Roswell, F. Bullock, F. W. Bockwith, H. C. Campbell, Jerome Conley, John A. Crowe, C. C. Croelman, A. L. Cass, William Cooke, P. H. Depew, C. J. DeForest, C. L. Doran, James Dunn-H. K.	Edwards, C. H. Echols, J. E. Erwin, Marcus Fowler, R. J. Falladay, W. Findley, D. L. Goelet, E. B. Gillespie, O. R. Griffith, J. F. Goode, Thomas E. Hewlett, T. J. Hoffman, S. J. Howe, George W. Kennedy, E. Lewis, John Logan, J. H. Lister, J. N.	Murray, James Mason, E. W. Moody, C. L. Mcrywoather, C. G. Moffatt, Frank G. McGaughery, E. W. Nettles, W. M. Oliver, C. W. Oliver, T. A. Potter, Lewis Purnell, J. H. Powers, John M. Peel, E. Pride, Thomas Saville, E. J. Sanford, William Terry, J. C.	Terry, T. B. Thomas, J. C. Thompson, J. J. Thompson, V. A. Taylor, W. B. Tynan, John Taylor, W. B. Taylor, Mrs. W. B. Taylor, Miss Carrie Wolf, Thos. J., Jr. Wenzel, John Winter, E. Worden, J. W. Woodruff, C. D. Weeks, W. A.
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## ARKANSAS.

Abbott, William Brown, L. Walter Chambers, W. D. Chandler, J. W. Colvin, J. M.	Carl Lee, Ed. S. Conolly, C. P. Dellmon, John N. Grogan, John W. Hunt, George B.	Hunter, Charles E. Hull, J. T. Neely, J. B. Newton, J. L. Newton, B. C.	Owen, J. P. Pillow, Wm. A. Pillow, Ben. S. Ryan, W. G. Richardson, A. L.
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**BRITISH COLUMBIA.**

Lamb, F. H. McMicking, R. B.

**CALIFORNIA.**

Allen, John F.	Dittmer, John	Muir, John	Swain, C. T.
Bennett, H. M.	Field, Stephen D.	Martin, Ed.	Swain, C. C.
Brown, J. W.	George, F.	Ollivier, R.	Shearer, Ben. C.
Bolden, J. F.	Gonzales, A.	O'Brien, James W	Sellon, L. J.
Burch, C. B.	Gamble, James	Post, A. H.	Shepherd, C. J.
Brown, N. H.	Goodall, William	Pearson, E. L.	Street, Charles E.
Bulletin, Evening	Hutchison, W. S.	Richtmyer, B. F.	Thomas, Charles J.
Buck, Addison	Hoag, C. P.	Spinner, William	Thatcher, J. H.
Cornell, A. F.	Hubbs, Ch. H.	Sawyer, George	Urquhart, J. S.
Carder, J. B.	Holbrook, C. E.	Snyder, C. D.	Villegas, Y. P.
Coons, Alonzo,	Heenan, C. O.	Sabine, J. J.	Weems, J. D.
Doychert, J.	Jungerman, E.	Storror, L. W.	Wheeler, T. P.
Dozier, Charles D.	Lovejoy, A. P.	Stoddard, J. R.	Wells, A. B.
Davis, Charles	McGrew, C. O.	Swain, J. F.	

**COLORADO.**

Bennett, Charles F.	Fisher, William R.	Mosier, H. J.	Woodward, B. F.
Bush, B. F.	Harris, J. J.	Stephens, Ebner	

**CAPE BRETON.**

Blissett, Miss	Friends & Other Friends,	McDonald, William	Scanlan, T. D.
Chipman, O. H.	Grant, Peter	McDonald, William	String, E. S.
Dunlap, David	Gynau, Annie	McLennan, Donald	Treen, Marietta
Donovan, H. N.	Grant, Mary Jane	Nicholson, Samuel	Ward, J. P.
Earle, E. P.	Hamilton, David	Patrequin, Henry	
Earle, W. E.	James, T. C.	Secton, A. P.	
Fixott, Miss	Martell, Nathaniel	Scanlon, M.	

**CONNECTICUT.**

Andrews, E. H.	Downer, M. M.	Jennings, L. N.	Ralfe, Fred.
Avery, Nina H.	Dolan, Thomas	Jackson, L. S.	Raymond, R. S.
Barbour, George H.	Emmis, John	Kennedy, M. L.	Russell, F. W.
Butler, J. K.	Emily, C. H.	Kenyon, E. M.	Redfield, J. E.
Boardman, L. Addie	Edwards, M. J.	Kennedy, M. T.	Richardson, W. P.
Bailey, Mammie E.	Edgcombe, D. W.	Lester, Emilie	Reeder, James
Bond, J.	Fox, E.	Leeke, M. A.	Sperry, A. W.
Beckwith, H. C.	Follansbee, Lizzie W.	Lounsberry, J. H.	Samuels, F.
Burnett, F. S.	Fairchild, J. M.	Long, M. J.	Sherry, Emma J.
Bartlett, E. T.	Fairchild, W. H.	Lord, F. W.	Spornay, W. N.
Burnham, Frank	Fairchild, Fred.	Lynde, E. M.	Smith, C. S.
Bronson, Harvey	Foote, W. H.	Manley, Hattie L.	Stone, W. T.
Botsford, J.	Freeman, S. C.	M., Southport	Sesery, Martin.
Buckley, E. J.	Fitzgerald, M.	M., Danbury	Stevens, N. B.
Buell, Charles E.	Fitzgerald, John	M. M. D.	Sundant, Walter J.
Benjamin, D. M.	Ferris, John	Monroe, S. M.	Sperry, S. D.
Case, Charles E.	Farrell, Thomas	M'Callif, J.	Sweetland, R. W.
Cook, Edward C.	Gorham, Sadie	Murphy, K. A.	Snow, L. M.
Clapp, Edward	Goodrich, T. H.	Martin, George	Smith, J. A., Jr.
Coak, Fred N.	Hathaway, F. R.	Munger, George	Shermin, E. G.
Case, D. B.	Holt, Miss E. A.	McNell, Charles	Thompson, C. S.
Chapin, George W.	Hilton, C. E.	McNell, Nellie C.	Waterbury, C. W.
Corcoran, John	Hubbard, B. D.	McNell, V. F.	West, Adle F.
Canfield, A.	Hutchkiss, W. T.	Miller, E.	Williams, F. S.
Churchill, H. H.	Hanrahan, John	Matson, W. L.	Ward, Miss Lizzie T.
Crandall, H. C.	Hunt, C. R.	McGill, C. J.	Watson, T. L.
Chapman, J. L.	Henry, F. W.	McGill, Peter	Waterbury, G. A.
Curtis, G. B.	Hartford Daily Times	Nash, C. M.	Woodford, S. M.
Clark, Johnnie	Hartford Daily Courant	Nash, S. L.	Wessels, H. W.
Clapp, D. E.	Hartford 1st Natl. Bank	Nickerson, L. B.	Waters, Miss
Cotton, B. F.	Hartford S. B. Ins. Co.	Nolan, J. P.	Wheeler, Porter A.
Coville, Frank	Howard, Charles G.	Otis, George	Whitely, F. H.
Cheney and Brothers	Hamilton, G. W.	Osborne, J. A.	Woodruff, Samuel F.
Dare, A.	Hubbell, G. W.	Post, Lon. E.	Woodbridge, C. W.
Dickerman, Miss S. S.	Hubbell, G. B.	Platt, C. H.	Whitts, Lyman A.
Dennison, M. C.	Halliday, J.	Powell, James B.	Yale, Charles A.
Doane, Miss S. M.	Hovey, A. B.	Rider, E.	Yale, B. Frank.
Dorman, Carrie E.	Hinckley, W. W.	Reynolds, G. M.	
Davison, F. M.	Ingoldsby, Francis	Reynolds, Giles	

**DELAWARE.**

Bingham, W. E.	Fleming, B. F.	Kay, George T.	Shivler, Harry
Carlisle, Frank	Griffith, W. B.	Moody, Frank P.	Simpson, W. M.
Calloway, John W.	Hallam, J. W.	Rawlins, D. T.	Westbrook, W. T.
Coulbourne, J. F.	Hilyard, W. F.	Simpson, H. T.	Watson, Albert
Connor, A. B.	Johnson, George W.	Simpson, George	White, John

## DISTRICT OF COLUMBIA.

Adams, A. S.  
Bender, Robert W.  
Bates, Bennett R.  
Bishop, A. H.  
Curren, Ed.  
Connor, Paul D.  
Connor, M. F.  
Cash  
Dyer, William  
Happ, John  
Halley, James

Holley, M. Y.  
Jones, William G.  
Jones, G.  
Johnson, Benjamin  
Johns, Benjamin F.  
Kanode, A. H.  
Kerbey, J. A.  
King, James H.  
Loomis, C. F.  
Lombard, H. C.  
Larcombe, H. C.

Larcombe, J. H.  
McConnell, John F.  
Maynard, George C.  
McCann, Henry C.  
Marsan, Morrell  
Miles, H. R.  
Noyes, J. C.  
Royce, Fred W.  
Ryan, J. A.  
Swift, James A.  
Stewart, Edward C.

Squire, F. D.  
Stalcup, John  
Tinker, Charles A.  
Tallman, J. C.  
Marsan, T. H.  
Wells, Harry A.  
Whitney, Leonard  
Wells, Cornelius  
Young, W. H.

## DOMINION OF CANADA.

Adams, D.  
Anderson, James  
Armstrong, J. A.  
Attwood, J.  
Addison, M.  
Adam, E.  
Atcheson, J.  
Bourne, Charles  
Bowman, W.  
Baker, H. S.  
Black, G.  
Balc, J. C.  
Bethune, N. W.  
Battle, J. R.  
Beswick, W. H.  
Burker, H., Jr.  
Bennett, A.  
Bennett, W.  
Burns, W. J.  
Berry, A.  
Blair, W.  
Battin, W. P.  
Buttery, S.  
Brown, L.  
Bartlett, A. W.  
Barclay, J.  
Bailey, Napoleon  
Belfour, J.  
Blondin, A.  
Belleveille, A. E. R.  
Boucher, M.  
Buck, Robert  
Buck, J. S.  
Breck, L. W.  
Barber, J. A.  
Baker, J. W.  
Bennington, C. W.  
Brown, J.  
Clandinman, J. C.  
Cochrane, J. C.  
Connor, J.  
Clark, A.  
Constock, C.  
Curry, J. L.  
Cullen, W.  
Cuppauge, R.  
Carty, J.  
Cooke, W.  
Chalmers, H.  
Chillas, Miss M.  
Cream, M.  
Chanucey, W. H.  
Connell, E.  
Chaplin, P. F.  
Cannon, E. A.  
Cushing, James  
Conway, James  
Chapman, G. E.  
Cushman, S. S.  
Dakers, James  
Dwight, H. P.  
Douglas, W. P. A.  
Duncan, D.  
Douglass, H.  
Dunlap, Thomas  
Davis, I. J.  
Deschenes, M.  
Dixon, E. B.  
Drumm, W. H.  
Duffin, Miss  
Dunham, R. K.  
Dow, W.  
Duggan, J. R.

Daley, John  
Dupelow, M.  
Douglas, G. R.  
Dwyer, Eugene  
Donahu, T.  
Dowley, K.  
Davoust, J. L.  
Dickinson, G.  
Eby, Martin  
Eason, R. F.  
Edwards, W. E.  
Edwards, A. H.  
Edwards, George  
Elibeck, R.  
Ebbs, S.  
Elliot, W.  
Eadys, T.  
Findlay, S. A.  
Foster, J.  
Fleming, Thomas  
Fortier, C. Lyman  
Franklin, B. O.  
Fraser, J.  
Flanagan, J.  
Ford, G.  
Farnsworth, Miss A.  
Foster, J.  
Furness, W. C.  
Grant, A.  
Gandin, James  
Grier, T. J.  
Gorman, James  
Grier, W. J.  
Grant, John  
Grant, A.  
Goodevo, W.  
Graham, W. J.  
Gunn, W. A.  
Gray, W.  
Henderson, J. P.  
Hutchinson, A.  
Hegman, O.  
Henderson, T.  
Hunter, A.  
Henderson, S. W.  
Houlehan, J.  
Hanna, R.  
Hurley, F. E.  
Haynes, F. R.  
Hackett, T. L.  
Hambly, W.  
Hurley, J.  
Hanchette, W. D.  
Harnon, E.  
Hall, Charles  
Hollister, W. G.  
Hibbard, W. L.  
Hubbard, Miss Kate N.  
Hosmer, G.  
Hecogens, J.  
Hill, J. N.  
Hall, W. L.  
Ingram, J.  
Johnson, H. A.  
Jones, C. T.  
Jones, A.  
Jean, F.  
Kirk, W.  
Kelly, John  
Kearnes, James  
Kent, J.  
Kelly, P.  
Kehoe, T.

Kennedy, G.  
Lighthart, W. K.  
Lewis, D.  
Lancts, E. J.  
Lockwood, T. C.  
LeRoy, M. K.  
Lawson, S. D.  
Longmore, L.  
Lanskall, John  
Le Fevre, J. H.  
Lawrence, W.  
Lansan, S. D.  
McGillis, D. J.  
McMullen, J.  
McRassil, R.  
McConnell, J. S.  
McNaughton, Miss  
Mathews, W.  
McCabe, P.  
Mauer, W.  
McCormick, E. E.  
McCauley, R. O.  
McKeuzie, J. S.  
McFarlane, L. B.  
McFord, G.  
McDonald, A.  
McAdam, J.  
Malone, A.  
Murphy, J.  
McConnell, E.  
McCallum, W.  
McFarlane, W.  
Motte, Miss Julia  
Moxam, J.  
McDonald, G. R.  
McTobie, J.  
McNaughton, A.  
McDonald, G.  
McDonald, M.  
Marling, P. R.  
Morrison, A.  
Marshall, E. M.  
Mitchell, W. C.  
Marchildon, J. H.  
McLaren, J. W.  
Martin, Albert  
May, Thomas  
Mullen, J.  
Mullen, F. J.  
Mullen, R. J.  
Melles, R. S.  
Moore, J. H.  
Mayo, W.  
Maizer, W.  
McCarthy, D.  
McPhe, A.  
McLanchlin, G.  
McIntyre, E.  
McCord, R.  
Nolan, W.  
Nichols, Wm.  
Noble, Miss A.  
O'Connell, T. F.  
Ogden, C. K.  
Orr, W. A.  
Preston, R.  
Perrin, W.  
Pare, F.  
Patterson, S.  
Parr, James A.  
Powers, E.  
Pilon, Joseph

Pike, ———  
Phemister, G.  
Pattison, A. J.  
Pope, E.  
Paton, H.  
Purdon, W. J.  
Pentland, A.  
Poustie, J.  
Peel, J. N.  
Parker, F. J.  
Phillip, W. M.  
Putnam, H.  
Robertson, William  
Reid, G.  
Rourk, N. H.  
Reynolds, J. W.  
Rogers, S.  
Richardson, C. T.  
Roberts, J.  
Scott, George J.  
Scott, Miss  
Scott, Richard  
Scott, H.  
Scott, William  
St. Dennis, F.  
Sinclair, T. F.  
Smith, Miss  
Smith, A. B.  
Savage, T.  
Swetzing, J.  
Smith, J.  
Sutherland, Miss  
Seeger, E. H.  
Snyder, George  
Stacey, L.  
Shearer, Silas  
Springer, M. P.  
Stinson, A.  
Swift, M.  
Stiles, L. H.  
Stone, H. M.  
Scott, Miss A.  
Storey, R.  
Sherwood, W. J.  
Showerman, J. C.  
Toye, B. B.  
Taylor, J. M.  
Tobey, R. B.  
Turner, C. T.  
Twohey, J.  
Thompson, J. W.  
Tweed, C. H.  
Thompson, W. E.  
Tuglee, A. A.  
Ussery, W. J.  
Wales, C. T.  
Walton, G. H.  
Wilson, John  
Winter, T.  
Wallace, H.  
Wardle, G.  
Wilson, John  
Wells, M. W.  
Watson, John G.  
Webb, G.  
Webbs, E. J.  
Wood, H. A.  
Wilson, W.  
Weller, T. Moore  
Walker, Miss N.  
Van Ostrand, D.  
Young, Albert  
Yearly, G. S.

DOMINION OF CANADA — Continued.

MESSENGEERS.

Sanderson	Jones	Reid	H. H. Meredith
Turner	Pagan	Hasley	W. Cook
Robertson	Wilson	Kennedy	W. Wade
Wallis	Moeser	Darrach	R. Somerville
Felkin	McGregor	Carroll	W. Rousseaux
McCaw	Britt	O. Borne	W. G. McCauley
Harris	Ellis	Henthorn	T. J. Payne
Potter	Brown	Chisholm	
Garratt	Jannell	W. Honer	

FLORIDA.

Branch, W. T.	Francis, J. W.	Johnson, W. A.	Redding, J. D.
Boyle, Thomas	Gough, Thomas E.	Ledwith, W.	Ross, O.
Bassett, R. P.	Heiss, W. H.	Maloney, C. S.	Schultz, G. R.
Crowley, John E.	Hall, W. H.	Morris, Oscar D.	Soule, J.
Clarke, Thomas S.	Hamlin, Daniel B.	Mann, T. C.	Thompson, C. W.
Canova, A. L.	Heiss, C. Y.	Pensacola Teleg. Co.	Taylor, James L.
Crowley, Daniel J.	Hatch, C. L., Jr.	Pearce, W. H.	Wilson, J. A.
Edwards, B. C.	Hall, W. T.	Pipkin, Miss L. A.	Wright, A. J.

GEORGIA.

Citizens of Fort Valley:	Askew, D. P.	Holcombe, Philo	Presley, J. H.
Anderson & Co.	Adkins, W. H.	Herrick, J.	Roiston, J.
Averd & Bro.	Bullock, Governor	Hemphill, Samuel	Ruthrauff, M. L.
Brown & Bro.	Bryan, T. M.	Hampton, Dr. R. J.	Rome Courier
Byington, G. W.	Brown, Frank P.	Harrell, O. C.	Rome Commercial
Brown, W. R.	Berrys & Co., Rome	Horne, O. A.	Rome Daily
Brown, E. M.	Bones, J. S., & Co.	Haygood, A. Watts	Rogers, C. H.
Brown, H. T.	Brenner, J. A.	Jones, J. W. A.	Rauh, A. J.
Everett & Brown	Brown, J. W.	Locke, Will. L.	Rusk, Thomas R.
Fountain, W. C.	Brenner, W. L.	Lyons, J. E.	Roland, G. W.
Greene, W. W.	Crowley, J. M.	McCutcheon, J. C.	Stephenson E. J.
Harris, H. U.	Camp, R. O.	Mann, W. D.	Stephens, J. M.
King, L. W.	Coyne, John	Macon Operators	Wall, C. H.
Miller, O. H.	Campbell, P. F.	Miller, John	Sprague, R.
Maddox, J. E.	Cothran & McGuire	McAvoy, George	Smith, A. R.
Mathews, J. R.	Coggin, H. W.	Meyer, C. W.	Turner, W. H.
Mathews, W. J.	Coleman, A. A.	Miller, L. K.	Taunton, Charlie
Sturgess & Anderson	Dwelle, G. W.	McCarthy, R. J.	Wall, C. H.
Skellie, A. D.	Davis, Thomas A.	Norvell, W. E.	Westervelt, J. D.
Shelton, W. L.	Griffith, Henry	Potter, A.	York, A. W.
Wiggins & Co.	Gustin, George	Printup, D. S., Rome	
	Gustin, George A.	Perry, Judge T. J.	

IDAHO.—Shilling, W. N.

INDIANA.

Adams, W. R.	Beecher, A.	Carnahan, S. H.	Griffith, Frank
Adams, G. C.	Bacon, D. T.	Carrier, C. H.	Garner, A. L.
Adams, W. E.	Blake, John G.	Criswell, John	Glover, Thomas S.
Ainsworth, Andie	Baldwin, Fred.	Dodge, G. A.	Goodin, A.
Aldrich, F. C.	Bobo, L. B.	Difley, J. J.	Goodin, D. A.
Arnold, C.	Butler, N. D.	Deusner, Phil.	Gilmore, J. C.
Arnold, Henry G.	Baker, A. M.	Doolittle, H. E.	Green, C. R.
Allen, E. C.	Bishop, J. H.	Duncan, Richard D.	Godfrey, George H.
Andrus, D. E.	Bishop, R. H.	Dolph, G. W.	Goodwin, James K.
Ashton, M. A.	Brown, C. B.	Dunn, Frank A.	Gorham, F. A.
Avery, A. J.	Bowers, James E.	Develin, D. C.	Gorham, C. D.
Avery, Mrs. A. J.	Boyd, W. H.	Davis, J. T.	Gilmartin, Nest
Allhands, George R.	Brownenberg, H. J.	Davis, J. N.	Harter, Frank W.
Avery, L. K.	Ball, William	Davis, Amos	Harter, B. C.
Allen, C. E.	Cook, W. G.	Davis, C. A.	Howlett, E. C.
Baln, T. J.	Carter, John D.	Davis, B. H.	Hugh, V. C.
Beaver, C. E.	Cone, W. S.	Davis, G. W.	Humphreys J. M.
Bechtel, J. M.	Church, S. B.	Day, S. H.	Higgins, C. R.
Bishop, J.	Crane, Thomas A.	Dyer, George W.	Hart, A. T.
Ball, John E.	Crawford, J. F.	Dunlap, Miss A.	Hart, W. B.
Boyd, John S.	Canniff, W. H.	Dickson, J. M.	Harvey, A.
Bucklin, J. J.	Camp, C. D.	Dilla, Dan.	Hamlin, W. H.
Bullard, Miller.	Campbell, Sam.	Eggleston, A. L.	Henderson, Goldson
Brewer, Ed.	Curtis, J.	Erringer, T. T.	Hunsaker, E.
Bingham, C. O.	Clark, J. R.	Fitzgerald, Willie	Hodskin, A. V.
Bachtenkircher, D.	Crim, J. H.	Fitzgerald, Edward	Hoover, J. N.
Biel, N.	Chaffer, B. M.	French, A. D.	Ilay, Charles D.
Basien, F. E.	Cummings, W.	Fuller, J. A.	Hotchkiss, Z. P.
Brown, W. G.	Cook, T. B.	Fairhead, J. E.	Hinsdale, D. C.
Beamer, E.	Connor, Eugene	Frey, Charles P.	Hill, J. M.
Burks, Eugene	Cleary, Tim.	Fontz, J. W.	Howard, Mrs. E. M.
Beal, D.	Crull, E. S.	Flanders, H.	Howard, E. M.
Brown, T. P.	Clifford, L. O.	Frazier, A. J.	Hurd, George A.
Bonnell, D. R.	Commons, W. B.	Fortenberg, James M	Hartman, W. H.
Bartlett, H.	Carpenter, J. W.		Harris, H. C.

## INDIANA — Continued.

- Hall, J. K.  
Hurd, A. R.  
Hughes, P.  
Hood, F.  
Hayward, A.  
Heustis, H. O.  
Hatfield, J. L.  
Howard, J. Edgar  
Hendricks, Ed.  
Hathway, C. E.  
Harris, J. B.  
Hartwell, G. A.  
Hart, Samuel  
Heltz, George  
Hart, A. T.  
Haughey, C. T.  
Junkins, W. B.  
Johnson, Harney C.  
Jones, T. E.  
Justus, W. L.  
Justus, D. G.  
Jones, J. H.  
Kelly, T.  
Kewley, Charlie  
Kelsey, Raymond  
Kishlar, J. W.  
Kirkman, J. B.  
Kennan, T. W.  
Lenning, W. F.  
Lennert, John P.  
Lyon, T. S.  
Lee, J. W.  
Little, Frank  
Lewis, James  
Logan, William  
Lindsay, S. C.  
Lehr, Charles  
Larimer, W. F.  
Larnerd, J. A.  
Lee, William  
Litic, Frank  
Lightcap, H.  
Langhorne, A. T.  
Lloyd, J. T. F.  
McManaman, J.  
Martin, John V.  
Mount, Charles F.  
McClellan, W. S.  
Mayes, T. A.  
Moore, John S.  
Mills, Frank  
Miner, C. T.  
Morgan, Lewis D.  
McAdams, Frank  
Montgomery, H. B.  
Montgomery, J. W.  
Morris, S. S.  
McMahon, W. H.  
Morris, J. E.  
Moore, J. O.  
Morris, E. J.  
Murphy, John  
McDonald, John  
McGuire, Owen  
Markle, Warren  
Mann, Miss Nettie  
Mead, W. S.  
Morgan, L. D.  
McNeany, J. M.  
Murphy, J. P.  
McMeans, Homer L.  
McGahan, P.  
Murphy, Patrick  
Nelson, George S.  
Nelson, R. J.  
Newman, George W.  
Nordyke, Israel  
Norcross, E. L.  
O'Neal, T. H.  
O'Neil, Thomas  
Ochiltree, S. M.  
Oldham, John C.  
Orrell, J. M. D.  
Orrell, A. L.  
Porter, George S.  
Parker, Robert  
Patterson, W.  
Pennington, W. H.  
PHELPS, E. C.  
Perry, J. L.  
Pinney, H. H.  
Pearson, L.  
Parker, Robert  
Peters, William  
Perrin, H. B.  
Post, Charles A.  
Powers, J. W.  
Patterson, Robert A.  
Prentice, J. S.  
Randall, F. A.  
Ranss, H. V.  
Ryan, R. B.  
Richmond, James F.  
Robinson, W. J.  
Robinson, G. Wheeler  
Eggin, M. M.  
Richardson, E. J.  
Rogers, H. A.  
Reeder, W. H. H.  
Roach, George B.  
Keynolds, Thomas  
Roper, George  
Reed, W.  
Redrup, E. K.  
Rheems, Alice B.  
Sawyer, R. H.  
Stumpton, D. W.  
Shearer, John R.  
Smith, C. H.  
Smith, C. Q.  
Spith, J.  
Smith, C. T. B.  
Smith, J. W. I.  
Stanley, Levi D.  
Stevens, J. T.  
Smallwood, H. T.  
Sanders, J. T.  
Siermer, Harri.  
Sweetland, George N.  
Stillwell, Duane D.  
Stone, James E.  
Sutherland, William  
Shepherd, O. M.  
Summers, A.  
Seeman, George F.  
Stevens, C. H.  
Shafer, D. R.  
Sears, J. B.  
Snook, F. M.  
Stephens, W. V.  
Shafer, Peter  
Sutton, B. W.  
Shaw, J. B.  
Sanderson, T. A.  
Sala, W. G.  
Sefton, George  
Simpson, John E.  
Shurick, F. S.  
Shumway, D. L.  
Saunders, J. T.  
Shearer, John  
Taylor, George  
Tweed, C. E.  
Teague, John L.  
Titchine, Georgius  
Towsee, E. A.  
Thomas, G. D.  
Temple, Charles W.  
Temple, G. A.  
Underwood, Z. T.  
Vinson, S. R.  
Vinson, Joseph V.  
Van Meter, T. G.  
Voorhees, B. S.  
Wallace, Ed. H.  
Wallace, H. B.  
Watts, J. C.  
Wallick, John F.  
Wagner, Charles H.  
Watson, William P.  
Woolfer, H. P.  
Wilson, J. C.  
Wiltshire, L. C.  
Walton, C. H.  
Weston, A. M.  
Webster, J. J.  
Weaver, D. A.  
Winter, J. H.  
Weakly, Mark K.  
Weller, W. H.  
Waterman, R. W.  
Winder, Alfred  
Whitney, Charles C.  
Weakly, George  
Wilson, D.  
Wilson, J. C.  
Wilson, S.  
Winter, George  
Wright, W. W.  
Wilson, Daneton  
Zent, Miss A.

## ILLINOIS.

- Allen, W. H.  
Allen, E. W.  
Alcorn, William  
Anderson, F. W.  
Allen, Samuel  
Allen, J. M.  
Barnwell, E. M.  
Babcock, W. N.  
Bush, G. N.  
Burnett, T.  
Bruce, N. E.  
Bixby, W. H.  
Bennett, H. L.  
Bacon, M. A.  
Boyd, S. F.  
Burrell, S. T.  
Bacon, H. L.  
Butler, George W.  
Brown, F. G.  
Brown, James A.  
Brown, Frank W.  
Bushnell, D. W.  
Brownell, A. S.  
Barlow, H.  
Baylis, J. W.  
Bailey, D. S.  
Belden, S. P.  
Bruce, Millard  
Belden, George D.  
Bowen, Isaac  
Bell, O. W.  
Boothe, J. C.  
Boyles, E. A.  
Candee, Henry H.  
Christance, C. E.  
Chittenden, A. T.  
Clark, Fred.  
Crookshank, W. H.  
Chambers, T. H.  
Crookshank, F. H.  
Cook, C. W.  
Chadwick, W. B.  
Chellis, W. E.  
Castle, Alfred  
Cartigan, Theod.  
Coe, Willie W.  
Crittenton, F. M.  
Carnohan, John M.  
Cumming, George  
Cropper, Charles W.  
Cherry, A. M.  
Carlisle, George F.  
Carlton, W. Y.  
Dresser, C.  
Dawes, F. L. C.  
Dustin, H. W.  
Diller, George M.  
Duff, R. F.  
Dixon, J. R.  
Drumb, S.  
Dean, Melville  
Daniels, J. P.  
Day, W. A.  
Dubarry, William  
DePue, H. C.  
Duplaine, F. P.  
Everingham, W. C.  
Ewing, W. D. A.  
Everett, W.  
Elman, W.  
Everett, W.  
Egan, James  
Elliot, M. A.  
Fosdick, J. C.  
Findley, S.  
Finnell, George T.  
Finney, T. V.  
Fisk, J. C.  
Fleming, George C.  
Forrest, W. R.  
Finnegan,ONEY  
Foster, Charles E.  
Fertig, C. A.  
Frelz, P. A.  
Gamble, Thomas D.  
Gilpin, Wm. D.  
Green, J.  
Cunn, Z. E.  
Gearhart, M. G.  
Gregory, G. M. D.  
Greenough, J. St. J.  
Gough, R. S.  
Goodrich, W. M.  
Gordon, H. P.  
Gishwiller, J. V.  
Gibb, Charles M.  
Graham, J. M.  
Gunn, A. B.  
Gordon, H. P.  
Gross, J. H.  
Gwin, T. J.  
Hall, W. D.  
Hamstein, H.  
Hatfield, Sam.  
Hamilton, W. N.  
Hague, W. S.  
Henning, A.  
Herbert, John  
Headley, L.  
Hugel, B. D.  
Hinsdale, Chas. W.  
Harrison, A. P.  
Hanker, J. W.  
Hussey, S.  
Hart, H. E.  
Hall, F. M.  
Hogan, Daniel  
Harrigan, J. G.  
Hough, Hattie  
Hough, James  
Hoffman, G.  
Hoffman, John  
Humphrey, E. C.  
Halsey, E. B.  
Hendrick, C.  
Heaford, W. W.  
Henniman, Chas. D.  
Hallenbeck, W. H.  
Ives, Dwight  
James, John L.  
Jones, M. B.  
James, S. D.  
Jones, A. T.  
Jeffries, J. O.  
Judson, C. O.  
Judy, C. C.  
Johnson, J. M.  
Kerns, T. S.  
Ketcham, F. H.  
King, John  
Knowles, M. C.  
Kelllogg, W. H.  
Kent, F. S.  
Kewell, M.  
Keeley, S. W.  
Kimball, J.  
Killian, William  
Kent, T. F.

ILLINOIS—Continued.

- |                   |                     |                    |                        |
|-------------------|---------------------|--------------------|------------------------|
| Koche, Henry      | O'Conner, J. G.     | Sutton, J. T.      | Vierborne, Abram       |
| Knecht, B. Weyd   | Pope, Abe.          | Sutton, Mrs. J. T. | Van Buren, J.          |
| Lambert, F. C.    | Pool, John          | Sutton, Miss Leoti | Van Devere, Miss H. N. |
| Lipton, J. W.     | Powers, S.          | Stimpson, C. M.    | Vogel, Hugo            |
| Lee, Charles H.   | Palmer, Miss S. B.  | Stafford, D.       | Warner, E. P.          |
| Leshie, C.        | Palmer, Frank       | Stephenson, W. H.  | Warner, Charles        |
| Lipe, W. N.       | Parker, A. F.       | Stevens, E. C.     | Warner, L. J.          |
| Lentz, S. P.      | Pratt, W. H.        | Sill, E.           | Warner, J. C.          |
| Leet, J. M.       | Peiren, C. E.       | Stittwell, A. W.   | Warner, A. R.          |
| Lee, A. J.        | Phelps, W. E.       | Sherman, M. W.     | Wetmore, A. S.         |
| Landenberger, F.  | Phelps, W. J.       | Stahle, Grant      | Wunder, Ed.            |
| Logan, W. J.      | Putnam, J. A.       | Safford, A. B.     | Wade, K. H.            |
| Musgrove, William | Parkins, George L.  | Sheldon, J. B.     | Wood, W. W.            |
| Musgrove, R. C.   | Parkins, John B.    | Spear, George E.   | Wilson, H. C.          |
| Mixer, C. L.      | Putnam, J. W.       | Sternberg, J. A.   | Wallace, C. G.         |
| Mattison, U.      | Powers, L.          | Snyder, J. L.      | Wilcox, Theo.          |
| McKinney, G. W.   | Phillips, John      | Schranner, L.      | Wright, N. S.          |
| McGee, W. R.      | Porter, J. Willie   | Shiery, A. W.      | Whitnah, A. J.         |
| Mcke, J. T.       | Patterson, J. A.    | Scherler, O.       | White, N. A.           |
| Manley, J. A.     | Pottzer, F. W.      | Sampson, F. G.     | Waterman, J. D.        |
| Mason, J. Q.      | Porter, George M.   | Silet, Charles     | Wood, William D.       |
| Morrison, C. M.   | Purdy, W. F.        | Sykes, L. R.       | Way, H. P.             |
| Moody, C. E.      | Rawlings, T. E.     | Strickler, E. F.   | Wallace, Charles       |
| Montor, John      | Rumer, Samuel       | Syford, D. N.      | Welch, F. M.           |
| Morton, Ira O.    | Stone, Ellis        | Stone, Ellis       | Wheeler, M. A.         |
| Mortley, S. E.    | Robbins, Mrs. M. E. | Swartz, D. C.      | Wheeler, L.            |
| Mann, Alton       | Rice, C. O.         | Swanson, J.        | Wetherford, S. D.      |
| Mears, Arthur     | Reals, J. F.        | Soule, J. J.       | Walfsberg, E.          |
| McKee, William    | Roberts, R. H.      | Schneider, J. S.   | Walker, J. M.          |
| Musselman, J. K.  | Roodman, J. M.      | Stanfield, J. A.   | Waldo, J. D.           |
| McGregor, A. H.   | Rogers, D. A.       | Trull, Z. A.       | White, D. W.           |
| Momson, W. H.     | Ryan, G. W.         | Thompson, F.       | Whitcomb, S. P.        |
| Newmeyer, P.      | Royal, —            | Turner, D. N.      | Wentworth, J. P.       |
| Norcross, F. E.   | Smith, James R.     | Thoms, W. A.       | White, Janger          |
| Nilson, C.        | Smith, T. Rice      | Trouslot, E. C.    | Walker, W. A.          |
| Nesley, L. A.     | Smith, D. J.        | Taylor, H. J.      | Walker, George L.      |
| Newton, O. L.     | Smith, J. M.        | Tankesley, J.      | Walker, G. F.          |
| Ocheltree, J. M.  | Smith, Day K.       | Tubbs, F. H.       | Wedon, W. H.           |
| Osborne, Ralph    | Smith, A. A., Jr.   | Thomas, W. M.      | Yost, E. A.            |
| Overhiser, J. C.  | Sweet, Don A.       | Ticknor, B. F.     |                        |
| Owen, H. W.       | Stapleton, John H.  | Ungles, W. J.      |                        |
| Owen, E. B.       |                     | Uhl, C. F.         |                        |

CHICAGO.

- |                   |                     |                    |                     |
|-------------------|---------------------|--------------------|---------------------|
| Angel, F. E.      | Giddings, Helen     | Patch, Charles H.  | Springer, L. C.     |
| Adams, Josie C.   | Giles, F. D.        | Porter, E. Payson  | Sill, A. M.         |
| Andrews, C. V.    | Gredle, W. J.       | Penoyer, L.        | Stanton, Emma       |
| Anderson, D. S.   | Haskins, Charles H. | Prentice, M. F.    | Shumway, Fred.      |
| Bagge, W. H.      | Huddleston, G. W.   | Park, R.           | Stewart, F. C.      |
| Barnard, Thomas   | Husted, C. E.       | Phelps, J. E.      | Thornton, H. B.     |
| Byrne, Paul       | Hobbs, Adlle M.     | Parker, L. D.      | Tillotson, Mrs.     |
| Bonghan, A.       | Jones, C. W.        | Quinn, Joe.        | Tramor, Joseph      |
| Bennett, E. B.    | Keeler, B. C.       | Rankin, R. C.      | Valeureux, F. G.    |
| Boyd, N. D.       | Lynch, S. G.        | Rousseau, M.       | Vanpelt, C. B.      |
| Chettle, M. G.    | Lynch, T. J.        | Robinson, S. L.    | Valliquet, T. L. A. |
| Crittendon, J. N. | Lithgow, C. H.      | Richardson, G. F.  | Waterman, O.        |
| Curry, Aug.       | Long, W. C.         | Redrup, Sophia L.  | Wilson, J. J. S.    |
| Catlin, C.        | Mason, S. C.        | Rudd, E. J.        | Wilson, Eddie       |
| Chapman, R. W.    | Medbery, J. H.      | Ryan, John J.      | Wilson, J. C.       |
| Cunningham, G. W. | Merrill, F. E.      | Stager, Anson      | Wilkinson, C. E.    |
| Drieslein, C. L.  | Maynard, H. C.      | Swain, F. C.       | Willis, W. M.       |
| Dolber, W. H.     | Morgan, C. B.       | Shape, A. E.       | Warner, L. E.       |
| Farrell, J. F.    | Myers, R. II.       | Sisson, W. H.      | Yetter, A. F.       |
| Felton, Geo. W.   | Minor, R. C.        | Summers, C. H.     | York, D. L.         |
| Fowler, John P.   | Nesley, J. N.       | Soule, C. E.       | York, George C.     |
| Firman, L. B.     | Nixon, Anne         | Simpson, George B. |                     |
| Foote, D. S.      | Plum, H. W.         | Singer, G. A.      |                     |
| Guthridge, J. J.  | Plank, A. F.        | Singer, F. W.      |                     |

IOWA.

- |                 |                       |                   |                   |
|-----------------|-----------------------|-------------------|-------------------|
| Allen, E. G.    | Bear, S. J. M.        | Dorchester, J. C. | Hughes, H. M.     |
| Anderson, J. B. | Bailey, E. K.         | Dinehart, Kate    | Hunt, H. H.       |
| Ashley, E. G.   | Bloss, J. G.          | Eagar, W. J.      | Henry, N. D.      |
| Alton, W. L.    | Bodman, Robert D.     | Eastbrook, C. E.  | Harrington, W. H. |
| Birchard, E.    | Cole, F. W.           | Ely, W. A.        | Husted, C. E.     |
| Bohric, O.      | Cumber, J. M.         | Ferris, B. H.     | Harbert, E. E.    |
| Barker, C. T.   | Chase, C. M.          | Fox, J.           | Hoyal, G. H.      |
| Bangs, L. G.    | Chester, C. F.'s Baby | French, M. J.     | Hull, M. G.       |
| Bronson, A. M.  | Crapeay, J. F.        | Fuliman, S. D.    | Harker, J. D.     |
| Britton, F. H.  | Conroy, H.            | Frame, A. R.      | Hines, T. S.      |
| Belding, J. W.  | Crowns, George H.     | Fowler, R. S.     | Hines, Thomas     |
| Beck, J. Q.     | Crary, A. J.          | Ford, T. J.       | Johnson, L. M.    |
| Berry, E. J. C. | Clark, T. E.          | Faugh, T.         | Johnson, L. F.    |
| Bell, N. H.     | Dutcher, H. B.        | Gray, Miss Mary   | Jennings, Charles |
| Bedel, A. W.    | Donohan, Thomas       | Gale, J. F.       | Jennings, James   |
| Brown, O. M.    | Denny, J. C.          | Haldiday, E. G.   | Kinnaman, H. A.   |
| Bush, E. H.     | Deland, D. A.         | Higley, D.        | Kendall, Frank    |

## IOWA — Continued.

Kirkpatrick, J. R.	Newton, H. C.	Ruff, E. W.	Steever, E.
Kelsey, W. H.	Nash, Thos.	Robertson, M. O.	Sweet, E. A.
Leonard, A. L.	Nash, W. J.	Resseque, Charles	Smith, M. A.
Leonard, Geo. B.	Nicholson, W. T.	Rice, Wm.	Strong, J. W.
Loomis, W. W.	Olmstead, H. A.	Sloan, J. M.	Strong, W. B.
Leary, W. A.	Olmstead, H. W.	Street, E. A.	Shaw, J. B.
Ludwig, J. F.	Parr, J.	Steedewick, W. F.	Towne, M. M.
Lyman, E. F.	Phillips, C. L.	Snyder, F. H.	Tracy, F. D.
Lloyd, W. J.	Palmer, Nellie	Skinner, C. K.	Talmaga, W. E.
Mathews, G. B.	Platte, Ida V.	Saxby, J. B.	Trimble, T. W.
Morgan, F. H.	Peck, George E.	Smith, George B.	Tufts, A. G.
Mosher, L. E.	Price, T.	Sutherland, Clark	Van Gilder, A. C.
Marks, H. C.	Paul, H. R.	Snyder, E. N.	Walt, E. O.
Moore, Erastus D.	Parker, W. H.	Stevens, C. J.	Whitson, O. J.
McKechanie, J.	Rheam, L. M.	Sparks, J. C.	Wirt, Miss J. J.
McLaughlin, Frank	Ryan, J. S.	Stewart, P.	Warfield, George A.
Morse, J. W.	Reed, W. L.	Steever, E. T.	Wheeler, Fannie M.
Munger, F. E.	Root, N.	Sholes, Ed.	White, M. J.

## KANSAS.

Abbott, F. M.	Dodd, G. A.	Hansen, Joe.	O'Rourke, John J.
Branham, Orlando	Evans, W. G.	Jackson, F. C.	Osborne, J. C.
Baldwin, W. B.	Everts, E.	Jones, F. C.	Poor, Scott E.
Burns, J. J.	Elli, C. D.	Kelly, J. B.	Rising & Son
Baldwin, Asa P.	Fortner, Hugh	Linton, E. H.	Shutts, John
Clark, A. B.	Fanning, W. H.	Lange, D. F.	Stout, Thomas J.
Cruise, John D.	Fisher, E. R.	Lawrence, G. N.	Shunway, W. A.
Cook, G. W.	Graham, J. W.	Littlejohn, Kittie	Thayer, B.
Cochrane, C.	Gates, F. J.	McMillen, L. T.	Tyler, J. Q.
Crooks, J. E.	Gilbert, E. F.	McDill, E. B.	Twiss, Jennie F.
Cassity, M. P. M.	Hunt, H. B.	Muir, William	Towis, J. A.
Cole, M. M.	Hiday, G. E.	Martyr, D. E.	Vestal, C. R.
Dunsmore, J. M.	Hard, J. A.	Mitchell, Leon G.	Wood, H. A.

## KENTUCKY.

Atkinson, W. T.	De Grove, W. M.	Hicks, Brown	Pogue, James E.
Adkins, Louie	Durant, G. B.	Jenkins, E. F.	Phelps, G. D.
Boyle, T. E.	Erringer, W. B.	Johnson, Sanford	Quinn, James
Biggert, W. L.	Fox, Thomas	Johnson, W. H.	Richardson, James F.
Buckner, E. A.	Fowler, Peter	Kerr, Edward	Rense Alex.
Buckner, M. L.	Fortune, Bend. W.	Kelner, Frank P.	Raitt, N.
Beaumont, R. J.	Friend, James E.	Kirklighter, J.	Smith, J. W.
Blick, Hiram	Frisbie, H. D.	Larmonth, Albert	Smith, C. A.
Bishop, Albert	Gilmartin, Thomas	Lingenfeiter, Horace	Springer, Robert S.
Carter, Kearsley	Gibson, John B.	Landrum, G. R.	Sterling, G. F.
Chambers, H. J.	Gaslin, John	Lyie, I. S.	Sinclair, Alexander
Curtiss, G. H.	Grant, A. E.	McCartey, Wm.	See, George N.
Colvin, John	Golding, G. J.	McLellan, Thomas	Sharrard, J. T.
Conner, John	Hull, A. K. V.	McGuire, C. J.	Todd, G. H. D.
Crawford, Andrew	Harper, F. L.	Mangen, Thos.	Van Horne, John
Craft, Frank L.	Hadden, James	Miller, P. H.	Watt, J. B.
Crafts, George	Holmes, Newton C.	McKenzie, Mrs. Mary B.	Wade, J. H.
Carey, Samuel	Haas, Geiger	McCarthy, Joe.	Wilson, Robert
Caton, C. W.	Headden, John H.	McGuinness, J. H.	Wilson, W. G.
De Bree, Nathan	Holloran, J.	Norton, G. N.	Woodruff, J.
Dingman, D. J.	Hodge, W. S.	Netherland, G. E.	Yellow, A. M.
Dunlap, S. M.	Hunter, H. B.	Norton, Robert N.	
Duke, W. V.	Heidelberg, H.	Pierson, Harry	

## LOUISIANA.

Alleyn, J. T.	Davis, E. J.	Haight, C. H.	Moak, W.
Alleyn, Charles J.	Dwyer, C. W.	Hill, William	Maloney, James
Alleyn, Thad. D.	Daniel, Leonidas	Hirling, Alex.	Maloney's Baby
Adam, J. E.	Dwyer, C.	Hugent, George M.	Mahoney, Dan.
Adam, J. L.	Delgado, P.	Huder, P. J.	McElroy, John
Adams, Taylor	Downey, W.	Hudson, J. W.	Montgomery, C. W.
Adams, J. L.	Driscoll, Thm.	Irvine, Hugh	Morrison, J. P.
Austin, J. D.	D'Echaux, J.	Johnson, A. B.	McLemore, F.
Alleyn, J. D.	Even, L. E.	Judson, J. W.	Morrison, J. W.
Brown, Taylor L.	English, A.	Jones, John L.	Meehan, W. T. D.
Blaichard, T. F.	Echan, J. D.	Kearns, James J.	Meehan, John H.
Brooks, John	Fitzgerald, Thomas J.	Keron, W. D.	Meehan's Baby
Brimm, Henry	Fitzpatrick, Simon	Keating, Joseph J.	McLellan, E. C.
Bush (4), W. T. Brick	Frazier, Will	Kelly, James	Moyle, William
Buchanan, J. L.	Fische, H. J.	Keely, James	Mansker, J. E.
Booth, J. W.	Fox, E. M.	Landy, W. J.	McEachern, J. H.
Bright, Aymer	Flanery, David	Lennatt, A. K.	Nugent, G. M.
Bush, W. E.	Gardner, M. D.	L'Hommedieu, Wm. A.	Nugent, Robert
Cumminns, W.	Graham, Thomas E.	Loss, A. T.	Newell, James
Cumminns, W. P. J.	Gardner, John J.	Malouey, P.	O'Sullivan, P. W.
Chinn, T. H.	Gardner, Thomas P.	Mathews, John	Parsons, Robert
Christian, J. W.	Grant, Henan E.	McCann, Thomas	Ring, Jerry
Campbell, D.	Grutbridge, J. J.	McDaniel, J. E.	Rankin, James
Dillon, B. B.	Hooper, Thad. F.		Ring, Pat.

LOUISIANA—Continued.

Rae, G. J.  
Sullivan, John  
Sewell, E. W.  
Swindell, John  
Sennett, Alex. K.

Smith, J. A.  
Selman, Geo. W.  
Sevier, S. O.  
Shores, E. T.  
Thomas, C. D.

Vincent, A.  
Von Eye, E.  
Viucant, A.  
Walsh, M. P.  
Warren, —

Welch, Wm.  
Wilder, M.  
Wark, A. P.  
Walt, W. W.  
West, W. D.

MARYLAND—City of Baltimore.

Abbott, George M.  
Bauer, Wm. H.  
Bauer, Alex. A.  
Bowersock, Austin  
Bloxham, Richard J.  
Brendel, Graves S.  
Boone, W. C.  
Brendel, C. H.  
Bowman, Alonzo  
Conner, Samuel  
Cross, John T.  
Carncross, W. W.  
Cramer, Jacob  
Davis, A. G.

Fisher, Isaac  
Finegan, Joseph  
Faster, W. H. S.  
Garden, C.  
Guthridge, John F.  
Ganger, Fred. Wm.  
Gallion, Edward  
Gintz, L.  
Hess, Isaac, Jr.  
Inalenslein, Bennett  
Hart, Malcolm  
Haase, Edward  
Johnson, Benj. T.  
Jones, George

King, T. J.  
Kirby, George A.  
Kelly, Patrick  
McMakin, Mary L.  
McLean, John W.  
McCord, Marshall A.  
Miller, H. W.  
Pryor, Frank  
Pearson, Edward  
Rest, Bella  
Sunwalt, Theod.  
Spedden, W. A.  
Spalding, John B. R.  
Stuart, Charles G.

Smith, Robert H.  
Sellman, Arthur W.  
Smith, George  
Smith, Thomas  
Stern, Robert  
Taylor, W. H.  
Wilson, Arch. Jr.  
Wilson, W. E.  
Wolff, Chas. C.  
Williams, Rudolph R.  
Wilson, Frank P.

MARYLAND.

Aughinbaugh, D. C.  
Benjamin, A. J.  
Bowman, Alonzo  
Cosden, Geo. W.  
Cline, John  
Cassiday, J.  
Deetz, G. M.  
Fluschutz, F. W.

Hardesty, E.  
Houser, J. W.  
Johnson, James J.  
Kreb, O. F.  
Kohlenberg, G. T.  
Legge, John F.  
McEwing, L.  
Miller, F. E.

McKinsey, W.  
Mullinix, T. P.  
Mullinix, Wm.  
Miles, J.  
Quinn, J. M.  
Rizer, F.  
Sprigg, S. D.  
Stidham, S. B.

Shriver, A.  
Smith, H. N.  
Swingle, A. A.  
Truss, Samuel L.  
Walker, C. G.  
Woodhouse, E. N.

MAINE.

Austin, M. C.  
Austin, M. P.  
Albrecht, Louis H.  
Blaisdell, M. G.  
Black, Samuel, Jr.  
Bradford, N. Y.  
Bradford, W. H.  
Brickett, Herbert  
Boothby, Fred. E.  
Bliss, Charles E.  
Bliss, George  
Benson, Charles C.  
Benson, A. W.  
Black, Samuel  
Baskow, C. C.  
Booker, A. W.  
Crane, Jared  
Crane, James E.  
Cobb, Nathan  
Collamore, Charles J.  
Chase, Ed. G.  
Calne, Miss Carrie  
Carter, G. A.  
Corey, W.  
Clark, Fanny M.

Cushing, Geo. H.  
Doe, Hattie A.  
Dougher, John H.  
Dougher, James A.  
De Grancy, Frank  
Dow, E. M.  
Eldridge, Samuel W.  
Estabrooke, D. E.  
Eldred, Sarah M.  
Edwards, Miss C. P.  
Farnham, B. D.  
Flood, Jennie C.  
Genn, A. A.  
Gilmore, Charles H., Jr.  
McKensie, S. W.  
Kerbert, Patrick  
Hartwell, W. E.  
Holden, May  
Hooke, P. J.  
Hooke, F. A.  
Ingalls, F. M.  
Ingersoll, Hattie W.  
Jordan, E. H.  
Kibby, G. W.  
Kingsley, Austin F.

Leavitt, Charles H.  
Leavitt, Seward  
Lambe, Robt. A.  
Lee, Fommie  
Livermore, Chas. D.  
Livermore, D. P.  
Malone, James  
Moore, J. J.  
Moore, F. J.  
McDonough, P.  
McKay, S. Frank  
Merrill, Eddie S.  
McLaughlin, W. W.  
Masterson, Peter  
McKenzie, Colin  
Merrill, Geo. Edward  
McIsaac, Angus  
Nelson, Frank  
Pillsbury, E. P.  
Pillsbury, F. A. H.  
Pillsbury, T.  
Pierce, Roscoe  
Pettengill, H. J.  
Parritt, W. J.  
Rand, E. W. A.

Robinson, G. J.  
Rich, Capt. Abm.  
Ring, Eleazer  
Salisbury, E. J.  
Shaw, Ed. P.  
Small, W. H.  
Small, J. A.  
Shaw, D. C.  
Smith, Andrew  
Smith, Ruel  
Seveno, E. R.  
Stone, David G.  
Stockbridge, M. A.  
Turner, O. G.  
Tabbot, Eliza M.  
Temple, Frank J.  
Tinker, John H.  
Unknown Manager  
Vie,  
Watson, Miss M. A.  
Wright, M. L.  
Wheeler, H. W.  
Walker, Mrs. A. C.

MASSACHUSETTS—Boston.

Allen, P. P.  
Barrett, J. C.  
Boyce, W. E.  
Beardlee, E. A.  
Bugbee, E. L.  
Brown, George P.  
Brown, C. J.  
Bride, W. B.  
Bolger, Bunsby  
Calahan, T. J.  
Cadmus, Eugene  
Crowley, Florence J.  
Cate, E. C.  
Cullen, John J.  
Curtis, Michael  
Davitt, T. A.  
Duxbury, J. W.  
Davitt, E.  
Donovan, John  
Dunham, Sarah E.  
Dawsley, John F.  
Dunham, George  
Dowd, John J.  
Dodge, Edgar L.

Fullum, E. J.  
Fessenden, W. H.  
Farley, N. R.  
Fessenden, E. G.  
Flanders, D. J.  
Farrell, Edward  
Farmer, Moses G.  
Fitzgerald, Thos. J.  
Fobare, A.  
Garland, W. H.  
Granby, D. B.  
Harkins, W. F.  
Harmon, D.  
Hennigan, Mary A.  
Holder, E. B.  
Henderson, C. W.  
Hoops, T. W.  
Hotch, C. H.  
Johnson, Nora C.  
Kittredge, A. W.  
Kelly, Thomas  
Keating, Jeremiah  
Lapham, A. J.  
Leighton, E. F.

Leet, G. W.  
Lord, Edward  
Ladies' Department  
Milliken, G. F.  
McGee, J. A.  
McMahon, P. J.  
Martin, H. S.  
McFarland, Wm.  
Milliken, J. H.  
Milliken, Frank J.  
Martin, William  
McFarland, John O.  
McGrath, James  
McGrath, John  
Mahoney, D. J.  
McCarthy, Timothy  
McCarthy, P. J.  
McPartland, John  
Mahoney, David J.  
Mahoney, Daniel J.  
Moore, John J., Jr.  
Noyes, C. B.  
Noonan, John F.  
Noonan, Michael

Nelson, A. H.  
Noves, Etta  
O'Hern, Michael  
O'Neil, Thomas  
O'Meara, Daniel J.  
O'Patterson, E. E.  
Peeling, Geo. W.  
Pope, C. G. L.  
Powers, G. H.  
Quinn, Geo. D.  
Robinson, J. C.  
Russell, E. V.  
Randall, James  
Reagan, Jeremiah  
Riley, John J.  
Sherman, Israel A.  
Stevens, F.  
Stover, E. B.  
Sawin, Louise M.  
Smith, A.  
Switchell, J. H.  
Shea, Patrick J.  
Sughrue, Chas.  
Shea, Michael

## MASSACHUSETTS — Boston — Continued.

Sullivan, James  
Tenair, T. B.  
Thomas, George N.  
Troy, Wm.

Two Sisters  
Tobin, Charles J.  
Wood, Charles F.

Wood, W. W.  
Wright, J. E.  
Whitacre, J. S.

Winter, B. G.  
Wallace, Jack.  
Williams, C., Jr.

## CITIZENS OF CHARLESTOWN.

Adams, Jas., Jr.

Edmunds, George D. Lawrence, Edward

Stowell, John

## MASSACHUSETTS.

Adams, K. C.  
Bancroft, M. J.  
Butterfield, A. E.  
Blake, C. B.  
Brown, J. T.  
Beiding, Edward E.  
Butler, Lucy A.  
Bradford, E. W.  
Booth, W. H.  
Borden, P. H.  
Cutler, E. H.  
C., J. E.  
Chadsey, N. D.  
Dunham, Sarah E.  
Donnell, James D.  
Denner, W. J.  
Denner, H.  
Dunham, S. E.  
Doten, C. C.  
Davis, John P.

Davis, Frank  
Ferrin, George J.  
Flynn, Michael  
Fenton, Osgood J.  
Freeman Nellie  
Fitzgerald, D. W.  
Hoit, Mrs. M. S.  
Howe, Katie  
Holden, T. B.  
Hankins, V. P.  
Hoadley, George M.  
Highland Lt. Tel. Office  
Hartwell, C. L.  
Horton, Sparrow  
Hoyt, George S.  
Jones, A. F.  
Keyes, A.  
Lowell Office, W. U. T  
Linsley, Chas. M.  
Manley, F. L.  
Marshall, Frank  
Manley, G. E.  
Merritt, E. S.  
Mullins, James  
Muldoon, M.  
McHugh, John  
Nicherson, Zita  
O'Connor, E. J., Jr.  
Pierce, B. F.  
Penn, George R.  
Paige, Edgar T.  
Parris, S. J.  
Paine, B. R.  
Potter, W. P.  
Ranney, M.  
Ritchie, A. C.  
Ryder, P. L.  
Raymond, J. D.  
Rourke, John  
Snow, Amelia

Smith, W. P.  
Spencer, H. B.  
Shumway, L. S.  
Smith, Andrew  
Smith, F. L.  
Smith, J. T.  
Smith, Stephen W.  
Stone, Ella M.  
Simpson, John E.  
Swan, E. J.  
Taylor, M. J.  
True, A. G.  
Tannatt, H. B.  
Underwood, William  
Watkins, A. H.  
Whitmarsh, A. F.  
Whitmarsh, W. Z.

## MISSISSIPPI.

Anderson, Owen  
Addis, Geo. H.  
Brown, E. A.  
Compton, James  
Conlan, Mike  
Coughlan, D.  
Chisholm, Benj. F.  
Chisholm, W. W.  
Chisholm, L.  
Cohen, Daniel  
Delgado, Phil.  
Davidson, J. T.  
Davidson, J. J.  
Evans, W. D.

Flint, F. W.  
Flippen, W. E.  
Fulda, A. E.  
Gilbert, M. L.  
Heiss, Gustave M.  
Hogshead, E. H.  
Harris, H. M.  
Hendersen, James M.  
Hills, C. W.  
Hopkins, Edward  
Johnston, Thomas  
Lofand, Charles  
Lucket, Gus.  
Larned, J. D.

Marshall, W. G.  
Moore, Phos. J.  
Marshall, W. M.  
Nicholson, Otis  
McRaven, R.  
McMurckley, G. W.  
Mosby, R. M.  
Mosby, L. B.  
McCarthy, F. W.  
Morris, C. R.  
Morris, Miles H.  
Polk, W. W.  
Perryman, S. R.  
Polk, James K.

Parham, J. M.  
Richmond, S. A.  
Record, A. M.  
Russell, A. G.  
Seaborn, John H.  
St. John, C.  
Smith, W. P.  
Terrell, C. W.  
Tinney, W. E.  
Tinney, J. D.  
Wood, Wallace  
Walton, N.  
West, J. F.  
Yelverton, E. H.

## MINNESOTA.

Arnold, W. F.  
Baker, L. J.  
Bloomfield, R. D.  
Bontecou, G. H.  
Benjamin, F.  
Barnard, Alef.  
Blanchard, Martilla  
Boylan, A. B.  
Badgeley, J. H.  
Crouse, J. W.  
Carpenter, L. C.  
Curry, Ed.  
Coates, Laura  
Caldwell, J. E.  
Clark, T. E.  
Coborn, C.  
Currie, N.  
Case, E. A.

Conant, E. L.  
Clawke, T. M.  
Cassaday, Geo.  
Carpenter, W. C.  
Carpenter, M. J.  
Delano, Wint  
Dodge, E. F.  
Dunham, H. L.  
Dinsley, W. P.  
Drake, W. H.  
Evans, Geo. A.  
Elliott, A. J.  
Fitch, George  
Fisher, C. J.  
Flint, J. A.  
Foote, J. M.  
Greene, O. C.  
Gridley, W. H.

Glassford, J. W.  
Gate, D. N.  
Hughes, C. E.  
Harris, George  
Harris, Joseph  
Harris, James  
Heebner, H. J.  
Hazzard, A. E.  
Hamilton, G. S.  
Henderson, T. W.  
Hensley, Leo  
Inks, William  
Jilson, F. B.  
Jacobus, Delos  
Kyte, H.  
Langdon, Thomas  
Lands, W. H.  
Loper, W. T.

Minor, Frank  
Mann, L. W.  
Merwin, A. H.  
Ming, L.  
McDougal, H.  
Petsch, C. D.  
Putnam, P. D.  
Putnam, S. A.  
Ryder, E. L.  
Reppy, W. B.  
Richardson, O. C. W.  
Robbins, A. B.  
Tennant, H. B.  
Thornton, F. M.  
Ulmer, S. S.  
Van Vliet, J. W.  
Watson, Frank  
Youmans, Libbie E.

## MICHIGAN.

Booth, L. N.  
Beamer, A.  
Brown, Jerome T.  
Barnum, J. E.  
Burroughs, Ed.  
Barrett, D. E.  
Cooper, Thomas J.  
Covert, A. B. L.  
Corbett, C.  
Clough, A. B.  
Dalba, W. S.  
Damon, B. M.  
Dudley, J. W.  
Dantels, H.  
Dane, A. H.  
Dwight, S. B.  
Doty, L. D.  
Douseman, J. P.

Elliott, C. D.  
Faxon, John T.  
Folsom, N. C.  
Fox, C.  
Ford, B. F.  
Forbes, F. A.  
Gaylord, Miss M.  
Glaizer, L.  
Green, James  
Goss, S.  
Hilton, A. M.  
Hunt, S.  
Huntington, F. M.  
Hubbard, F. M.  
Horton, Frank  
Haywood, J. E.  
Harrington, E. B.  
Hunter, F. W.

Hays, James  
Hedgco, P. J.  
Handford, J.  
Horton, Amer  
Irwin, R. W.  
Jacketon, W. A.  
Jenks, B. W.  
Jenks, Geo. W.  
Kerr, J.  
Kingsbury, G. P.  
Knowlton, B. F.  
Leavenworth, E. C.  
Minick, John B.  
Murphy, J. S.  
Miller, E.  
Mohle, Henry  
Metcalfe, W.  
Miller, Bradley & Co.

Mann, Fred. G.  
McKernan, John  
Mobbs, S.  
Newman, V. P.  
Nines, E. L.  
O'Keefe, A. W.  
Parsons, Samuel U.  
Rothwell, B. Henry  
Ross, B. M.  
Russ, J. N.  
Rouch, A. N.  
Rood, C. L.  
Sampson, J. D. C.  
Sawyer, F. W.  
Sylvester, W. B.  
Swazee, J. A.  
Stoddard, C. L.  
Stanton, W. H.\*

MICHIGAN - Continued.

Stebbins, H. H.  
Sullivan, J. C.  
Slafer, C. J.  
Sloat, O. D.  
Taylor, W. S.

Taylor, Hugh  
Tolfree, J. H.  
Thompson, Geo. D.  
Thompson, W. Rothwell

Thompson, J.  
Walker, Claude C.  
Wooley, L. G.  
Williams, E.

Weeks, James A., Jr.  
Williams, Miss Sue  
Wadsworth, D. F.  
Yates, J. E. T.

MISSOURI - City of St. Louis.

Anderson, J. D.  
Albright, Thomas  
Brent, Robert  
Brown, E. H.  
Bohle, R. H.  
Brooks, William  
Brown, Richard  
Bicknell, George R.  
Clowry, R. C.  
Crain, M. D.  
Cassell, T. J.  
Carroll, Patrick  
Cook, James W.  
Dougherty, K. L.  
Foy, Martin  
Franklin, W. A.

Gerritzen, J.  
Grant, W. H.  
Green, Edward T.  
Gallagher, James H.  
Hart, M. C.  
Haquette, A. E.  
Hobbs, John A.  
Holahan, Joseph T.  
Houston, C. H.  
Hollahan, R. P.  
Heyer, P.  
Hogan, John  
Harrigan, T.  
Hume, John  
Irwin, C. D.  
Ingraham, E. W.

Kreuger, Adoiphe  
Logan, D. A.  
Landy, William J.  
Lenharth, Jacob  
Leimke, Henry  
McMichael, Isaac  
Mulholland, John J.  
Malley, Michael F.  
McTaggart, Edward  
McCarl, W.  
Morris, Wm.  
Murphy, R. J.  
McQuoid, Chas.  
Mullen, Edward  
O'Toole, James  
Parnalee, E. L.

Paxson, Chas. A.  
Picketing, E. O.  
Reilly, John D.  
Shannon, E. J.  
Schofield, L. H.  
Stanbery, Henry  
Stephenson, A. Z.  
Tierney, Thos. F.  
Tracy, John H.  
Vigus, W. E.  
Van Tyne, A. E.  
Williams, Robert  
Watson, Charles L.  
Weaver, Joseph  
West, William D.  
An Operator

MISSOURI.

Ammerman, B. W.  
Ammerman, E. T.  
Arbuckle, Frank P.  
Arbuckle, F. P., Jr.  
Aldrich, H. G.  
Anderson, G.  
Abbott, A.  
Allen, E. G.  
Abrams, H. H.  
Beeler, T. S.  
Brown, R. Q.  
Brown, Alf. E.  
Bay, J. W.  
Bryington, D.  
Berkley, W.  
Byllieu, J.  
Brace, A. L.  
Balcom, B. G.  
Beall, Henry S.  
Barkley, Z. T.  
Burk, W. W.  
Barnett, G. P.  
Bowen, F. E.  
Clark, H. K.  
Callett, Mary E.  
Clement, J. S.  
Coffin, E. H.  
Carrier, A. G.  
Crawford, S. C.  
Campbell, F. W.  
Cole, Arthur  
Clark, Harry  
Cleaver, Charles  
Cook, Theo. P.  
Coates, Flora A.  
Duret, John B.  
Deleplane, F. B.  
Diefenderfer, Isaac  
Dennison, H.

Delaney, L.  
Doyle, C. E.  
Drew, P. W.  
Elliott, J. W.  
Entricon, J. F.  
Fitch, D. H.  
Ferguson, James  
Fawcett, F. M.  
Fisher, J. L.  
Fulkerson, A., Jr.  
French, S. T.  
Freeman, W. T.  
Ford, A.  
Ford, W. A.  
Ferris, Thomas  
Ferris, Michael  
Garwood, M. H.  
Gutheridge, J. H.  
Gunsaulus, M. M.  
Green, A. A.  
Green, G. R.  
Griggs, C. D.  
Gilchrist, J. H.  
Graves, E. A.  
Garwood, J. F.  
Griffin, R. B.  
Gunn, J. D.  
Henderson, D.  
Huggans, Geo.  
Hollingsworth, W. R.  
Hunt, James  
Henry, James  
Hamlin, McD.  
Hull, H. P.  
Hewitt, R. J.  
Hamlin, M. C.  
Hillyer, Geo. S.  
Hune, H. F.  
Hunter, A. M.

Holtman, William  
Herrington, M. M.  
Hohl, G. M.  
Hohl, L. A.  
Hathaway, S. C.  
Hathaway, D. W.  
Irwin, J. S.  
Johnson, E. G.  
Jones, F. M.  
Jeffries, J.  
Kibbs, E. O.  
Kellum, Mrs. S. J.  
Kendall, H.  
Kittle, H.  
Kaemph, A.  
Keen, G. W.  
Kane, W.  
Keeley, H. A.  
Lyon, J. L.  
Lessele, H. W.  
Lewis, N.  
McDill, C. W.  
McClary, E. J.  
Marsh, Charles  
McKenzie, K.  
McVean, D. C.  
Markley, A. B.  
Magehan, W. H.  
Mellen, J. H.  
Merrill, G. H.  
Maloney, L.  
McAlvery, Geo. P.  
Morrison, J. R.  
Miller, W.  
Naylor, Thomas  
Nichols, Ailie  
Noel, Frank  
Nagle, Frank G.  
Owen, R. H.

Page, W. S.  
Phillipi, J. J.  
PHELPS, Thomas H.  
Payn, W. N.  
Pritchard, M. M.  
Phillips, Marshall  
Pennington, E. T.  
Palmer, Sol.  
Pence, R. E.  
Phillip, L.  
Patrick, C. B.  
Pallett, Nathaniel  
Rugger, Ed.  
Reed, Robert  
Stacey, James  
Shutters, William  
Smith, J. E.  
Southwick, H. R.  
Stickle, A. W.  
Spaulding, H. C.  
Simpson, W. D.  
Sharp, A. V.  
Sloan, A. L.  
Todd, E. L.  
Turner, John  
Torrington, R. E.  
Thompson, G. W.  
Ulow, J. C.  
Von Winkle, J. A.  
Winfield, W. H.  
Wadsworth, H. S.  
Woodworth, E. H.  
Woodworth, J. A.  
Walsh, E. J.  
Wood, M. D.  
Willis, H. S.

MONTANA.

Brundage, H.  
Day, Charles

Fredericks, W. E.

Hines, J. P.

Thomas, J. A.

NEBRASKA.

Armstrong, E. L.  
Ayres, A. S.  
Bruce, O.  
Burr, M. P.  
Becher, F. G.  
Boker, E. F.  
Barker, C. F.  
Cottrell, C. H. H.  
Drake, F.

Ford, John W.  
Gilmore, P. S.  
Guy, Alonzo  
Hilliker, A. B.  
Hibbard, W. H.  
Hilliker, A. B.  
Herrington, B. F.  
Henderson, N. B.  
Hibbard, W. H.

Howe, E. P.  
Leslie, E. O.  
Lockyer, E.  
Lehmer, Frank  
Lehmer, W.  
Lackner, E.  
McElroy, W. A.  
Morse, E. C.  
Nalle, Geo. W.

Nichols, J. H.  
Purcell, Joseph  
Prugh, W. W.  
Stewart, T. C.  
Smith, John C.  
Soyler, A. G.  
Spofford, W. P.  
Upton, J. W.  
Walker, John D.

NEW MEXICO.

Barbey, J. S.  
Bush, A. W.  
Bush, A. M.

Gough, J. M.  
Jerome, Lieut. A. B.

Nash, W. H.  
New Mexican, Daily

Poet, Dally  
Rice, B. W.

## NEWFOUNDLAND.

Bailey, S. S.	Donnell, T. P. O.	Murphy, J. L.	Saunders, A. J.
Blackodor, A. M.	Gaden, G. M.	Murphy, Edward	Smith, Nathan
Brien, R. F.	Hutton, W. F.	Phippard, John	Stephenson, H. S.
Bailey, Thomas	LeMoine, John	Parsons, Reuben	Vitch, John
Carson, G. R.	Mackay, A. M.	Roberts, J. A.	Waidell, John
Cavanagh, M. J.	Mackenzie, H. H.	Roche, E. J.	White, G. K.
Durfee, R. W.	Moore, E. B.	Smith, J. T. F.	Ward, Gisborne

## NEVADA.

Ardery, A. M.	Crall, C. E.	Lovell, P. H.	Saviers, N. J.
Allen, John F.	Davis, Walter	Morgan, G. A.	Schivinsky, L. R.
Bell, Frank	Ellis, A. J.	McFarnahan, J. C.	Schively, A. R.
Boisot, C. W.	Fowler, Ed.	McBoy, A. B.	Stewart, Joseph
Bousher, C. T.	Foster, J. L.	Pixley, E. B.	Shay, Dan.
Bousher, A. L.	Hamilton, W. J.	Ragdale, J. L. Ed.	Willis, S. M.
Boydston, N. L.	Henry, Patrick	Reid, James H.	Wyatt, F. G.
Clowes, John C.	Hedges, H. A.	Reese, Ned	Young, J. C.
Callaghan, J. P.	Jones, Emmett	Ruenzley, Jacob	Yontz, John R.
Cummings, J. W.	Kesten, H.	Sears, Jos. L.	
Chubbuck, S. W.	Kauppikus, D. W.	Seuf, Geo.	
Carter, J. B.	Lewis, Dick.	Shamp, T. B.	

## NORTH CAROLINA.

Bangham, T. W.	Howard, S. A.	Potts, Sam. C.	Young, James B.
Galloway, W. E.	Hrell, David J.	Reed, C. F.	
Henderson, George	Morris, A. H.	Reddick, Richard E.	

## NEW BRUNSWICK.

Archibald, J. H.	Dawson, D. C.	Jones, F. W.	Robinson, T. M.
Black, B. S.	Davidson, A.	Lorimer, E.	Sutherland, D. M.
Betts, E. B.	Edgar, J. F.	MacArthur, C. L.	Todd, A. W.
Byrne, J. G.	Frink, J. H.	O'Brien, E. R.	Wetmore, T. C.
Clinch, R. T.	Gallup, George	Price, James E.	Welsh, R. B.
Dunham, C. B.	Godfrey, J.	Racine, James	Wallace, J. J.
Dodge, G. S.	Hoyt, Henry S.	Robinson, G. A.	
Doran, M.	Harris, C. E.	Rankin, J. J.	

## NOVA SCOTIA.

Archibald, L. B.	Hadley, Miss R.	McDonald, A. G.	Stewart, W. B.
Corning, Miss E. C.	Hurley, Miss Ada A.	McGregor, Miss M. S.	Treen, Miss H. A.
Pennison, John W.	Jones, C. D.	McGill, G. S.	Trott, Z.
Fitzgerald, John	James, J. W.	McGregor, Miss Ch.	Willott, Geo. B.
Gowan, Miss Mary	Laird, James W.	Parker, Mrs. E. W.	Walker, James J.
Hoyt, Alex. E.	Lawson, A.	Rudolf, Miss A. Louise	Wisewell, W. W.
Huestis, Miss P. A.	Lydiard Geo. E.	Robinson, Charles B.	Yeaton, Geo. W.

## NEW JERSEY.

Aaronson, D. H.	Decker, Oliver	Miller, A.	Sage, T. B.
Antrim, Harry B.	Deacon, Eugene M.	Miller, Henry	Schenck, J. F.
Ayder, J. W.	Davis, W. E.	Montalvo, W. W.	Seely, E. C.
Adlum, H. H.	Dickson, George	McCarty, E. B.	Sommers, W. B.
Allen, George H.	Ettenger, Wm.	Miller, Harvey B.	Spain, C. B.
Aydon, J. W.	Early, K. M.	Mitchell, J.	Snyder, E. S.
Alton, J. S.	Foley, James E.	Morrell, J. T.	Smith, A. M.
Battin, R.	Forman, James	McKee, A. G.	Smith, H. L.
Bodline, George W.	Farish, James	Maulay, Edward W.	Smith, T. J.
Bliss, L. G.	Forbes, W. W.	Miller, John H.	Schermehorn, O. H.
Brock, E. H.	Garrison, Joseph	Norris, Charles R.	Truax, John W.
Boyce, John B.	Hamilton, Geo. M.	New, L. C.	Tobias, F. C.
Brown, J. M.	Hoffman, J.	Osmond, Jos. L.	Tong, George H.
Brown, C. M.	Hawk, Samuel L.	Odenmelder, John	Terrill, E.
Buskirk, Jacob S.	Harris, W. P.	Page, C. W.	Thom, W. H.
Bray, A. T.	Hurley, J. B.	Perry, O. N.	Tompkins, E. C.
Courter, George S.	Headley, E.	Pennington, F. R.	Varney, S. W.
Carty, D. T.	Houling, Geo.	Pennock, G. B.	Van Wagoner, J.
Craze, A. B.	Howe, Martin E.	Quinn, Thomas E.	Van Duesen, L. S.
Counor, George W.	Hoffman, A. C.	Rickard, W. F.	Worrell, W. A.
Cox, Samuel S.	Hagenbuck, W. H.	Reeves, John H.	Wolcott, R.
Colby, A. T. G.	Jemison, S.	Reeder, Andrew	Weisse, F. T.
Case, A. C.	King, C. Keyson	Reedy, John	Wyckoff, F. P.
Curtiss, C. P.	Lining, C. E.	Reed, F. C.	Whitely, Samuel
Cooper, S. H.	Levins, Geo. C.	Stewart, E. B.	Wiseman, William
Callahan, S. B.	Labaw, S. W.	Silver, H. N.	Williams, J. Y.
Chambers, John O.	Levy, John W., Jr.	Stonaker, D. F.	Waite, G. W.
Cyphers, J. J.	Lane, George M.	Shreve, Isaac A.	Wright, M. B.
Dunn, Wm.	Little, George E.	Snowhill, Daniel	Wilde, G. B.
Deacon, W. W.	Maitland, M.	Stevenson, L. N.	Wynn, J. W.
Dougherty, Robert S.	Mead, J. W.	Scattergood, W. B.	Wortendyke, A. C.
Davis, E. C.	Mortimer, William	Stimers, B.	

NEW JERSEY—Continued.

ERIE RAILROAD.

- |                    |                    |                      |                     |
|--------------------|--------------------|----------------------|---------------------|
| Allison, George B. | Donohue, Thos.     | Humphrey, B. P.      | Plum, R. W.         |
| Agnew, T. H.       | Doyle, J. K.       | Hopkins, O. M.       | Patterson, A. A.    |
| Ackerman, L. B.    | Dillon, John       | Hyde, C. B.          | Preston, Albert     |
| Arensburg, B. F.   | Dodge, F. J. O.    | Hawkins, S. S.       | Pearce, W. C.       |
| Askin, A. H.       | Donnell, J. O.     | Hilton, John         | Praet, H. D. V.     |
| Ackerly, G. D.     | Doan, W. H.        | Judd, H. C.          | Palmer, Chas.       |
| Angell, J.         | DeWitt, H. W.      | Jones, F. C.         | Frouk, J. N.        |
| Arnott, James H.   | Doty, B. P.        | Joyce, Phil.         | Palmalee, A. S.     |
| Adams, William     | Decker, B. F.      | Judd, C. A.          | Palmateer, J. A.    |
| Aspinwall, J. D.   | Douglass, W. B.    | Jeffries, F. C.      | Parrott Peter P.    |
| Ashurst, J. A.     | Davis, Asa         | Johnson, S. C.       | Phelps, A. J.       |
| Allen, W. S.       | Dunning, J. E.     | Johnson, A. K.       | Quick, M. A.        |
| Babb, A. H.        | Dougherty, T. T.   | Judson, Charles S.   | Rhodes, W. R.       |
| Brooks, H. Geo.    | Dougherty, Wm.     | Johnson, H. P.       | Reeves, C. F.       |
| Bolster, T. H.     | Dougherty, Dan.    | Jones, J. H.         | Reddington, Geo. S. |
| Balley, E. G.      | Doyle, W. L.       | Jenks, G. A.         | Reed, John R.       |
| Raker, Joseph      | DeWitt, F.         | Kavanagh, J. D.      | Roosa, C. B.        |
| Brant, W.          | Elser, L. J.       | Kennedy, Jas.        | Reeves, F. S.       |
| Byrne, W.          | Express, U. S.     | Kalbfus, E. R.       | Rockwell, H. R.     |
| Brodwell, Geo. C.  | Eastlake, Geo. W.  | Kelsey, E. E.        | Robinson, E. N.     |
| Brown, George A.   | Edson, H. S.       | Keating, J. J.       | Rison, F. A.        |
| Badger, R. M.      | Evans, Miss L. A.  | Keating, M.          | Rice, James         |
| Brown, M. A.       | Evans, L. B.       | Knight, B.           | Stamback, J. M.     |
| Bidwell, T.        | Early, T. B.       | Kerr, James N.       | Stearns, J. R.      |
| Butts, J. E., Jr.  | Fox, W. S.         | Kinney, A. R.        | Sturdevant, C. B.   |
| Brown, A. C.       | Fisher, J. A.      | Knight, C. T.        | Stocum, O. A.       |
| Byrns, Peter       | Fowler, W. R.      | Kennedy, J. W.       | Shaw, J. B.         |
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| Brown, G. H.       | Fuller, C. W.      | Lewis, J. E.         | Swezey, J. B.       |
| Rockway, G. G.     | Farquharson, J. H. | Lewis, W. W.         | Smith, D. E.        |
| Beggs, J. S.       | Franklin, Wm.      | Last, Byron          | Smith, F. T.        |
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 McDonald, John  
 McDonald, J. A.  
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 O'Hare, James  
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 Monck, Nelson H.  
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 Sink, Will  
 Sink, Millard C.  
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 Schnell, J.  
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 Smith, H.  
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 Snyder, H. B.  
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 Sisson, A.  
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 Simmons, L. D.  
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Fairney, P. J.  
Fitzgerald, J.  
Ford, J.  
Falls, Emory  
Freeman, Chas.  
Gough, John H.  
Gorman, W.  
Gatter, C. E.  
Grevers, W.  
Gordon, E.  
Goodrich, C. T.  
Gleason, Ada M.  
Gall, Fred.  
Gamewell & Co.,  
Grace, F. J.  
Green, William  
Granzow, H. L.  
Gilbert, H. W.  
Giles, H.  
Giles, W. B.  
Gallagher, E.  
Gardiner, J.  
Gervin, William  
Gonde, J.  
Gough, J.  
Gleason, Edward  
Glenn, O. F.  
Grant, R.  
Hinchman, J. C.  
Hohnes, William  
Hill, W. A.  
Horne, John, Jr.  
Howe, John M.  
Harlenburgh, John A.
- Hinds, Carrie A.  
Havens, W. C.  
Howe, A. S.  
Halt, John C.  
Hunstone, W. C.  
Hatch, A. J.  
Harrington, Miss H. M.  
Heffern, J.  
Hall, W.  
Hook, Henry H.  
Hall, Stuart  
Hogan, T.  
Harris, Phillip H.  
Hunter, William  
Hessnan, J. R.  
Hild, C. F.  
Henrich, Charles  
Hickey, M.  
Hoey, John  
Hoxey, Geo. W.  
Harrington, John  
Habitoh, Theo.  
Higgins, T.  
Irsch, Jacob  
Jones, W. J.  
Jones, H. P.  
Johnson, E. N.  
Jones, L. J.  
Jennings, W., Jr.  
Kennedy, M.  
Ketiles, W. F.  
King, William  
Kelly, J. W.  
Keegan, M.  
Kuttle, Joseph  
Kirchner, J. P.  
Knapp, John F.  
Kennedy, T. G.  
Keth, E. S.  
Kelly, T.  
Keeler, C.  
Kittle, Chas. A.  
Kohlmeler, John  
Kilroy, John  
Kane, J. C.  
Landy, T. J.  
Lenhart, John  
Ludwig, E. F.  
Ludwig, D. J.  
Lewis, Mrs. M. E.  
Landy, C. J.  
Lynch, J.  
Law, John  
Ladies of check Dep't.  
Lathrop, L. H.  
Leder, Nosh  
Lown, R. B.  
Markland, William  
Makepeace, H. F.  
Maloney, J. P.  
Martin, John F.  
Marriott, R. W.  
Marsh, F. P.  
McGonegal, H.  
Martin, H. L.  
Marquis, John  
Randolph, John  
Morris, F.  
Morton, E.  
Morris, R. H.  
Muchmore, W. F.  
Mackintosh, William  
Mackay, E. T.
- McDonnell, William  
McCoy, Mortimer  
Mills, Jesse R.  
Martin, C.  
Mills, G. D.  
McGibney, W. H.  
Mead, J. W.  
Myers, C. K.  
Myers, J. F.  
Miles, F. M.  
Malone, John  
Morrison, W.  
McRoberts, E.  
McGill, W.  
McCormick, John  
Malone, M.  
Moorby, H.  
Marr, J.  
McCarty, M.  
Martin, C.  
Mitchell, G. W.  
Mahoney, John  
Mulligan, John  
Moake, W. H.  
McCarthy, L.  
Mangan, John  
Mienhardt, F.  
Mauger, Joseph  
Minster, Geo.  
Morris, David  
Moltz, John  
Nightingale, H. O.  
Nightingale, Mrs. H. O.  
Nelson, Alfred  
Neilson, Andrew  
Orton, William  
Orinstead, J. F.  
O'Reilly, T. H.  
O'Hearn, W.  
Oliver, William  
Oliver, Richard  
Oehman, Geo.  
Palmer, O. H.  
Prescott, Geo. B.  
Page, J. B.  
Pearson, Charles W.  
Pearson, E. M.  
Pearsall, E. H.  
Phelps, George M.  
Pease, W. A.  
Pope, F. L.  
Pope, H. W.  
Polhemus, John  
Powers, Richard  
Powell, Tunis J.  
Pette,  
Phelan, J. M.  
Parsons, C. A.  
Powers, P.  
Quinn, T.  
Quall, J.  
Rochester, R. H.  
Ricketts, E. M.  
Reardon, Edward P.  
Reid, William I.  
Reid, James D.  
Reid, A. Y.  
Roby, B. F.  
Ryan, Thomas  
Roche, William  
Redfield, William A. G.  
Randolph, K. S. V.  
Reynolds, E.  
Roden, J.  
Roberts, M. S.  
Redman, Smith  
Redman, Sanford  
Reeve, A. R.
- Sammis, Miss E.  
Spronsteen, E. S.  
Schust, Wm. A.  
Singlehurst, Joseph  
Spencer, George E.  
Shires, Geo. W.  
Smith, Gerritt  
Snow, Miss Lizzie A.  
Southard, Theo.  
Sullivan, Michael  
Sweet, E. D. L.  
Smith, J. G.  
Smith, M. L.  
Smith, A. W.  
Stevens, E. D.  
Stuart, E. E.  
Schroff, S. P.  
Scully, T. S.  
Sayre, A. H.  
Shannon, W. W.  
Scranton, A. G.  
Schweitheln,  
Sullivan, J. J.  
Sweeney, M.  
Shery, P.  
Sullivan, Stephen  
Smith, S. J.  
Stewart, J. C.  
Stuart, Henri L.  
Schuster, C. A.  
Stevens, T. F.  
Speltman, John  
Shuster, O. C.  
Schmultz, J. W.  
Speck, F.  
Strangeway, G.  
Smith, F. J.  
Smith, S. J., Jr.  
Spear, G. W.  
Spiltdorf, Henry  
Shaarn, John  
Shivler, C. S.  
Sheldon, George D.  
Snyder, W. F.  
Tillotson, L. G.  
Topping, N. B.  
Tait, W. A.  
Tucker, George R.  
Thurber, A. F.  
Timmons, W.  
Tree, J. B.  
Topping, Henry  
Townshend, J. H.  
Terry, J. W.  
Tunins, Joseph  
Van Every, J. B.  
Walker, George  
Willis, Charles  
Williams, John F.  
Ward, H. H.  
Watson, A. H.  
Weep, Sam. G.  
Welch, E. F.  
Walcott, George K.  
Way, J. H.  
Welter, L. E.  
Ward, F. C.  
Williams, R. D.  
Williams, Theodore  
Waldron, G. W.  
Williams, C.  
Wolfe & Dusenbury,  
Wendle, W. H.  
Williams, Thos. S.  
Waldron, Arthur  
Wilke, Thomas

NEW HAMPSHIRE.

- Barrett, G. W.  
Barr, Frank  
Barron, Oliver M.  
Booth, Wilfred D.  
Blodgett, Miss M.  
Brackett, W. R.
- Catlin, Mary J.  
Cushman, P. E.  
Clough, L.  
Dunlop, F. A.  
Dickey, F. G.  
Eastman, E. Eugeno
- Eastman, J. B.  
French, Mrs. W. C.  
Fitch, A. P.  
Gilmore, Chas. L.  
Gledden, Frank W.  
Gove, F. H.
- Gilman, Miss M. J.  
Harvey, Fred.  
Hall, M. E.  
Haskins, S. F.  
Judkins, H.  
Jewell, J. G.

NEW HAMPSHIRE—Continued.

Knight, C. L.	Nims, F. E.	Ramsey, H. W.	Tuft, Chas. A.
Kennedy, J. A.	Noonan, G.	Ross, A. B.	Woodworth, A. B.
Kelsea, C. J.	Parker, J. O.	Ross, A. W.	Whitcher, W. P.
Leavitt, Geo. F.	Priest, John H.	Rowell, H. N.	Woodworth, E. B.
Landon, J. N.	Priest, James	Sargent, Geo. W.	Woodman, J. D.
Morrison, Henry H.	Poole, C. J.	Savage, Ed.	Wilkins, Geo. T.
Morrison, Miss H. F.	Paige, Edmund	Sheridan, H. A.	Wright, Walter
Morrison, C. W.	Putnam, A. B.	Sturtevant, J. T.	
Miller, Chas. A.	Ross, H. P.	Stuart, R. V.	

OREGON.

Baldwin, Wallace	Goodwin, C. W.	McClure, E. L.	Tibbetts, O. O.
Brown, B. F.	Guild, J.	Stewart, J. Q.	
Calvig, Valney	Leahy, W. J.	Turner, W. W.	

OHIO—Cincinnati.

Armstrong, F. A.	Davis, J. C.	Judd, S. S.	Rose, John E.
Allen, T. C.	Dunning, J. D.	Kinney, C. S.	Snyder, C. L.
Allen, A. J.	Everett, G. H.	Kern, Abe	Scovil, H. H.
Bodley, W. T.	Frey, William	Laubach, C. A.	Stephenson, J. T.
Bristol, M. C.	Fulton, Frank	Lawler, W. J.	Smith, W. W.
Barnes, C. W.	Gould, A. J.	Lamb, C. S.	Sherwood, J.
Baker, E. N.	Graham, A. H.	Love, Geo. A.	Tibbetts, Thos.
Brettm, W.	Griggs, J. H.	Maguire, S. F.	Thurston, J. D.
Blaney, O. C.	Hamilton, L. D.	Maguire, J. N.	Williams, J. S.
Clark, George A.	Higdon, C. G.	Morehouse, W. R.	Williams, George T.
Curtis, Miss F. H.	Hall, J. C.	Makee, Geo.	Webb, Miss L.
Conant, John	Hargibt, A. R.	Newton, O. K.	Webb, C. F.
Coan, B. F.	Hust, J. W.	Payne, W. W.	Wasson, N. E.
Callahan, P.	Johnson, B. H.	Radford, T. H.	Welch, Richard

CLEVELAND, O.

Buckingham, H. G.	Douglas, H. F.	Melton, H. H.	Stumm, C. F.
Buell, N. A.	Gurley, O. A.	McKinstry, J. P.	Wade, J. H.
Burwell, Geo. H.	Graham, W. C.	Manning, W. A.	Wright, E. P.
Case, J.	Greene, V. D.	Morse, L. D.	Williams, C. F.
Cadmus, C. A.	Giberson, E. D.	Rudd, C. H.	Watts, J. M.
Cozzens, M. E.	Hays, J. W.	Somers, L. A.	
Douglas, C. W.	Kerner, N.	Stow, O. F.	
Desson, A. J.	Lapp, C. H.	Shuil, D. C.	

OHIO.

Anders, E. V.	Boure, F. M.	Curl, B. F.	Grippin, F. P.
Adams, J.	Butler, J. D.	Cochran, M.	Griswold, Geo. W.
Allen, J. M.	Butler, C. C.	Carcn, T. E.	Greene, H. C.
Allen, Mrs. J. M.	Butler, Maggie J.	Davy, John V.	Green, F. M.
Allen, S. W.	Beery, C. A.	DeLong, W. H.	Gardner, G. F.
Anderson, Frank	Brandenburg, Henry	Dreyer, J. A.	Gardner, G. W.
Alsdorf, J. R.	Beals, W. E.	Dix, S. S.	Hard, E. C.
Abbott, S. C.	Beach, W. A.	Dart, N. J.	Hinds, J. D.
Armstrong, W. D.	Beach, G. A.	Dort, C. B.	Howard, J. E.
Arnold, Frank	Bradley, C. W.	Desbrow, E. E.	Hook, J. W.
Booth, O. H.	Boyle, J. H.	Dudley, J. W.	Hadley, E. W.
Bannister, W. H.	Bodley, W. T.	Navy, J. V.	Huggins, W. J.
Butler, T. D.	Black, C. W.	Dodge, G. A.	Hubbell, R. B.
Buttermore, Samuel	Brown, J. H.	Donalison, Geo. W.	Hubbard, E. M.
Blair, B. F.	Blade, Toledo	Dunlop, Robert	Hurd, A. N.
Barber, H. S.	Blauvelt, Johnson	Dunn, J. H.	Holland, G. W.
Bannitt, J. A.	Cole, George	Denis, L. B.	Hutchinson, W.
Broomhall, C. W.	Converse, H. S.	Delaney, W. H.	Hubbard, A. F.
Bianchard, O. M.	Cleary, J. W.	Dewey, F. R.	Hall, H. H.
Brooks, Geo. A.	Chamberlin, E.	Enoch, Frank	Harris, Joseph
Brinton, J. B.	Coulter, E. F.	Ely, G. B.	Hall, W. D.
Brownson, G. W.	Commercial, Toledo	Eckman, W. H.	Harrington, T. H.
Brownson, G. W.	Clemans, L. T.	Every little helps,	Howard, John
Bruner, P.	Carmau, A. L.	Evans, E. J.	Howard, C. H.
Bender, Geo.	Crewson, E. A.	Evans, W. S.	Howard, Horace
Bast, Charles	Cummings, D. R.	Fox, W. F.	Haynes, Ed. J.
Boner, M. A.	Coulter, E. F.	Ferguson, W. J.	Hemper, W. R.
Boner, H. G.	Cligg, J. C.	Flesher, A.	Hemphell, O.
Boner, John O.	Clark, Daniel	Fulmer, A.	Hewes, M. P.
Barkalow, James	Chenece, James A.	Fulton, M. H.	Howes, S. G.
Bodge, A. M.	Chaney, N. W.	Foster, C. H.	Hill, D. C.
Boyd, W. E.	Chambers, George B.	Fisher, C. S.	Hey, John F.
Brook, L.	Canby, E. J.	Franz, William	Hess, John
Boyle, J. H.	Childs, George T.	Frost, Mary	Hoak, John
Beach, G. A.	Cox, J. H.	Flaherty, A. J.	Huntington, J. A.
Boyer, L. W.	Childster, David	Gates, Thomas S.	Hazen, Aleck
Barks, A. Y.	Campbell, J. C.	Gray, A.	Hatcher, J. C.
Blaise, J. E.	Cully, E. J.	Guthrie, James	Hinman, L. D.
Brigham, Geo. M.	Cory, W. H.	Green, H. C.	Hoke, J. D.
Brigham, C. O.	Cory, Samuel	Greenfield, R.	Higgins, W. J.
Brown, George P.	Cummings, W. W.	Gurley, W. C.	Hughes, R. M.

## OHIO—Continued.

- Havens, G. B.  
Howard, Charles  
Howard, R. T.  
Huntington, J. A.  
Huntington, C. T.  
Hunter, J. W.  
Hughes, R. M.  
Hurlburt, C. S.  
Jamison, F.  
Jones, J. W.  
Jones, C. W.  
Kiepper, J. M.  
Kerr, W. H.  
Knight, W. O.  
Kirtland, D. P.  
Kiepper, J. M.  
Kane, Maggie  
King, E. C. W.  
Kelly, John  
Kelly, C. C.  
Kinnaman, C. M.  
King, William  
Lindenberger, C. H.  
Lynch, C. G.  
Lucas, W. W.  
Lucas, H. G.  
Lomasney, Ed.  
Lytle, James  
Lloyd, C. W.  
Lang, A. E.  
Larsh, B. F.  
Lane, C. R.  
Lane, Geo. M.  
Lovejoy, Thomas S.  
Lybrook, R. A.  
Lloyd, C. W.  
Lloyd, Wm.  
Lainig, G. W.  
McAlpine, James H.  
McAlpine, Thomas  
McCormick, L.  
McClair, J.  
Miller, John F.  
McCracken, W. V.  
McCracken, A. M.  
Maxfield, G. W.
- Moore, H. T.  
Morrison, W. H.  
McGonegal, R. S.  
Miller, L. N.  
Miller, Wilmer  
McGlinchy, J. A.  
Miller, E. O.  
Maxfield, G. W.  
McSweeney, T. J.  
Miller, N.  
McDowell, Jasper  
Miller, J. H.  
Miller, Z. T.  
Monypenny, S.  
Maloney, M. B.  
McCue, E. C.  
Miller, N.  
Noe, A. J.  
Newell, C. H.  
Newell, Otis H.  
Noble, Stanley  
Neller, A. M.  
Olds, C. V.  
Orvis, S. A.  
Orbison, J. L.  
Perdue, W. F.  
Pearson, W. K.  
Pemberton, T. E.  
Purcell, L. S.  
Powell, J. H.  
Pritchard, A. P.  
Pritchard, W. W.  
Phillips, J. R.  
Plumly, B. S.  
Patchen, J., Jr.  
Pallock, James E.  
Paden, Henry F.  
Patterson, S. P.  
Patterson, Isaac H.  
Putt, D. W.  
Ross, F. P.  
Ross, C. W.  
Read, W. J.  
Reich, W. D.  
Richmond, J. F.  
Robinson, M. S.
- Ralston, W. M.  
Reals, C. F.  
Reed, P. G.  
Redish, Wesley  
Robinson, S. C.  
Riggin, W. G.  
Riley, W. H.  
Root, J. M.  
Sampson, A.  
Stally, J. B.  
Smith, Arthur  
Shepard, M.  
Smith, Frank C.  
Scott, Samuel H.  
Skeggs, Charley B.  
Slater, A.  
Shattuck, Lee  
Schaeffer, S. T.  
Squire, Geo. T.  
Scheechan, D. E.  
Smith, J. J.  
Sage, W. R.  
Snyder, A. H.  
Stafford, J.  
Sheridan, Barney  
Shreve, B. T.  
Snell, F. W.  
Sunderman, C. H.  
Thompson, F. A.  
Thompson, Ed. T.  
Ticket agent, Crestline  
Tattarall, Thomas R.  
Turner, B. H.  
Thomas, John  
Tibbets, A. S.  
Talbot, H. C.  
Teter, W. H.  
Thyngers, W. H.  
Tindall, E. T.  
Thompson, E. J.  
Thompson, B.  
Towns, J. H.  
Towns, L. J.  
Ulrich, Sarn.  
Uhlich, Henry  
Uhley, Geo. E.
- Upton, J. L.  
Uhly, Geo. E.  
Vanrenseleer, S.  
Vincent, O. B.  
Vincent, H. C.  
Vignes, Mrs. A. E.  
Viereborne, Geo.  
Van Heyde, M.  
Walnut Logs,  
Ward, Sam  
Wright, James  
Wynkoop, H. W.  
Whitaker, J. H.  
Whitaker, E.  
Wilkins, A. W.  
White, Carl  
White, C. H.  
Willard, Geo.  
Wilkins, A. W.  
Wright, James  
Whitmer, W. C.  
Wickham, W. W.  
William, S. J.  
Wire, Chas. E.  
Withers, J. K.  
White, John W.  
Wicks, W. W.  
Watkins, Mary J.  
Weiss, W. W.  
Wadsworth, G. H.  
Werner, T. T.  
Wilson, W.  
Wilson, Frank  
Thomson, Wu.  
Wills, R. M.  
Wilber, B. F. M.  
Wetherlew, C. C.  
Whithead, Stanley E.  
Wolf, M. R.  
Whedon, Edwin F.  
Young, C. C.  
Young, J. O.  
Young, Robert  
Yard, D. H.

## PANAMA.

- Burnett, D. B.  
Lefevre, H.
- McNider, Stanley  
Ogden, E.
- Robinson, Tracy
- Thomas, O. A.

## PENNSYLVANIA.

- Alleghany Trust Co.,  
Alloway, Miss E. C.  
Atherby, M. H.  
Arnold, D. E.  
Aldred, Miss Alice  
Armstrong, S. J.  
Acker, S. A.  
Arnold, J. C.  
Armstrong, F. J.  
Arms, A. N.  
A Friend,  
Another,  
Adams, E. R.  
Adams, R. R.  
Ash, E. A.  
Armrod, George  
Allison, W. R.  
Alter, Maggie  
Ash, Mrs. W. M.  
Anderson, J. T.  
Aughenbaugh, J. Q. A.  
Ash, James E.  
Bates, D. H.  
Bear, Simon J.  
Bentley, Henry  
Boyd, John P.  
Brady, Hugh  
Bloomer, Anna M.  
Black, W. D.  
Bleakney, S. M.  
Boyies, Miss A. E.  
Boyd, G. H.
- Boyle, Frank  
Berryman, John, Jr.  
Benney, W. C.  
Bryant, J. B.  
Bucknell, William T.  
Brosius, Albanus  
Brower, Hannah D.  
Boyd, W. A.  
Butts, W. P.  
Binder, J. H.  
Bower, S. L.  
Bower, L. A.  
Buckley, L. D.  
Bettenman, T. P.  
Bracefield, E., Jr.  
Boyer, D. R.  
Bourke, Michael  
Bosbyshell, L. W.  
Beckel, T. H.  
Bachman, W. D.  
Bariet, B. F.  
Bradley, Dr.  
Brennan, C. L.  
Bechtel, J. M.  
Beckel, J. J.  
Bowman, B. Frank  
Bomberger, I. F.  
Boggs, J. O.  
Baum, H. O.  
Bauer, A.  
Brady, J.  
Benney, W. C.
- Brallier, H. F.  
Bingham, A. R.  
Barclay, Miss Ada  
Boltn, J. A.  
Boyle, S. A.  
Bell, W.  
Babb, J. H.  
Baker, N. M.  
Bevier, Herbert  
Bennett, A. R.  
Burroughs, A. K.  
Buchannan, Anna C.  
Brooks, David  
Bishop, Edward L.  
Butz, L. F.  
Brown, Samuel, Jr.  
Bogart, J. P.  
Benckert, John W.  
Beal, W. E.  
Bowers, P. M.  
Bates, T. M.  
Bone, C. C.  
Buckwalter, A. A.  
Brubacker, Frank  
Bortell, H. J.  
Brown, D. T.  
Bratt, M.  
Beatty, C. H.  
Buck, Duane  
Blanchard, S. G.  
Blasingham, F. M.  
Blanchard, S. G.
- Carpenter, D.  
Campbell, D. W.  
Clute, H. A.  
Cassellberry, A. Q.  
Camp, O. C.  
Carnog, H.  
Campbell, John  
Curran, William F.  
Crisman, Laura  
Carson, A. A.  
Carnes, H. G.  
Covert, C.  
Cowell, Ed.  
Cornick, G. H.  
Coulter, A. M.  
Cordes, Henry  
Coble, R.  
Collier, Jacob  
Calow, A. P.  
Crown, W. H.  
Calfelt, Chas.  
Cooper, E.  
Corey, R. E.  
Cogley, Miss E.  
Cogley, Miss M. B.  
Corbett, Miss J. E.  
Cann, Robert P.  
Carley, William  
Crane, Jennie V.  
Callins, J. H.  
Cully, G. J.  
Connelly, W. C.

PENNSYLVANIA — Continued.

- Connelly, A. B.  
 Conrad, D. B.  
 Corrigan, E. J.  
 Cramer, William  
 Crowley, Dennis  
 Connelly, W. C., Jr.  
 Clowes, George A., Jr.  
 Couter, A. M.  
 Curt, David A.  
 Carley, William  
 Clark, J. W.  
 Clark, Thomas C.  
 Custer, C. L.  
 Carey, Frank  
 Carpenter, F. R.  
 Clay, Charles  
 Craig, B. F.  
 Converse, C. A.  
 Criesbach, W. G.  
 Davis, B. R.  
 Davidson, Elam  
 Dillon, W. H.  
 Drovin, Annie  
 Drake, William H.  
 Denny, Kate M.  
 Davie, Lizzie  
 Deem, John J.  
 Disbrow, E. E.  
 Dutcher, A. C.  
 Ditty, John W.  
 Dalzell, J. E. B.  
 Dover, Miss M. D.  
 Daniel, J. C.  
 Dankle, J. E.  
 Davis, Foster W.  
 Daugan, J. C.  
 Davis, J. F.  
 David, T. B. A.  
 Duncan, J. A.  
 Davy, W. H.  
 Duncan, F. H.  
 Dean, Charles  
 Denny, Kate M.  
 Dixon, John  
 Dixon, Taylor  
 Deery, E. G.  
 Dechant, W. H.  
 De Haven, A.  
 Darlington, A. J.  
 Darlington, R. A.  
 Deppen, B. F.  
 Dengler, Geo. S.  
 Dintler, H. S.  
 Dimler, Jacob  
 Dotts, T. J.  
 Duncan, Geo. S.  
 Davies, Miss Cora  
 Ellis, T. E. B.  
 Erwin, C. H.  
 English, James W.  
 Eitemiller, George M.  
 Ennis, Belle  
 Etilson, J. D.  
 Eyde, Eli H.  
 Evening Telegraph, Ph  
 Egner, G. F.  
 Eastlake, A. P.  
 Eby, A. M.  
 Eberle, C. R.  
 Eldridge, T. C.  
 Ellis, N. M.  
 Eschelman, E. R.  
 Frank, B. M.  
 Fisher, Charles F.  
 Ford, E. W.  
 First National Bank,  
 Fondersmith, H.  
 Fleming, D.  
 Fisher, J. M.  
 Fulton, H. W.  
 Fowler, M. E.  
 Ferguson, P. J.  
 Francis, A.  
 Freck, Chas. G.  
 Fleming, J. K.  
 Foy, Miss A. J.  
 Fank, J. R.  
 Foster, C. B.
- Fisher, Miss M. E.  
 Foster, Ed.  
 Fullwood, Saml. L.  
 Frew, H. B.  
 Fitzgerald, Ed.  
 Gibbs, John  
 Goodrich, Annie A.  
 Gone, W. H.  
 Grof, J.  
 Gerbig, A. V.  
 Grumbly, John  
 Gilmore, W. Blair  
 Garvey, H. J.  
 Gove, Eng. S.  
 Greene, Joseph S.  
 Galbraith, B. G.  
 Gillette, T. G.  
 Gill, William B.  
 Good, D.  
 Gilson, Sam. L.  
 Gray, J. S.  
 Gould, Joe  
 Garman, T. S.  
 Grogg, Geo. A.  
 Ganster, W. A.  
 Griesemer, J. B.  
 Griffith, L. H.  
 Glaze, Chas. F.  
 Gately, John  
 Geary, Albert  
 Gartlan, F. H.  
 Griffiths, John J.  
 Griscom, Leslie  
 Giham, D. Y.  
 Graham, Richard  
 Gage, Frank  
 Goodrich, Alice N.  
 Grier, Aggie  
 Griscomb, Walter  
 Hanna, A. F.  
 Hanks, J. P. M.  
 Hoffman, J. W.  
 Hart, Michael  
 Heston, A. E.  
 Hamilton, Olion W.  
 Hamilton, A. J.  
 Hamilton, James  
 Hamilton, W. A.  
 Hamilton, H. H.  
 Iotham, W. H.  
 Hogan, Miss L. E.  
 Hogan, Miss M. C.  
 Haines, Robert  
 Harding, W. W.  
 Hamberry, John A.  
 Hambright, Chas. K.  
 Hagenbuch, T. C.  
 Hagenbuch, T. H.  
 Hartman, F. S.  
 Hartman, J. P.  
 Hirschberger, E. J.  
 Hannum, L. K.  
 Hogan, Thomas J.  
 Haines, J. M.  
 Hatnes, H. G.  
 Holmes, R. D.  
 Hoffer, Mary E.  
 Hawes, A. B.  
 Hannan, Charles  
 Hyndman, J. W.  
 Hooper, Penn  
 Haviland, John  
 Hahn, Harry A.  
 Homan, Chas. A.  
 Heckroath, L.  
 Harrison, G. W.  
 Holder, E. F.  
 Hartman, J. P.  
 Hartman, Michael  
 Hannum, L. K.  
 Hodson, E. P.  
 Hawley, L. N.  
 Heaton, E. C.  
 Heilerton, W. U. Office  
 Henry, Jerome W.  
 Humble, W. P.  
 Hambright, Thos. A.  
 Hendrick, E. M.
- Hilton, H. B.  
 Hill, Asaph  
 Hicks, A. D.  
 Hirschberger, E. J.  
 Holmes, W. O.  
 Herron, Dr. W. M.  
 Hoover, R. B.  
 Haley, Charles B.  
 Hauff, P. P.  
 Hayes, Annie M.  
 Hamilton, George A.  
 Habliston, C. E.  
 Hoffer, Uriah E.  
 Hoffer, Hannah  
 Hodill, Jacob  
 Hoffer, Mary E.  
 Hoch, W. Howard  
 Harney, Theodore P.  
 Hays, Michael  
 Hamaker, W.  
 Hall, J. L.  
 Hukill, H. O.  
 Hugett, J. G.  
 Irons, J. V.  
 Kemmerer, W. B.  
 Irwin, W. A.  
 Irwin, W.  
 Jacobs, Samuel  
 Jones, C. P.  
 Jones, W. G.  
 Johnson, W. B.  
 Jones, A. C.  
 Jenks, Orin  
 Jeter, D. K.  
 Janney, M. P.  
 Jennett, B.  
 Kunkel, J. W.  
 Knox, R. & Sons  
 Krans, Frank  
 Keneagy, A.  
 Kiefel, A. P.  
 Kline, M. F.  
 Kane, George W.  
 Kennedy, J. A.  
 Kline, M. F.  
 Kite, Geo. R.  
 Kemmerer, J. J.  
 Knauer, I. D.  
 Kauffman, A. M.  
 Konp, Joseph D.  
 Kelly, C. P.  
 Kline, George H.  
 Kerlin, E. H.  
 King, A. J.  
 Kauffman, H. T.  
 Kautner, D. C.  
 Keesberry, Miss M. E.  
 Katz, E.  
 Knapp, G. P.  
 Keltly, W. H.  
 Kennedy, J. P.  
 Kuchler, J. C.  
 Kelsey, E. R.  
 Kelly, Miss M. C.  
 Kennedy, J. P.  
 Kinch, H. A.  
 Lilley, J. M.  
 Lucas, W. P.  
 Langworthy, H.  
 Ledwith, Richard W.  
 Lyndall, J. Brady  
 Lang, George L.  
 J. G.  
 Lynch, Frank J.  
 Lanerty, C. Latta  
 Laing, J. D.  
 Lee, A. T.  
 Lichty, Benj. A.  
 Lytle, J. N.  
 Lowe, Rob't P.  
 Lee, Peter  
 Lindle, J. D.  
 Lingle, E. O.  
 Lingle, C. S.  
 Lingle, John D.  
 Ludwig, L. A.  
 Ludwigs, O. P.  
 Lubken, Henry E.  
 Luce, M. E.
- Loyd, B. F.  
 Lawson, Chas. H.  
 Leutz, F. P.  
 Levan, W. B.  
 Leddy, John  
 Leddy, P. J.  
 Lewis, C. M., Jr.  
 Lengel, John H.  
 Leshner, H. H.  
 Longenecker, H. S.  
 Lockart, D. E.  
 Lyon, D. E.  
 Moorhead, J. K.  
 McFarlane, J.  
 Mears, G. W.  
 Munson, J. A.  
 Mier, W. B.  
 Maltz, Geo. W.  
 McCargo, David  
 McMulhen, C.  
 Moon, James E.  
 Mears, G. W.  
 Mather, William  
 McAlister, Charles P.  
 McClurg, James  
 Moore, Robert  
 McMullin, W.  
 McCoy, D. B.  
 McCoy, Chauncey F.  
 Masten, C. H.  
 Masten, Will  
 Mazler, A. M.  
 Miller, Henry S.  
 Miller, Horace  
 McNair, James A.  
 McConnell, C. C.  
 Musser, H. H.  
 McCandless, L. D.  
 McCandless, Willie O.  
 McCandless, J. D. Reid  
 McGonegal, Frank C.  
 Marshall, J. N.  
 McDade, John C.  
 Moran, C. B.  
 McConnell, C. H.  
 Mingle, James L.  
 Merrifew, James  
 Moyer, T. U.  
 Millerstown office,  
 Markle, W. H.  
 Moreland, T. E.  
 Munson, William M.  
 Matze, Isalah D.  
 Maize, E. L.  
 McMullen, George  
 McGonegal, E.  
 Moffat, John  
 Minter, W. W.  
 McAleer, Hugh  
 Maul, George D.  
 Monroe, John  
 McKinley, G. S.  
 McCarty, Miles  
 Mebt, C. B.  
 Miller, J. H.  
 Moyer, T. W.  
 McCalla, J. S.  
 McDermott, B.  
 McCalg, Arthur  
 Maloney, Edward M.  
 McAdoo, John  
 McWilliams, John  
 McKeage, J.  
 Muroloch, J. E.  
 Morlan, H. T.  
 Morlan, C. C.  
 McElroy, W. J.  
 Maxon, M. J.  
 McCormick, W.  
 McCormick, O. A.  
 McCormick, Miss L. A.  
 McCoy, J. W.  
 McCrum, Miss E.  
 Moody, J. K.  
 McKelvey, L. E.  
 Muse, W. S.  
 Matter, E. T.  
 Nat. Ins. Co., Alleghany

## PENNSYLVANIA — Continued.

- Negley, Cyrus L.  
Nichols, G. W.  
Nichols, E. H.  
Nicholson, J. M.  
Ogie, Mrs. H. M.  
Ogie, Earl  
O'Brien, Lizzie C.  
O'Neill, Addie  
O'Brien, Richard  
Oiney, R.  
Owens, S. J.  
Oursler, J. M.  
Patterson, Thomas M.  
Porter, G. W.  
Phila. Inquirer,  
Phelps, E. Sydney  
Pulpress, B. F.  
Perchard, E. C.  
Powers, James  
Penn, Richard  
Porter, G. W.  
Phum, Phillip S.  
Phum, George S.  
Priest, E. T.  
Paxson, L. B.  
Palmer, J. E.  
Potter, A. S.  
Poult, W. B.  
Peterson, Charles  
Pearson, Lorelle  
Pitcairn, W. W.  
Perry, O. L.  
Purcell, Ed.  
Piffers, J. W.  
Quidland, Joseph  
Kaleigh, J. K.  
Ray, Warren E.  
Ray, G. G.  
Reese, Ed. G.  
Reynolds, G. W.  
Reeves, M. J.  
Reno, Benj.  
Reno, J. J.  
Reinhart, John  
Robinson, H. C.  
Reitzel, Harry W.  
Reid, C. H.  
Rowe, Chas. O.  
Rowe, R. D. E.  
Robertson, D. A.  
Robertson, Marie  
Robinson, Heber C.  
Rommel, J. A.  
Ramsay, C. J.  
Ramsay, S. G.
- Roeller, L. A.  
Rost, John A.  
Roult, Victor  
Ryan, Peter J.  
Rourke, James J.  
Reber, R.  
Roelker, Samuel B.  
Ruffinger, M.  
Reeser, John F.  
Rowse, Joseph F.  
Blai, John  
Reichert, J. E.  
Reamer, Herman  
Remmel, F. G.  
Rote, W. H.  
Rothschild, L.  
Reichard, N. L.  
Reed, J. H.  
Reed, D. B.  
Redrup, E. K.  
Rogers, M. L.  
Rumsey, S. B.  
Sanz, George S.  
Schuchhart, J. H.  
Shaw, E. T.  
Shaffer, E. B.  
Savage, Z. M.  
Sellers, C. T.  
Spang, H. W.  
Supplee, L. A.  
Shaw, E. T.  
Stager, O. W.  
Perry, O. L.  
Shaeffer, F.  
Spang, D.  
Sellers, John J.  
Schantz, W. H.  
Smith, F. P.  
Simpson, Jas. K.  
Seaman, Abraham  
Stager, A. F.  
Simon, Frank J.  
Spear, Chas. W.  
Saylor, M. H.  
Stern, W. S.  
Shearer, J. C.  
Sands, W. D.  
Spahr, H. W.  
Stape, Samuel M.  
Schultz, Mollie G.  
Smith, Lawrence  
Suter, John  
Stoner, M. J.  
Stickle, C. E.  
Stoney, H. W.  
Scott, J. M.  
Simpson, D. J.
- Sowers, J. B.  
Strahl, Miss M. A.  
Swartz, Samuel  
Snyder, George W.  
Snyder, Nicholas J., Jr.  
Shaffer, Phillip  
Sempie, William  
Sempie, David  
Shaffner, John N.  
Shaffner, Samuel J.  
Spalding, J. S.  
Sullivan, John M.  
Shain, James T.  
Shultz, H. T.  
Saunders, F. M.  
Silver, A. C.  
Sutherland, C. F.  
Sutherland, G. H.  
Spencer, Jones & Co.,  
Sax, M.  
Schoonmaker, T. S.  
Shafer, S. P.  
Seal, George H.  
Schneider, F.  
Stoll, J. H.  
Scott, R. G.  
Scott, E. H.  
Slater, Mrs. L. J.  
Spaulding, S. S.  
Smith, Luther L.  
Smith, Suel  
Smart, Walter  
Swoyer, C. W.  
Shock, Geo. N.  
Shook, David  
Sargeant, W. D.  
Shantz, W. H.  
Singer, E. O.  
Smith, James H.  
Simpson, Joseph H.  
Smet, T. B.  
Symmes, C. R.  
Silne, John B.  
Taney, R. E.  
Troxell, W. H.  
Towless, L. E.  
Titus, DeWitt  
Trone, D. E.  
Thompson, E.  
Turnbach, John  
Tarrance, John A.  
Thomas, C. H.  
Utley, E. H.  
Van Voorhees, Isaac S.  
Van Buskirk, C.
- Van Akin, L. L.  
Van Banker, Jos. R.  
Van Duzet, F. C.  
Voorhees, John T.  
Vincent, S. W.  
Vetter, D.  
Wilson, E. H.  
Watson, N. G.  
White, A. H.  
Woods, Austin E.  
Wells, Charles H.  
Williamson, James  
Wintrup, John  
Watkinson, R. W.  
Wilson, L. F.  
Weldner, Daniel K.  
Weldner, George D.  
Wimeland, Charles  
Weaver, W. M.  
Weaver, J. W.  
Willard, M. L.  
Wilson, George  
Wunder, G. S.  
Wilson, M. M.  
Walferberger, P.  
Wiley, W. T.  
Wright, Chauncey  
Wiltshire, L. C.  
Weish, E. S.  
Wise, R. B.  
Wenck, Hattie W.  
Wiggins, C.  
Winthrop, John  
Welch, L.  
Welch, E. L.  
Ward, Ed. T.  
Wetzell, A. A.  
Weiss, C. A.  
Wallover, C.  
Whitney, A. L.  
Ward, Elin  
Whitney, J. B.  
Young, M. H.  
Zeigler, R. R.  
Zeigler, Frank E.  
Zeigler, Ambrose A.  
Ward, Ed. T.  
Zeubin, John E.  
Zimmerman, S.  
Zimmerman, J. S.  
Zulich, G. B.

## RHODE ISLAND.

- Arnold, Miss E. A.  
Adams, Miss E.  
Baem, R.  
Briggs, Miss Lizzie  
Bushee, Miss J.  
Burroughs, G. W. S.  
Bradford, H. C.  
Burlingame, Miss A.  
Coleman, T. E.
- Crane, M. H.  
Dillon, J. J.  
Downey, C. A.  
Gaynor, J. B.  
Gonsloe, W. E.  
Green, J. W.  
Holt, A.  
Hall, Miss Ada B.  
Hurlburt, P. J.
- Horton, G. B., Jr.  
Harris, W. A.  
Ingraham, J. H.  
Little, J. P.  
Lewis, C. O.  
Lawson, Miss C. M.  
Mahew, Miss C.  
Munro, W. H.  
McNerny, Miss A.
- Patterson, O.  
Pennell, W. H.  
Perry, Abm.  
Phillips, W. P.  
Proud, Miss J. A.  
Suesman, A. L.  
White, A. C.  
Williams, H. N.

## SOUTH CAROLINA.

- Bell, Geo. W.  
Burns, William  
Brencke, G. H.  
Bignon, J. P.  
Capers, L. W.  
Corbett, Richard  
Cathcart, W. R.  
Driscoll, D. M.  
Dean, T. W.
- Evans, W. J.  
Esdra, J. B.  
Evans, S. P.  
Easterlin, John D.  
Flinn, Joseph  
Fleming, Wm.  
Greer, T. C.  
Goulden, Oaslan  
Hancock, W.
- Howard, B. T.  
Henger, F. K.  
Kennedy, C. C.  
Lamb, C. V.  
Ligon, J. R.  
Malce, W. J.  
McDonald, S. K.  
Pegram, S. S.  
Ryan, F. E.
- Rivers, J. T.  
Stanland, T. W.  
Svens, P. D.  
Starr, W. W., Jr.  
Toye, J. E.  
Ward, P. H.  
Witherspoon, J. H.  
Wright, S. B.

## TEXAS.

- Anderson, T. W.  
Bennett, J. A.  
Bleakney, D. C.  
Bock, F.
- Burke, E. C.  
Bright, J. H.  
Curtis, L. E.  
Collins, Thomas M.
- Cohen, M.  
Chase, C. R.  
Collins, B. F.  
Chilton, J. C.
- Campbell, Davo  
Davis, H. T.  
Daniel, L. S.  
Franklin, B. R.

TEXAS—Continued.

Glass, A. M.	Mersfelder, A.	Rooke, H. L.	Sabine, J. G.
Hancock, W. J., Jr.	Mulrkey, P.	Patrick, Jr.	Shepherd, D. P.
Hooper, J. R.	McEachern, J. H.	Russell, A.	Shepherd, A. J.
Johnson, E. L.	Morrison, J. M.	Ryan, D. S.	Whitaker, T.
Keohler, W.	Moore, J. S.	Russell, J. B.	Whitaker, J. H.
Lee, John H.	Noite, H.	Raphael, M.	Williams, J. R., Jr.
Lewis, E. D.	Norman, James	Russell, Thos. J.	Voelcker, Frank
Mather, W.	Osborne, J. M.	Scarborough, W. H.	

TENNESSEE.

Anderson, J. M.	Dugan, Geo. M.	Lowe, E.	Roberts, Sam
Allison, J.	Davis, James C.	Loneragan, John	Ross, B. F.
Atkins, G. W.	Davis, Geo. L.	Murray, P. J.	Ross, W. M.
Baker, Glynn M.	Eves, C. R.	Marable, C. C.	Reese, Samuel
Baker, Joe C.	Fowler, Joe J.	Montgomery, H. A.	Richmond, R. J.
Brown, W. W.	Fisher, J. W.	Martin, J. L.	Rogers, W. L.
Bartholomew, O. D.	Fisher, F. T.	McCarthy, Cornelius	Reed, J. M.
Breed, D. G.	Fox, Henry J.	Mulford, William	Spencer, N. B.
Bondurant, J. W.	Freight Depot Office	McKnight, G.	Stewart, A. H.
Brown, J. R.	Gallther, H. A.	Mitchell, G. W.	Shenk, D.
Brown, W. W.	Griffith, Andrew J.	McKee, Wm.	Sivindell, John
Bryan, W. S.	Griffith, J. E.	Morrell, James H.	Smith, Tom J.
Burton, J. W.	Gaston, Charles A.	McKenzie, P. A.	Sullivan, G. G.
Barth, Martin	Green, H. W.	Mynatt, W. H.	Schlöss & Wolf
Barnes, Charles T.	Glover, John R.	McCoy, G. B.	Stovall, D. J.
Boyle, E. C.	Gibson, N. J.	Maffett, Henry	Shurtall, B. B.
Barker, James M.	Harblu, Geo. C.	McGathery, Frank	Steger, T. P.
Barker, James T.	Harrison, W. T.	McKnight, George	Steger, W. A.
Bates, Henry	Howard, Emmett	Morris, John	Stewart, J. M.
Coleman, James	Hunt, Charley	Morris, J. B.	Sensalg, J. P.
Clowes, E. W.	Hornor, E. W. A.	Miller, Isaac M.	Stone, J. F.
Craig, Archie	Hughes, Barney	Miller, John D.	Stillman, G. G.
Collins, A. J.	Howard, T. A.	Nichols, W. H.	Smythe, U. T.
Cox, James	Hill, W. M.	Nicholson, J. G.	Spear, John F.
Curran, M. J.	Harney, J. C.	Nolley, W. B.	Sterns, Chas. A.
Cobourn, J. R.	Hill, C. P.	Pepper, Mont.	Schermerhorn, Ed.
Clark, J. H.	Harne, Jesse W.	Pepper, Samuel A.	Scott, Dave
Cox, H. C.	Hargrave, Andrew J.	Faoli, Marco T.	Shay, D.
Cooney, P.	Joyce, Wm. H.	Putnam, O. S.	Thweatt, W. H.
Curtiss, C.	Johnstone, W. F.	Purath, Ernest	Turner, S. C.
Corban, B. J.	Kellogg, Chas. A.	Park, J. R.	Tiley, Wm.
Cowell, Robert	Kirk, W. B.	Park, Robert O.	Taylor, Charles E.
Dugan, Andrew	Kibbe, Amos	Palmer, Fred. W.	Trabue, G. W.
Duncan, J. C.	Leach, J. B.	Plasser, Frank	Tyrrell, Thomas
Duncan, W. O.	Larcomb, H. S.	Priddy, C. W.	Wynatt, M. L.
Darr, M.	Lucas, H. B.	Pearce, J. H.	Wiltshire, At.
Davis, J. M.	Leach, J. B.	Pride, Harvey	Woodson, W. O.
Duke, R. E.	Lindsey, L. T.	Riley, Chris.	Whitney, Jac.
Dean, Thomas H.	Lindsey, L. J.	Robertson, G. M.	White, William N.
Darr, M.	Loving, A. W.	Reece, Samuel	Wallace, C. R.
Davis, W. L.	Love, A. G.	Remley, J. A.	Williams, N.
			Wilson, A. J.

UTAH.

Brown, Geo. F.	Garis, S. H.	Kimber, Sam P.	Stewart, George
Brewer, Alf.	Glascott, W. H.	Pratt, H. O.	Sewell, James
Croxall, M.	Kearney, P.	Painter, L. M.	
Conway, Ed.	Kerns, John	Sawyer, Oscar G.	

VERMONT.

Adams, L. W.	Drury, H. N.	Leonard, P.	Shaw, T. D.
Abbott, C. J.	Demick, George O.	Mason, E. G.	Shepherd, Henry
Billings, Charlie	Durgin, F. A.	Nelson, W. S.	Sherman, H. O.
Copeland, J. W.	Ellis, H. H.	Orvis, S. C.	Spaulding, W. S.
Connor, Alfred	Harvey & Dow	Park, W. W.	Sherbleff, J. R.
Copeland, I. W.	Hickok, J. S.	Prindle, L. D.	Shaw, F. D.
Conant, A. F.	Harrington, W. C.	Parker, E. J.	Spafford, H. N.
Capen, J. H.	Huntoon, A. A.	Pool, F. W.	Smith, Charles H.
Clark, Andrew	Hayes, L. S.	Pooler, Frank	Wait, Clark J.
Clark, C. E.	Huntoon, W. E.	Perry, F. M.	Weeks, Lowell N.
Currter, Alfred	Johns, Mary	Read, L.	Welsh, J. S.
Cutler, M. C.	Kendall, George C.	Ryan, J. P.	
Dutton, E. N.	Landers, Pet.	Rice, B. G.	

VIRGINIA.

Angell, L. C.	Carpenter, C. S.	Oudlipp, F. D.	Dowell, J. R.
Bokell, W. J.	Carnahan, R. W.	Cook, J. N.	Dabney, C. T.
Boyd, D. P.	Crews, J. W.	Caltum, R. G.	Delaney, P. R.
Booker, E. B.	Cecil, J. F.	Cosnahan, R. W.	Duke, M. E.
Bashford, P.	Cutter, J. Harvey	Crouch, T. L.	Fleet, C. B.
Burns, J. W.	Cline, A. T.		Ford, W. A.

## VIRGINIA -- Continued.

Freeman, J. W.	Kintley, Thomas	Perkins, H. N.	Smith, E. T.
Freeman, Willie M.	Kimbrough, M. H.	Faynter, R. M. J.	Thweatt, W. H.
Finks, John H.	Krebs, E. T.	Pamplin, W. C.	Thweatt, J. G.
Friqua, M. D.	Lockwood, H. C.	Pace, Geo. R.	Taylor, W. S.
Garland, C. A.	McCluer, C. E.	Patterson, W.	Thompson, E. W.
Gaines, Geo. B.	McGanley, John M.	Ryan, B. G.	Vernon, W. J.
Holloway, W. F.	Murray, K. C.	Ramsey, Geo. J.	Whittington, C. P.
Harman, John B.	McGovern, Joseph	Robertson, T. P.	Williams, C. M.
Harrison, George T.	McGalne, R. R.	Rasene, T. O.	Wade, J. C.
Harris, N. C.	McEndoo, J. W.	Sweet Chalybeate Springs	Walker, Willie C.
Harvey, W. T.	McCarthy, E.	Simpson, J. E.	Wright, R. A.
Irvin, J. E.	Norris, J. F.	Shumate, W. B.	Walsh, J. H.
King, James E.	Naylor, J. A.	Sandoe, D. P.	West, S. P.
King's Baby	Norris, J. F.	Sneed, W. P.	Young, N. R.
Kates, J. W.	Oakey, L. G.	Smith, George O.	Yager, W. M.
Keller, J.	Oakey, W. S.	Smithers, H. S.	

## WISCONSIN.

Babcock, William	Crossman, N.	Mott, H. W.	Potter, C. O.
Barclay, R.	Eddy, A. M.	McGrou, T. E.	Rockwell, G. S.
Brownson, S. N.	Hope, H. C.	Nye, J. M.	Rheubman, F.
Beetle, G. L.	Harris, O.	Northway, W. II.	Radcliffe, W. S.
Bradley, J. N.	Hodgeman, J.	O'Neal, A. W.	Swearington, E. R.
Curry, E.	Kerr, John	Oakes, W. C.	Seelye, E. L.
Cronk, C. H.	Letz, R. E.	Pennington, L.	Smith, F. L.
Crosby, W. H.	McFadden, A.	Patch, E. L.	Tully, Thomas T.
			Woolsey, C. H.

## WEST VIRGINIA.

Adams, C.	Cunningham, J.	Keefe, A. E.	Ryan, J.
Benner, F.	Carroll, A. R.	Lorenstein, D.	Smith, Geo. O.
Brown, C. II.	Cline, A. T.	Lellich, M. C.	Sharpnock, D. M.
Burucker, J. L.	Day, J. W. C.	Manlin, Edward	Schoek, W.
Bueck, F. T.	Dalley, T. A.	Mudge, D. C.	Shock, W. W.
Bake, W. F.	Davis, E.	Marquette, J. M.	Strickler, G. W.
Bussard, E.	Engleth, J. A.	McKelvey, A. T.	Stott, G. B.
Baker, J. L.	Fitzgerald, Thos.	Mudee, D. A.	Spinner, J. E.
Courtright, J. L.	Farnsworth, J.	Mason, D. F.	Tabb, H.
Courtright, W. F.	Gilleland, Geo.	Past, R. E.	Tracey, C. R.
Cingmars, D. E.	Graham, L. T.	Pace, J. W.	Walker, E. D.
Cornbright, J. C.	Householder, J.	Reitz, F. W.	Wishart, W.
Cralg, H.	Hipsley, J. E.	Riley, James	Williams, H. S.
Clawoe, C.	Ingram, F. M.	Rainsford, G. E.	Worton, T. H. C.
Cannon, T.	Jordan, M. P.	Ryan, M.	Woodward, C. A.

## WYOMING.

Alley, George	Eagan, W. E.	Le Roy, C. R.	Shuler & Spindler
Abbot, T. D.	Eddy, T. C.	Malone, H. J.	Splton, G. G.
Abraham, L.	Fitzpatrick, J. F.	Miller & Pfeiffer	Springer, D. W.
Brewster, J. G.	Fillmore, Millard	Marks - Myers & Co.	Sabboty, D. L.
Brewster, Mrs. J. G.	Finckrook, J. B.	Mel drum & Peck	Spicer, M. T.
Baland, E.	Frank, J.	McDonald, James	Thompson, T.
Brennan & Smith	Gale, William	Moore, Charles W.	Town, W. G.
Crout, W. M.	Hart, J. C.	Mateon, J. E.	Taylor, C. W.
Crawford, W. M.	Haley & Fox	McNevin, J. C.	Unthank, O. N.
Cayota Rocky Mountain	Harper, —	Parsley, A. C.	Vogelzamy, A.
Conway, T. D.	Ivins, E.	Pease, J. A.	Voorhees, D. H.
Chldester, W. E.	Jones, J. J.	Richard, H. H.	Williams, H. H.
Downey, W. S.	Lafin, J. H.	Rogers, H. J., & Co.	Wagner Brothers
Earhart, Mrs. C.	Laramie Sentinel	Shanks, T. N.	Worth, N. C.

## WASHINGTON TERRITORY.

Latham, John	O'Connor, M.	Pitts, H. H.	Wright, William
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## CHAPTER LVI

## CONCLUSION.

THIS work, already extended to undue dimensions, requires a word or two more. It will be blamed for its omissions. The charge will not be unjust. Thus, for example, the service rendered by the telegraph in the late war has scarcely been mentioned. This generation cannot forget, and history will not neglect to record, how it aroused and united and gave strength to the nation at a period of its deepest peril. Neither can it be forgotten how effectively the telegraph directed the movements of the army, and enlisted in its service some of the brightest talent and some of the noblest men. Such a service demanded at least a chapter. Fortunately, it is to form the subject of a book. It deserves, as it is to have, an able pen and a brilliant record.

Another subject has been omitted. One of the agencies now most largely affecting the interests and sympathies of mankind is the telegraph in connection with the Press. The vigor with which this is now conducted is one of the marvels of modern enterprise. It finds in America congenial opportunity and demand. It merits careful exposition. A single page, however, must suffice.

The New York Associated Press, first organized in 1837, by the *Journal of Commerce*, *Courier and Enquirer*, and *Express*, and reorganized in 1847 by including the *Herald*, *Times*, *Tribune*, *World*, *Sun*, etc., is the focal power through which the telegraph has become the news-gatherer of the world. By an arrangement with eight State and Territorial associations of like character, representing five hundred daily journals throughout the continent, and by agents at London, Paris,

Berlin and other leading cities in Europe, and in China and Japan, the current history of the world is written on the instant by skillful hands, gathered, exchanged by telegraph and published daily. The records of universal commerce, politics, war, crime, in a stream of words, varying from 50,000 to 70,000 a day, flash day and night over the wires to New York, and from thence, after careful and skillful analysis, are distributed in assorted portions to all tributaries. New York accepts and publishes all.

The cost of this grouping of the world's news is large. The simple item of manifolding at New York costs \$30,000 a year. Cable tolls average \$500 a day, and often reach \$2,000. After deducting a large revenue from the State associations for supplying news, the annual cost to some of the chief New York daily papers for general American news in addition to the other expenses named, reaches, not unfrequently, the sum of \$1,000 per week. From 25,000 to 70,000 words are transmitted daily between Washington and New York during sessions of Congress. For all this service the New York Associated Press pays a fixed rate per word. Large sums are paid for "specials."

The papers published outside of New York are charged certain fixed weekly sums, regulated by the State associations. The telegraph company transmits the reports, under certain limitations as to time, at a specified annual sum.

Of this extensive system, David M. Stone, the veteran of the *Journal of Commerce*, is President; Gordon L. Ford, of the *Tribune*, Secretary; James W. Simonton, General Agent, New York; James C. Hueston, Resident Agent, London, and Walter P. Phillips, Representative at Washington, D. C. Messrs. Hueston and Phillips are well-known telegraphers, both having graduated from the office of the Associated Press, New York, and both having, in turn, served as Mr. Simonton's confidential chief assistant prior to their appointment to their present important trusts.

The employment of the telegraph in meteorological observations is a theme so interesting and so ample in detail as to require a separate work, for any adequate illustration.

It would have been grateful to have taken up, with something of

careful analysis, the influence of American mind on telegraphic science abroad. The allusion, heretofore made, to the failure of the Hughes printing instrument in America, until perfected by Mr. Phelps, must not be regarded as asserting that the Hughes printer, now so successful in Europe, owes its success there to any skill not Mr. Hughes' own. No such inference is designed or desired. Mr. Hughes, no doubt, deserves all the honors paid to him. One of the greatest of American triumphs abroad is likely to be the adaptation of mechanism to the Atlantic cables by our countryman, Mr. Joseph B. Stearns, by which they can be duplexed.

The use of an electro-magnet to effect reversible polarity in rapid automatic transmission on American lines, and by which alone it became possible, was first introduced at Albany, N. Y., in the fall of 1870, by George H. Grace, at that time Assistant Superintendent of the Automatic Telegraph Company.

And now, with the setting sun of the summer of 1878, as the thirty-third year of the writer's telegraphic life terminates, the last corrected proof of the "Telegraph in America" passes to the printer's hands. The title may seem pretentious; but it is convenient. It has been written as a kind of memorial, largely personal, of thirty-three years bright with many and delightful memories, along the track of which few shadows have fallen. It may be that these will come as do other shadows, at days decline. But in this nature will but assert her right, and her shade may be as grateful and as fruitful as her sheen. Of one thing the writer is sure. He has endeavored in his sphere, once large, and not without success, to infuse into telegraphic administration the elements of kindness, justice and fraternity. The book he now closes has been written with a like intent.

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## THE HEROISM OF THE CRAFT.

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IT seems improper, and it might be unjust, to close this volume without a reference to recent events which have, with unusual clearness, and to a very wide public acknowledgment and admiration, revealed the morale of the telegraphic staff.

The intelligence, generally so observable in an American telegraph operator, is, in part, a necessity of his vocation. It is a pursuit which demands it. But it is not less true of his character. The average of both of these is exceptionally high. No careful observer can go through the larger, or, indeed, the lesser operating rooms of America without noting their unmistakable signs. Besides being a business congenial to the sprightly mental qualities of the average American youth, it is one which demands and educates to a nice sense of honor. The fidelity with which the myriad secrets of the wires are kept, and the patient, careful, and skillful performance of ordinary duty, has given the whole system a tone and dignity which has more than responded to official management. It cannot, therefore, be wondered at, that, as occasions of magnanimity offer themselves, although these are necessarily rare in a pursuit so peaceful, evidences of true heroism promptly appear. To the most recent of these the following record is due :

As the sun of August, 1878, began to pour down with unusual intensity upon the cities of the South, the occurrence of numerous cases of yellow fever soon gave terrible certainty to the intuitive apprehensions which had more or less prevailed as the summer months approached. Almost the first victim was Minor Clark Gross, operator at Key West, Florida, July 11. The disease was not then epidemic. Mr. Gross's family were promptly paid \$1,000 by the Telegraphers' Mutual Benefit Association, of which he was a member. The second victim was Hugh

Irvine, chief operator, New Orleans, August 24th. At this latter date the yellow fever had spread with such fatal malignity that the cities of the Mississippi were largely depopulated, the frightened citizens fleeing, some to the North, and some to the adjacent woods and towns. Quickly following the death of Mr. Irvine, was announced that of Edmund W. Barnes, the able Manager of the New Orleans office, August 31st. Mr. Barnes was a native of Staplehurst, Kent, England, and was one of the oldest telegraphers of the country. He became Manager at New Orleans, May, 1875. The deaths in telegraph offices from this time were numerous, and the sickness almost universal. W. K. Woolf, of New Orleans, died Sept. 7th; F. B. Moxon, of the Atlantic and Pacific Company, died September 5th. At Memphis died successively M. J. Keyer, D. Walsh, John I. Connolly, a volunteer from Springfield, O., Thomas Hood, an English operator, H. M. Goewey, a volunteer from Pittsburg, Pa., J. W. McDonald, a volunteer from Cincinnati, O.; E. W. Gibson, J. H. Allen, W. H. Mynatt, and O. D. Bartholomew, a volunteer from the Nashville office, who had studied medicine in Nashville, and with great heroism and success, devoted himself to the care of the sick in Memphis, and who fell a victim to his unselfish and noble work. There died also at New Orleans A. D. Babbitt, who had been an active and warm-hearted member of the Relief Association of New Orleans. Amidst all these deaths and a sickness which weakened almost every arm, scarcely a man left his post whose hand had power left to manipulate the key. The men who died, including Thomas F. Marshall, Manager at Grenada, who had to be carried from his seat at the operating table, was only a type of many others who almost literally died at their posts. Wyatt M. Redding, Railroad Operator at Grenada, who took Marshall's place, and whose able dispatches to the *New York Times*, *Cincinnati Enquirer*, and *Associated Press*, aroused the north to a vivid sense of the desolation caused by the ravages of the pestilence, sent his last dispatch from the same room where his child lay dead and his mother, wife and sister, lay victims of the fever, and where he soon after himself died.

The following by William Ward of Macon, Ga., was written on the announcement of his death:

## MORSE MEMORIAL.

Click, click.

Like the beat of a death watch, sharp and quick,  
 From hearts that are stifled and lips that are dumb,  
 With the lightning's speed and the lightning's thrill,  
 The dark words go and come :  
 Click, click, and a pulse is still —  
 There's a form to shroud, and a grave to fill,  
 For the Yellow Death is upon the air,  
 And the city lies in the clutch of Despair.

Not less a hero than he whose plume  
 Goes, blood-stained, down in the conflict's gloom,  
 Not less a martyr than those who slake  
 A blood-thirst, bound to the burning stake,  
 Is he who stands at the last defense  
 Against the shock of the Pestilence.

Click, click.

His heart is strong and his fingers quick,  
 'Tis a fearful work of hand and brain !  
 Each click is a groan, each word is a pain,  
 But he falters not in his fight with death,  
 Even under his wing, as he breathes his breath,  
 The shrouded city before him lies,  
 And the dead drop down 'neath the burning skies.  
 Never a smile, or a word to cheer,  
 Brightens his eye or falls on his ear.  
 All is dreary, and all is dumb,  
 Save the hourly wail from the stricken home.

Click, click.

'Tis the only hope where the dead are thick.  
 Where the living, strewn by the plague's hot breath,  
 Are sown with the ripening seeds of Death,  
 Still the hero-boy at his key-board stands,  
 With his stout young heart and his busy hands,  
 And many a far-off city feels  
 The thrill of the wire, and its mute appeals.  
 And hands are stretched from the East and West,  
 Their upward palms with a blessing blest,  
 As it comes to those who meet their doom  
 Like scorched leaves struck by the hot simoon.

Click, click.

Like the beat of the death-watch, sharp and quick !  
 'Tis the last note struck, 'tis the first wild touch  
 He gives the key, as he feels the vague  
 And creeping chill of the deadly plague,

Ere it burns with the strength of its fever clutch !  
 He falters, falls, and his work is done,  
 And the fiend has marked his victim won.  
 Not long he dallies with those who fall  
 Beneath the curse of his yellow thrall.  
 Oh, city, beneath his merciless sway,  
 Mourn, mourn, for your hero dies to-day !

But for the heroism of men like Redding many an office would have been closed, and that invaluable means of communicating with and securing succor would have been lost, and made the isolation of unaided suffering appalling.

As sickness and death thus entered the southern offices, numerous requests from northern operators were received by General Superintendent John Van Horne, to be accepted for duty in the disabled offices. Men holding good positions in the north, unacclimated, cheerfully offered their services. The number who thus offered themselves exceeded three hundred. Among the first to go directly to the chief places of danger was David Flanery, formerly superintendent at New Orleans, and J. W. McDonald of Cincinnati, O., the latter, who took charge at Memphis, soon after falling at his post while gallantly performing his self-appointed task. The following are the names of the accepted volunteers:

## VOLUNTEERS ACCEPTED.

*A. S. Hawkins, Pittsburg, Pa., sent to.....	Memphis, Tenn.
A. K. Sinnott, Santa Fe, sent to.....	New Orleans, La.
J. B. R. Spaulding, Baltimore, sent to.....	Memphis, Tenn.
†Frank W. Farley, Philadelphia, sent to.....	New Orleans, La.
I. Van Cullen Jones, Philadelphia, sent to.....	New Orleans, La.
A. G. Taylor, Scranton, Pa., sent to.....	Mobile, Ala.
E. V. Wedin, New York, sent to.....	New Orleans, La.
*E. M. Pollard, Pittsburg, Pa., sent to.....	Hickman, Ky.
B. Deklyn, New York, sent to.....	New Orleans, La.
L. Klotz, Mobile, sent to.....	New Orleans, La.
*C. R. Langford, Montgomery, sent to.....	Memphis, Tenn.
*J. W. Alvis, Knoxville, Tenn., sent to.....	Vicksburg, Miss.
*C. M. Carr, St. Louis, sent to.....	Vicksburg, Miss.

\*Dead.

†Arrested at St. Louis by his family to prevent his going south.

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Geo. Lennox, St. Louis, sent to.....	Vicksburg, Miss.
John Heaberg, Winona, Miss., sent to.....	Grenada, Miss.
*A. Wiltshire, sent to.....	Holly Springs, Miss.
*B. H. Cayce, sent to.....	Holly Springs, Miss.
*C. G. Handy, New Albany, Ia., sent to.....	Grand Junction, Tenn.
*Thomas Hood, Philadelphia, sent to.....	Memphis, Tenn.
*H. M. Goewey, Pittsburg, Pa., sent to.....	Memphis, Tenn.
David Flanery, Richmond, Va., sent to.....	Grenada,
*J. W. McDonald, Cincinnati, sent to.....	Memphis, Tenn.
E. M. Hickey, New York, sent to.....	Chattanooga, Tenn.
C. T. Raymond, New York, sent to.....	Chattanooga, Tenn.
A. M. Pennock, New York, sent to.....	Chattanooga, Tenn.
H. G. Whallon, New York, sent to.....	Chattanooga, Tenn.
S. G. Swartz, New York, sent to.....	Chattanooga, Tenn.
Martin J. Keyer, Louisville, Ky., sent to.....	Memphis, Tenn.

Meanwhile the Western Union and Atlantic and Pacific Telegraph Companies issued directions to have nurses provided for their sick operators. Immediately, also, from all parts of the country came offers of money to nurse the living, bury the dead, and succor the bereaved. In this fraternal offer Canada heartily joined. Contributions from England, with expressions of sympathy, were also received from W. H. Preece and H. C. Fischer, managers of the British Telegraphs. A central committee was at once organized in New York, August 29th, consisting of eleven persons, representing different departments, who appointed General Superintendent John Van Horne chairman, and R. H. Rochester treasurer, and an invitation was telegraphed throughout the country inviting remittances. It was scarcely issued before money began to pour in from all directions, and local committees for the distribution of aid were promptly supplied with the means of relief. Prominent among those who thus distributed the money sent to them were A. D. Babbitt and J. T. Alleyn, of New Orleans, and Charles A. Gaston, of Memphis, who, as well as others, entered upon the duty of relief with great heartiness, delicacy and discretion. No operator was allowed to suffer without care, and a vast amount of distress was relieved by the aid thus judiciously provided. The following are the deaths so far as known :

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\*Dead.

## THE DEATH ROLL.

Minor Clark Gross.....	Key West.	A. W. Harvey.....	Tangipahoa, La.
Hugh Irvine.....	New Orleans.	L. M. Pennington.....	Water Valley.
Edmund W. Barnes..	New Orleans.	Thomas F. Marshall.....	Grenada.
F. B. Moxon.....	New Orleans.	Wyatt M. Redding.....	Grenada.
H. H. Hunt.....	New Orleans.	J. W. Alvis.....	Vicksburgh.
W. K. Woolf.....	New Orleans.	C. M. Carr.....	Vicksburgh.
A. D. Babbitt.....	New Orleans.	B. W. Fortune.....	Hickman, Ky.
J. J. McDermott.....	New Orleans.	E. M. Pollard.....	Hickman, Ky.
M. J. Keyer.....	Memphis.	A. Wiltshire.....	Holly Springs, Miss.
E. W. Gibson.....	Memphis.	B. H. Cayce.....	Holly Springs, Miss.
D. Walsh.....	Memphis.	J. M. Wells.....	Paris, Tenn.
John W. McDonald.....	Memphis.	John H. Beeler.....	Paris, Tenn.
John I. Connolly.....	Memphis.	W. H. Steed.....	Paris, Tenn.
J. H. Allen.....	Memphis.	H. B. Samuels.....	Paris, Tenn.
Thomas Hood.....	Memphis.	G. B. Swann.....	Grand Junction, Tenn.
H. M. Goewey.....	Memphis.	C. G. Handy.....	Grand Junction, Tenn.
W. H. Munnatt.....	Memphis.	J. V. Thompson.....	Decatur, Ala.
John Foley.....	Memphis.	Thomas Callon.....	McKenzie, Tenn.
C. R. Langford.....	Memphis.	S. H. Alley.....	Pascagoula, Miss.
O. D. Bartholomew.....	Memphis.	T. J. Murphv.....	Martin, Tenn.
A. S. Hawkins.....	Memphis.	A. P. Graves.....	Rossville, Tenn.
R. G. Raoul.....	Osyka, Miss.	C. Curtis.....	Guthrie, Ky.
A. Campbell.....	Canton, Miss.	I. G. Nicholson.....	Mason, Tenn.
A. W. Dennett.....	Brookhaven, Miss.	K. Garrett.....	Withe, Tenn.
W. L. Fairchild.....	Tangipahoa, La.		

The receipts from telegraph offices for the Southern Relief Fund amounted to \$12,677.35. Besides this fund, one thousand dollars each were paid by the Telegraphers' Mutual Benefit Association to the families of Minor Clark Gross, Edmund W. Barnes, Martin J. Keyer, John Isaac Connolly, John W. McDonald and Edward W. Gibson, victims of the fever, who were members of that association. In this it has done a noble work, and made its benign mission felt, at a time when it was most needed. The severe tax upon its strength which these payments imposed only strengthened its membership and gave it new power.

No adequate justice can be done to the courage and fidelity of the operators in the South during this terrible ordeal. They remained at their posts with sublime heroism and unselfishness. There was, however, no nobler work done than by William E. Flippin, manager at Vicksburg, who, without aid, and alone, remained at his post for several

weeks, during the darkest and deadliest period of the pestilence, uncomplainingly performing the severe duties of that large and important office.

Amid the sickness and deaths of the Memphis office, operator G. A. Putnam was the only man who did not fall, but stood faithfully at his work to the last. The necessity for keeping open communication so as to reach the avenues of relief made the labor of these men surpassingly important and valuable. Through their faithful service, often performed amid the gloom of sickness and death, the whole country was kept informed of the condition of affairs and given the medium of succor. Their bravery and self-sacrifice must remain monuments of fidelity which will not soon perish.





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