OBSERVATIONS ON THE LAKE FEVERS AND OTHER DISEASES OF THE GENESEE COUNTRY

Edward G. Ludlow

OBSERVATIONS

ON

THE LAKE FEVERS

AND

Other Diseases

OF

THE GENESEE COUNTRY,

IN THE

STATE OF NEW-YORK.

BY EDWARD G. LUDLOW.

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ON THE

LAKE FEVERS AND OTHER DISEASES

OF THE

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FOR THE

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ON THE 7th OF APRIL, 1823.

TO

WILLIAM J. MACNEVEN, M. D.

PROFESSOR OF CHEMISTRY

IN THE UNIVERSITY OF THE STATE OF NEW-YORK,

This Essay is inscribed,

IN TESTIMONY OF HIS SCIENTIFIC EMINENCE

AND PRIVATE WORTH,

BY THE AUTHOR.

TO

ALEXANDER H. STEVENS, M. D.

SURGEON OF THE NEW-YORK HOSPITAL, CONSULTING PHYSICIAN OF THE NEW-YORK DISPENSARY, &c. &c. &c.

DEAR SIR,

IN dedicating this Essay to you, it is my wish, not only to testify my gratitude for the many advantages your friendship has afforded me; but to do honour to myself by the record, of having pursued my studies under the auspices of one of your acknowledged talents.

With every sentiment of regard,

Your attached pupil,

THE AUTHOR.

PREFACE.

In this Essay, the title of *Lake Fevers* is meant to apply particularly to the *Remittent Fevers* of the Genesee Country; though, to speak strictly, it is equally applicable to all the endemic fevers in the vicinity of its lakes. This subject demands more than ordinary attention from those of the profession who reside in cities, as it embraces the consideration of a class of diseases which are susceptible of every variety both of symptoms and treatment; and concerning the nature of which there exists great diversity of opinion.

Before detailing the succession in which the various subjects included in this essay are treated, it may be proper to state the opportunities which have been afforded me in their investigation:—In addition to a residence of many years in the vicinity of the western lakes, I was engaged during the last summer in the practice of physic at Geneva; in which period I visited most places where epidemics prevailed.

For the elucidation of many of the facts noticed, a sketch of the *medical topography* of the country is given; to which is subjoined a history of the *epidemics* since its early settlement.

Intermittent fevers, as well as remittent, have been particularly noticed, both as respects their remote and exciting causes, as well as the mode of treatment most successfully pursued.

The author avails himself of this opportunity to acknowledge his obligations to A. M'Nab, Esq. Drs. Carter and Vanderburgh, of Geneva, Dr. Hayes, of Canandaigua, and other gentlemen of the profession, for their friendly communications.

TOPOGRAPHY OF THE GENESEE COUNTRY.

GENESEE is an Indian term, signifying *Pleasant Valley*, given to the country near the river of the same name. Its bounds are not very clearly defined, being sometimes extended to all that part of the state of New-York lying west of Utica, but more generally restricted to that portion west of a meridian passing throughout the N. W. corner of Seneca lake.—The country lying west of Utica is, in its general character and most prominent features, so much identified, as to admit of being taken under one review, and, therefore, the whole will be considered under the following brief notice:—

South by Pennsylvania,	Lat. 42° N.	
North by lakes Erie and Ontario, Salmon River, &c.	43° to 43°.30′	
West by Triangle in Pa. and Sts. Niagara,	2°.30′ to 3° W. Lon.	From Washington.
East by meridian of Cookhouse, Chenango River, and Rome,	1°.30′ to 2° E.	
Extent E. and W. 200 miles N. and S. 85 miles	medium.	
Area,	17000 square miles.	

Population, 255,000, being about 15 per square mile.

Agriculture, which is in a flourishing condition, occupies the mass of the people. The fertility of the country is proverbial. Clay, gravel, and sand, with a deep, rich loam, or vegetable mould, constitutes the superior soil, marl and gypsum are abundantly distributed as substrata. Excellent crops of all the grains, grasses, fruits, and vegetables, common to the northern and middle states, are raised here with ease, and are in great

plenty. From the south of the great lakes, there are extensive plains, gentle slopes, waving ridges, and gradual ascents, towards the Susquehannah and Alleghany mountains, with occasional steep and abrupt precipices, near the lakes and creeks. The term level is often misapplied here; undulation is more proper. The ridges or swells lay parallel with each other, and with the smaller lakes north and south, varying generally from 5 to 10 degrees from the meridian, and to the west of it. The ascents are gentle, and the eastern slopes most valuable. Here and there a hill rises from the general level of the plain to the height of 50 to 150 feet; the highest part is frequently the best soil; isolated eminences deserving the name of mountain rarely occur; they are confined almost exclusively to the vicinity of the dividing ridge.

The country exhibits little or nothing of an Alpine character, and that part of it which forms the Ridge, Roof, or Water Shed, is good land for tillage or pasture; this separates the waters of the Mississippi and Susquehannah from those of the St. Lawrence. Notwithstanding the great length of the streams and rivers which take their rise in this spine, it is believed not to exceed 1500 feet elevation above the level of the Atlantic tides; its course is somewhat tortuous, but its general direction lies east and west, nearly parallel with the Erie and Ontario lakes, and at right angles with the smaller lakes.—This might with great propriety be called the Lake Country, for in this respect Cumberland in England holds no comparison with Genesee. Besides the Erie and Ontario, (which, properly speaking, are *seas*,) there are the Conesus Hemlock, Honeoye, Canandarqua, Seneca, Cayuga, Owasco, Skaneateles, Otisco, Onondaga, and Cazenovia lakes, lying north and south, and the Oneida, lying east and west, all emptying themselves into Ontario; the Chatauqua and Casdauga lying north and south, discharging their waters by the Connewongo into the Alleghany river. The last mentioned lakes occupy the upper terrace, being, it is thought, about 1350 feet above the ocean. The Cayuga, Oneida, and Onondaga, are in the lowest part of the second or middle terrace, the last

(Onondaga) is 350 feet above tide, the others occupying basins of intermediate elevation. The waters of these lakes are pure and pellucid, several are so deep as rarely to freeze over in winter; the line has not yet fathomed some of them; their shores are in some parts bold, in others shelving, with pebbly or gravelly edges, but near the head generally moist or marshy. They abound in a variety of fish, and afford means of easy communication, which in process of time will doubtless be extended and improved. Viewed in connexion with their variegated and rich scenery, these lakes form an assemblage of objects in the highest degree picturesque, and at no very distant period will draw around them wealth, elegance, and refinement. Associated with interesting events of human life, our lake country would exercise the descriptive talents of Southey, Coleridge, or Wordsworth.

Among the rivers are the Niagara, Genesee, Seneca, and Salmon rivers, besides a great number of smaller streams. Passing over a calcarious soil, the waters of these streams are considerably impregnated with lime.

Among the principal swamps and marshes are the Tonnewanto, Cayuga, Onondaga, Sullivan, Newton, Catharines, and Braddocks bay. As I shall frequently have occasion to refer to these when describing the diseases prevalent in their vicinity, I shall enter into a more particular description of them than would, perhaps, otherwise be interesting.

The Onondaga marsh is situated at the head of Onondaga lake, which is about seven miles in length, and three in its greatest breadth; its water on the surface is perfectly fresh, but at a moderate distance beneath it is salt, as the lake receives its waters from both fresh and salt sources, the solution of this phenomenon is obvious. The famous salt springs issue chiefly from the marsh, near the banks by which it is enclosed, and at various distances from the waters of the lake; some of the principal disembogue in a group near the village of Salina, which is situated on the margin of the marsh. Its inhabitants are principally those concerned in the manufacture of salt, which is here extensively carried on.

During the sickly season, fevers of a highly malignant character are occasionally prevalent—the use of spiritous liquors as a preventive, predisposing the system to the action of the miasma, which is here copiously exhaled. How far the mixture of salt and fresh water assists in the decomposition of vegetable matter, will be considered in a subsequent part of this essay.

The Cayuga swamps and marshes are of great extent. In the immediate vicinity of them is situated the village of Montezuma, at the north end of one of those parallel ridges previously noticed; when the waters are high it is literally an island, having on the west three miles of marsh, and on the north and east one and a half, comprising in the whole about 800 acres of swamp and 4000 of marsh; here are likewise salt works, with the same causes of disease operating on the inhabitants as at Salina.

The marshes of Braddocks and Irondequot bay are situated at the mouth of Genesee river, where there is a small settlement; they are extensive, and are always partially covered with stagnant water, rendering them during the summer highly obnoxious to those who live in their vicinity. Numerous medicinal plants, whose virtues have been tested, are found in this region, and are much used, especially in those parts of the country where the scarcity or high price of pharmacutical preparations renders it necessary to resort to the less expensive simples of nature; in this way many valuable additions are made to medical botany.

When treating of diseases, I shall briefly notice those which are employed as remedies in fever, and such others as have novelty to recommend them. Chance has done something, science very little in the departments of Geology and Mineralogy, the surface of the earth having been but partially explored.

The district is usually and very properly divided into three sections or terraces. The lower or northern is nearly alluvial, and extends from lake Ontario to the Niagara mountain ridge, which is a perfect mural bank. This terrace is nearly level,

and its medium width is about ten miles; the alluvial way or nature's turnpike, passing east or west through the middle of it, from Niagara river to Sodus bay. Here occur extensive deposits of red ochre, the gypsum formations, and saline fountains. Red sandstone appears on the lake shore, beneath secondary limestone. The middle terrace abounds in secondary limestone, swinestone, bituminous marl, and slate. The southern or upper terrace extends from the smaller lakes southward; it presents a variety of argillaceous earths; the highest hills exhibit specimens of carbonate of lime, containing impressions of testacea; traces of coal and alum are also visible.*

The seasons are generally uniform; winter begins in December and continues until March, of which about two months afford good sleighing. Severe cold seldom lasts more than three days successively, and is followed by soft breezes from the south. The spring generally opens in March or by the first of April; the weather is, however, variable until May. The summer begins regularly in June; in autumn, through September and October, the weather is settled and serene. Westerly breezes prevail the greater part of the year. Easterly winds are of rare occurrence; those from the north are cool and bracing. Southerly winds are very common on the borders of the smaller lakes. Coming from warm latitudes, along the Mississippi and Ohio, they might be expected to bring genial warmth; but, on the contrary, they are humid, and invariably create a sense of chill.

The *temperature* is somewhat variable, but generally moderate, and seldom on extremes for any length of time.

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* About 11 miles to the north of Geneva are situated the Clifton springs. These waters are highly impregnated with sulphuretted hydrogen. When drawn from the spring they are clear, but become turbid when exposed to the air. They are found to be very serviceable in all cutaneous affections, and when heated form a bath highly efficacious in rheumatic complaints, being then similar to the warm sulphureous springs of Aix la Chapelle, Barege, and the baths of Nero in the vicinity of Naples.

The following observations were made during the year 1819, at the village of Geneva, which may be considered as the central climate west of New-York.

Meteorological Observations (mean temperature, 1819.)

	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
Highest,	58°	58°	50°	77°	86°	94°	92°	91°	87°	77°	57°	46°
Mean,	30	31	28	46	56	68	70	69	63	47	41	30
Lowest,	3	10	7	25	36	52	50	52	44	29	29	7
Winds,	N10 s25 E9 w46			N8 s30 E8 w45			N23 s34 E10 w25			N13 s24 E6 w49		
Weather,	62cloudy 28fair			39cloudy 52fair			38 cloudy 54 fair			53cloudy 39fair		

Geneva is situated at the N. W. corner of Seneca Lake, (which is 438 feet above tide waters at Albany,) in lat. 42° 52′ North, long. 3° West of New-York city, or 77° West of the Royal Observatory, Greenwich, England. To ascertain the mean average of temperature, expressive of the climate, would require a regular course of observations for a series of years. The following may be considered as near the truth: *summer*, 70° to 72°; *winter*, 30° to 32°; *spring*, 40° to 43°; *autumn*, 50° to 51°; *annual, mean average*, 45° to 50°. There can be but little doubt that the clearing of the country has made great changes, both in its temperature and the type of its diseases; but as a consideration of the latter will come more properly under another head, I shall at present waive all further notice of this subject.

History of Epidemic Diseases in the Genesee Country, from the year 1801 *to the year* 1823.

The settlement of this section of the state of New-York began in 1791, and was principally completed in 1804. For the few first years, the settlers were scattered over such an extent of country, that an attempt to characterize the prevalent diseases would be fruitless. I have therefore commenced at a period when they had developed themselves sufficiently to attract the notice of the medical practitioner. The summer of 1801 was warm, with frequent showers; the days were exces-

sively hot, but the nights very chilly. In September and October there was less rain; the days were mild and pleasant, but the nights continued cool. The diseases of the spring and summer months were principally intermittent fevers, which pre-prevailed throughout the country; they were of the tertian type, and were frequently complicated with visceral obstructions, and attended with violent inflammatory action: none were exempt from them except those who had undergone many previous attacks, without having taken any measures to interrupt their course. A strong prejudice existing against all remedies which check the paroxysms: the consequence of this was, that the disease laid the foundation of many incurable chronic affections.

Peruvian bark was then rarely used; though, when properly employed, generally successful. It was given without any previous depletion, even in cases where visceral obstruction existed; it is, therefore, not extraordinary that doubts of its efficacy should have arisen.

In September and October, remittents of a mild form appeared, which continued through November, growing more severe as the season advanced. For the first two or three paroxysms, it was difficult to distinguish intermittents from remittents: the patient was attacked with languor, pain in the head and back, and alternate fits of heat and cold. These symptoms lasted four or five days, about which time a remission commonly took place, often without the aid of medicine. Intermittents and remittents often occurred in the same family, and required similar treatment; an obstinate case of the former being more dreaded than a mild case of the latter. Venesection, an emetic, and cathartic, followed by a few doses of bark, usually subdued the disease by the fifth or ninth day. Occasionally, though rarely, it was more violent, the patient being attacked with a severe cold fit, violent pain in the head and back, delirium, full hard pulse, increased heat, and difficult breathing. These cases, however, were seldom fatal, when depletion, according to the exigencies of the case, was premised. When left to nature, the symptoms became typhoid, and a re-

covery of the patient uncertain. There were also a few cases of dysentery, but not of a malignant character. The small pox occasionally appeared, but was seldom fatal. The vaccine virus had been introduced, but was considered more dangerous than the former. All fevers, except fever and ague, were called by the people *Lake or Genesee fevers.* After November, the country was remarkably healthy, and continued so during the winter.

During the summer and fall of 1802, the diseases were similar to those of the preceding year: the winter was mild and healthy.

1803. As the country became more settled, new diseases appeared, and the preceding ones did not retain their former characteristics. Intermittents, from being simple, became complicated with other diseases, so as to render it difficult to determine their nosological character.

In each succeeding year, it became apparent that intermittents were declining, and continued fevers becoming more prevalent. Diarrhœa was the prevailing disease of the spring. During the summer, there were many cases of dysentery; the symptoms were, however, mild, and none terminated fatally. In autumn, remittents and continued fevers were general, but yielded readily to the usual remedies.

1804. The summer of this year was but moderately warm; the winter was intensely cold for an unusual length of time. A greater quantity of snow fell, and laid longer than had ever been known. Fevers, during the summer of this year, were less frequent than the last. The new settlements, where intermittents and remittents had prevailed the preceding season, were remarkably healthy. In the old settlements, during the fall, there were many cases of remittent. The winter diseases were purely inflammatory, which is generally the case in this country. Cynanche tonsillaris, pleuritis, and enteritis, were prevalent, making the season more than usually unhealthy.

1805. From the equable temperature of the last year, it was expected that the present warm season would be less sickly than those which succeeded open winters, but it was other-

wise. The spring commenced with fevers of an inflammatory nature, which continued until cold weather. The intermittents were complicated with enlargements of the liver and spleen; in most instances, these were sequelæ of the fever, but in others, these organs were primarily affected.

About this time, mercury came into fashion; and in all forms of fever, whether intermittent, remittent, or typhus, without reference to the diathesis, the patients were indiscriminately salivated. In those cases where the liver was diseased, it proved serviceable; but to its abuse, numbers were sacrificed.

1806. There was much rain and warm weather during this summer. The diseases resembled those of the last year, except at Palmyra, where a fever of a typhoid character prevailed. It commenced in December; the symptoms were, great prostration at the commencement of the disease, succeeded by coma, subsultus tendinum, and hiccough. Dissolution generally took place in three or four days, unless the system was supported by powerful tonics. It proved fatal to many. Hoopingcough was also epidemic throughout the country.

1807. The spring was ushered in by wet weather, which continued during the summer with alternations of great heat. The fevers of this year, during the summer months, were purely inflammatory. In September and October, typhoid symptoms supervened early in the disease. The character of the fever varied, however, with its localities. Near streams, and where the current had been obstructed by dams, its symptoms were strongly marked on the attack; whereas in high grounds, its approach was insidious, the patient feeling but slightly indisposed for some days previously; after this the disease suddenly developed itself. These cases were more unmanageable than when the attack was sudden. In July and August a severe opthalmia prevailed. In September influenza was epidemic throughout the country; few escaped an attack, as neither previous nor existing diseases were preventives. It was attended with acute pain in the head and eyes, and sometimes terminated in abscesses in the frontal sinuses. It proved fatal

to many elderly people, and soon terminated the sufferings of those who were in the advanced stage of pthisis pulmonalis, of which it became an exciting cause where a predisposition existed. It also frequently terminated in typhus. The treatment generally pursued was depletion, antimonials, and mucilaginous drinks. Measles, hoopingcough, and chickenpox, were prevalent during the winter.

1808. This season much resembled the last. Fevers of a continued type prevailed during the summer, but generally terminated favourably. In the month of January a typhoid fever appeared, which continued till May. It was confined to particular sections of the country, and as frequently originated in situations proverbially healthy, as in those of a different character. In many instances it terminated fatally. Different plans of treatment were pursued, of which none proved uniformly successful. Those who had hitherto considered mercury as infallible in all fevers, were now compelled to acknowledge their error. Some administered bark early in the disease; others, wine, brandy, and opium. The most successful treatment was early, though careful depletion, followed by stimuli, judiciously administered. The sudden prostration of strength, the small frequent pulse, brown tongue, and cold extremities, all indicated a disease of a different character from the inflammatory fevers which formerly prevailed.

1809. The summer was unusually cool, and the fevers of this season were of a less inflammatory character than common, readily assuming the form of a mild typhus. Intermittents seldom appeared.

1810. The spring commenced early, and the weather was less variable than the last season. The summer was hot and dry, and, during the winter, there was much snow and cold weather. The diseases of this year were similar to those of the last, though less numerous.

1811. Bilious fevers, with visceral obstructions, prevailed during this summer, which was extremely warm and dry. There were also many cases of diarrhœa. The winter months were excessively cold, with alternations of pleasant days.

Pneumonia, measles, and rheumatism, were the prevailing affections.

1812. In March, of this year, there were frequent cases of pleuritis, with great diversity of symptoms. In some cases, copious bleeding was required, with a strict antiphogistic regimen, while in others, an opposite course of treatment was indicated. The weather had been variable with southerly winds. In April and May were noticed for the first time, a few sporadic cases of *pneumonia typhoides*, a disease until then unknown, and which, during the ensuing winter, became the most formidable epidemic which had ever appeared in this country. In the first cases, the local affection was principally confined to the throat, and these were more fatal than those which succeeded them, in which the lungs and brain were principally affected. The summer months were extremely warm and dry. Diarrhœa, dysentery, and the usual fevers, were prevalent, without any thing remarkable in their symptoms. During the autumn, *pneumonia typhoides* again prevailed in different parts of the country, particularly among the soldiers at Lewiston, on the Niagara frontier.

1813. In January and February the weather was very variable, being alternately cold and humid; the epidemic pneumonia typhoides now became general, and caused great mortality. There were two forms of the disease: *sthenic* and *asthenic*; the greater portion, however, were of the latter kind. It differed from preceding epidemics, by its local determination to different parts of the system, particularly the brain and lungs. Its varied symptoms in different subjects, gave it a plurality of names, and occasioned a diversity of treatment. Some were attacked with violence, and died in a few hours, while others were but slightly indisposed. The disease was ushered in with severe cold chills, continuing several hours; pain in the head, back, loins, and side; cough, with expectoration of a frothy mucus, tinged with blood. The respiration was difficult, the extremities cold, and the pulse exhibited every variety; sometimes natural; again very slow, or quick; but, in most instances, the artery was weak, and easily com-

pressible. The morbid action was frequently translated from one part of the system to the other; thus, in one case, the patient was seized with a violent pain in the head, which continued several hours; on the subsidence of this, his legs became painful, and extensive inflammation and suppuration supervened. In other instances, the diseased action suddenly left the lungs, and inflammation and suppuration of the upper extremities followed. Such a multiplicity of symptoms occasioned a great contrariety of treatment: some depleted, others stimulated. On its first appearance, large bleedings were employed, but with temporary relief; in most cases the patient sinking on the third or fourth day. In other sections of the country, this mode of treatment was more successful. Those who were opposed to the lancet, trusted exclusively to opium, a practice equally fatal. The most successful treatment was restoring warmth, during the cold stage, by different stimuli, followed by moderate bleeding and evacuants; the skin being kept free, and blisters and tonics early employed. The epidemic ceased on the return of warm weather. In the spring there were a few cases of pleurisy. The summer was unusually healthy.

In the winter of 1814, the destructive disease of the preceding year returned, though it was not so malignant as it had proved during the last season. Depleting remedies generally produced a favourable termination. In the spring it wholly disappeared. There were fewer fevers this summer than usual. In the autumn, catarrhal complaints were very prevalent.

1815. The fevers of this year were generally inflammatory, and easily subdued. In July, dysentery prevailed as an epidemic, but admitted of free depletion. In some cases it was accompanied by external inflammation and tumefaction of the face, neck, and joints; in others the throat and fauces were affected; in some few instances, the inflammation of the face terminated in gangrene. The fatality was greatest among children.

1816. Every part of the country was this year unusually

free from fevers. Intermittents rarely occurred, except in new settlements, and continued fevers were very mild.

1817. There was nothing remarkable in the diseases of this year, except in September and October, when a fever with typhoid symptoms prevailed to a limited extent.

1818. In December, a fever similar to the last, appeared. In most cases typhoid symptoms supervened early in the disease, requiring the free use of tonics, which treatment was generally successful.

1819–20. Both of these years were generally free from fevers; but rheumatism, pleurisy, measles, hooping-cough, and dysentery, were constant visiters.

1821. Intermittents and remittents were more frequent this year, and were particularly malignant in different parts of the country. At Syracuse, a small village near Salina, many died suddenly. Hoopingcough, cynanche trachealis, cholera infantum, and measles, also prevailed. Among the cases of measles at Lyons, Ontario County, the following remarkable one occurred: Mrs. D—, aged forty years, in her eighth month of pregnancy, was taken with symptoms of measles on Tuesday; on the Friday following the eruption appeared on her face and neck; on Saturday evening she was seized with labour pains, and about two o'clock the next morning, the child was born, thickly covered with eruptions. The woman flooded excessively; and, for the five ensuing days, had turns of fainting, during which period the eruption entirely disappeared. On her gaining a little strength, it re-appeared on the face, with much difficulty of breathing; after that, successively on the abdomen and extremities, though the eruption never desquamated. On the eight day she expectorated large quantities of purulent matter, and died on the twelfth. The child lived.

1822. In the winter and spring of this year, the usual inflammatory diseases prevailed. During the summer, dysentery was epidemic, and many deaths occurred. Bowel complaints proved fatal to a number of children. Intermittents were more prevalent in old settlements than they had been for ten years previous; also remittents with unusual determi-

nation to the head. In some instances they were complicated with dysentery, the patient discharging large quantities of blood before death. At Salina, and in its vicinity, there were a few cases of a highly malignant character.

Calculous diseases are almost unknown, which is in opposition to the prevailing opinion, that they are peculiar to limestone countries. Goitre, or chronic inflammation of the thyroid gland, is a very common appearance. I have hitherto purposely avoided mentioning phthisis pulmonalis, among the diseases of the country, with a view of giving it a particular notice.

Since the time of Hippocrates, in has been a received opinion, that intermittents have great agency in the removal of other diseases. Boerhaave, in speaking of them, observes, "that unless they are malignant, they dispose a body to longevity, and purge it from inveterate disorders." By the moderns, this idea has been carried still further, and consumptions have been said to be almost unknown in those countries where intermittents prevail: the fens of Lincolnshire, and the inland parts of Holland, have been cited as examples. To a certain extent, this is the case in the Genesee country. Pulmonary affections, as idiopathic diseases, being rarely met with, although they are frequently the sequelæ of protracted intermittents. This has been accounted for on the supposition that the impure air of marshes is particularly favourable to the lungs of those who are predisposed to these complaints.

In the management of consumption, the main object is to translate the disease from the lungs, and to sustain it permanently in some other part without injury to the constitution, until the primary affection is removed. We see this effected in various ways. The action of mercury, by producing salivation, frequently arrests the disease in its earliest stages; the same effect is produced by the irritation of pregnancy, and as soon as the woman ceases to bear children, it invariably returns. In what way are these changes affected in marshy countries? Probably, by the increased action of the liver, and particularly of the stomach and intestines. In this coun-

try, and I believe it to be the case in all marshy countries, there is a general bilious diathesis, and a continual current to the bowels. Intestinal diseases prevail more or less throughout the whole year, accompanied frequently with hemorrhagic discharges. As cases are, however, at all times more particularly illustrative, I will select two out of a number within my recollection.

J. V. aged 26, a practising physician of Dutchess county, (N. Y.) of a slender habit, was attacked in 1811 with copious hemorrhage from the lungs, accompanied with stricture and pain in the breast, to which shortly succeeded a cough, with expectoration of bloody mucus. The hemorrhage continuing to occur at short intervals during the ensuing year, and his general health failing, in the fall of 1813 he embarked for Charleston, (S. C.) where he remained six months. The sea voyage benefited him; but he found the climate of the south rather prejudicial to his health than otherwise. On his return to Dutchess county, his complaint continued increasing on him for the ensuing eighteen months, when he removed to Geneva, (N. Y.) in the month of February, and immediately entered into the practice of physic. During March and April the hemorrhage continued, with a severe cough, and pain in the breast. After this month, however, and during the summer, all these unpleasant symptoms were completely removed, his habit became bilious, with derangement of the stomach and intestines. In the fall he had a violent attack of dysentery, which lasted thirty days; for the ensuing eighteen months, his stomach continued much disordered, having frequent occasion to take emetics, when large quantities of bile were discharged. Since which, with the exception of occasional intestinal irritation, he has enjoyed good health—a complete change being effected in his constitution.

E. B. aged 25, a lawyer of Dutchess county, (N. Y.) of a scrofulous habit, all his family having died with pulmonary affections, was attacked in 1810 with pain in the breast, cough, and slight hemorrhage from the lungs; which was followed by an increase of symptoms; the cough becoming more

violent, accompanied with purulent expectoration tinged with blood, and hectic fever. In the spring of 1811 he removed to Geneva, (N. Y.) and was immediately attacked with intermittent, with great derangement of the stomach and bowels; his cough and expectoration now gradually lessened, he soon became of a bilious temperament, and had repeated attacks of intermittent and dysentery for the first three years. His constitution then became familiarized to the climate, and he now enjoys perfect health.

Intermittents. The intermittents of this country naturally arrange themselves under two heads. Intermittents with ague; and intermittents without ague, or, as they are termed, *dumb agues*. Some authors notice many varieties of this disease, classing them according to the organ or organs most particularly affected, or the diseases with which they may be complicated. Among these refiners, Monsieur Alibert is most conspicuous.—He, like Hudibras,

> "Could distinguish and divide
> A hair 'twixt west and southwest side."

Such distinctions serve but to confuse; as in attending to local peculiarities, we almost invariably overlook the general cause of derangement.

Tertians are more common in this country than quotidians, although the latter are also frequent. Double tertians are not uncommon—quartans are met with occasionally. As to septans and octans, I have seen the fever return at these intervals, but believe that they are in general mere irregularities in the recurrence of the paroxysms. Senac observes, "It may indeed accidentally happen that some paroxysms fall on the 6th or 7th day, but it can scarcely be admitted, that they pursue this course, and observe their periods with regularity for any length of time." Again, "A patient may escape one or two paroxysms of tertian, in which case it will appear like a quintan or septan."*

* Senac on Fevers.

Intermittents commence in March, and continue generally until the middle of July, when they are succeeded by remittents. Sometimes, however, intermittents predominate during the summer, the patients becoming pale, yellowish, and emaciated. In the months of September and October they again become prevalent; unless however complicated with visceral obstruction, they are suspended by the approach of cold weather, but usually return for a short time in the spring, especially if the course of the disease has been interrupted by remedies, in which case they will certainly recur, unless these are continued. The reason of there being more cases of fever and ague in the spring than at any other time, is, that the old cases of the last year, (which recur from habit,) intermix with those newly generated. Bancroft says, " that vernal intermittents may be considered as resulting from miasma received into the body during the prevailing summer or autumn, and, (after having remained in a quiescent state during winter,) rendered active by some exciting or proximate cause of fever in the spring."*

During the winter, intermittents are frequently complicated with other affections. These will be noticed after a consideration of those of simple form.

Occupation and diet considered as predisposing causes.— Since the time of Hippocrates, authors have noticed particularly the influence which peculiar occupations and modes of living have had in preparing the system to be morbidly acted upon. In this country, the inhabitants, with reference to their pursuits, may be arranged into three classes:

First. Out-door labourers, or such as are exposed to the heat of the sun, and to the changes of atmosphere.

Second. Such as are confined to the house, but whose business requires them to take a considerable degree of exercise within doors. Under this head may be included merchants, manufacturers, clergymen, lawyers, and a great majority of females.

Third. All persons accustomed to a sedentary life, as ladies

* Bancroft on Fevers.

and gentlemen of fashion, and others, whose avocations give little exercise to the muscles. With respect to the diet of these classes, as a general rule, more animal food is used in proportion, than vegetable. This is the case particularly with the lower classes, who subsist chiefly on salted pork and fish. As both of these articles are indigestible, and the former, from its gross quality, particularly calculated to generate bilious and dyspeptic affections, it may be considered as one of the most active predisposing agents.

As to the prevalence of intermittents among fishermen, I consider it less owing to their peculiar food, than to the nocturnal exposure consequent on their calling; one of the most common modes being to spear fish by torch light.

The first class which I have enumerated, from their constant exposure to alternations of heat and cold, together with fatigue, intemperance, poor diet, &c. bear the brunt of the disease of this country. Among these may be included indigent foreigners who are powerfully acted upon; owing to their change of diet, and their being unaccustomed to breathe an atmosphere contaminated by miasma. To these are generally confined those highly malignant fevers, which are more or less met with at all seasons. The diet of the second and third classes consists of a larger proportion of fresh meat and vegetables, and they are susceptible of the same diseases as the first class, though in a less aggravated form.

The limits of the present essay will not allow me to enter more at large upon this subject. That it merits particular consideration must be obvious.

Marsh Miasma. Both Hippocrates and Galen had observed, and distinctly mention the insalubrity of stagnant waters, as swamps, marshes, &c. but they were ignorant of the means by which their morbid effects were produced. The attention of the medical world was first directed to marsh miasma, as the exciting cause of intermittent and remittent fevers, by Lancisi, physician to Pope Clement XI. who, about the middle of the last century, published at Rome his celebrated work, "De Noxiis Paludum effluviis." The researches of

modern writers have done little towards discovering its nature, which still remains involved in mystery. Many experiments have been made with a view to its analysis, and all the mephitic airs have at different times been considered as its base.* That these gases are exhaled from marshes, cannot be doubted; but they are likewise produced in situations where intermittent fevers are unknown. Under these circumstances, ignorant of its specific action, it is only left us to observe the phenomena of its generation, and to notice its varied effects on the human system.

It is observed to be most active during the first settlement of marshy countries, and to decrease in a ratio proportionate to their cultivation. There may be said to be three stages in the settlement of a country. The first, when it is in a state of nature; second, when partly cultivated; third, when entirely so. In the first, or forested stage, it is ordinarily healthy; the atmosphere is humid, and the temperature low, owing to the great evaporation which takes place, as it appears from experiment, that land covered with trees, emits one third more vapour than a surface of the same extent covered with water.† M. Alibert observes, that marshes are less injurious in proportion as they are more completely shaded by trees from the action of the sun, the inhabitants sustaining no other inconvenience than that which results from the vicinity of a moist atmosphere, which alone will not produce intermittents.‡ This is satisfactorily proved by experience, as the settlers of a country are free from them until they have partially cleared the land.

During the second stage, as cultivation advances, the moist ground, particularly the marshes, are laid open to the influence of the sun, and vegetable decomposition is the result, the remaining forest preventing a free circulation of air, and thus concentrating the miasma. The smaller streams are also rendered sluggish, and frequently overflow their banks, owing to

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* Experiments of Adam Seybert, M. D.

† Williamson on Climate.

‡ Alibert on Intermittents.

the quantity of timber with which they are obstructed, and thus they become an additional source of disease. Intermittent and remittent fevers, cholera, and dysentery, now prevail, and this may be considered the most unhealthy period. Dr. Rush says, it is a well known fact that intermitting and bilious fevers have increased in Pennsylvania in proportion as the country has been cleared of its wood. In the third stage, an artificial soil is produced, the lands have parted with their humidity, and vegetable decomposition has relatively ceased, for want of materials. The type of diseases now corresponds. Inflammatory and malignant fevers prevail, and the intermittents, from being simple, become complicated with other diseases. While marshes are covered with water of a sufficient depth to prevent putrefaction, they are healthy; hence wet summers in marshy countries are considered less sickly than those which are dry, a fact which was noticed by Hippocrates. Sir John Pringle also tells us that the inhabitants of Breda defend themselves from the morbid exhalations of a piece of marshy ground in its neighbourhood, in the season of bilious fevers, by overflowing it with water. For the same reason, swamps are more unhealthy than marshes, as the water subsides more readily, and they contain a larger proportion of vegetable matter. This, however, will depend on the previous condition of the soil. Bancroft observes, "that miasma will be most abundant in that soil which contains no more moisture than is really necessary for the complete decomposition of the vegetable and animal substances existing within."*

The mixture of salt with fresh water was early noticed by the ancients, (see Pliny) as producing more noxious exhalations than either uncombined. Sir John Pringle made experiments with a view of determining the cause, the result of which proved that salt in small quantities is a hastener of putrefaction.† Others, among whom is Dr Jackson, assert to the contrary, notwithstanding that the admixture of salt wa-

* Bancroft on Fevers.

† See Experiments by Sir J. Pringle on Septic and Antiseptic substances.

ter with that of marshes, does not increase the production or malignancy of intermittent fevers. The result of my observations made at the villages of Salina and Montezuma, where this combination takes place, is, that it depends entirely on the proportions in which the waters are mixed. If the waters of fresh marshes are largely combined with salt water, or vice versa, the general healthiness of the situation will be improved. Dr. Hosack mentions, in his lectures, that the marshes at Hoboken, in New-Jersey, while overflowed by the sea water, were healthy, intermittent and remittent fevers being unknown; but since they have been drained, and the ingress of the salt water has been prevented, these diseases are endemic. This was further proved by the breaking of the dykes during their prevalence, when they immediately ceased.

Both at Salina and Montezuma, the proportion of salt water furnished by the springs is small, when compared with the great quantity with which the fresh waters of Onondaga and Cayuga lakes dilute it. Both of these places, although proverbially unhealthy, are not more so than similar situations where fresh water is uncombined. Exceptions are, however, to be made to those places where the waters mingle in a concentrated form. Thus, at Montezuma, the inhabitants of those houses in the immediate vicinity of the salt springs, are never free from intermittent and remittent fevers. Every family that moves into them is attacked, while those who live at a short distance, although adjacent to the marsh, are comparatively exempt.

It is a singular fact, that the boilers of salt are generally free from these fevers, owing probably to the increased temperature they are constantly exposed to keeping their skin pervious, and thus eliminating the poison, or to the decomposing gas with which they are surrounded. Pliny observes, that "they who are seasoned, may live amidst pestilence." By the word seasoning, is generally understood having undergone repeated attacks of the endemic, by which the predisposition is removed. I should rather think it was owing to the lungs becoming accustomed to the inhalation of the miasma,

which at length becomes innoxious, and not to any radical change in the constitution. That habit counteracts the remote cause of disease, cannot be questioned. Children brought up in marshy countries, are generally exempt from their diseases; and we may accustom ourselves to the use of poisons, by commencing with small doses. Lancisi observes, that "persons who expose themselves for the first time in unwholesome situations, are the more affected in proportion as they have been accustomed to pure air."*

The presence of marshes is not, however, necessary to the production of intermittents. Ponds both of pure and stagnant water; woods, lakes, and creeks, have the same influence, though in a less degree. Artificial ponds frequently generate miasma. I have seen this exemplified in the damming of a small creek, by which it was caused to overflow two or three acres of meadow land. The pond thus made, was to appearance perfectly pure, containing no fallen timber, or decaying vegetable materials. The land was high, and intermittents and remittents were previously unknown: they, however, immediately became so prevalent, as to render it necessary to remove the dam. In another instance of a similar nature, the sickness continued two or three seasons, and then subsided, leaving those in the vicinity exempt for years; when it becoming necessary to make the dam higher, more ground was encroached on, and precisely the same state of things occurred as when the dam was first made. I have known frequent instances, where brooks becoming partially dry, have produced intermittent fever. It is generated also by lakes. Here the vegetable matter probably exists in the waters, and undergoes decomposition when washed on the shore. It is also sometimes produced by direct combination. I have known decaying potatoes in a wet cellar to produce intermittent fevers.

The same effect is noticed by Dr. Rush, as produced by many other vegetables. Miasma is detained very near the surface of the earth, and seldom rises to any height; resem-

* De Nox Pallud. Effluv.

bling, in this particular, some of the mephitic airs. The carbonic acid of the Grotto del Cane will immediately deprive a dog of life; but a human being may enter it with impunity. The same in brew-houses: a person is safe until his respiratory organs are so placed as to receive a substance, which, either from its weight, or from the air with which it is mixed, occupies a lower position. Bancroft observes, "that the power of marsh miasma in exciting diseases, is rapidly diminished at a very small distance from the earth."* It has also been noticed, that the labourers in marshes, while in the erect posture, escape the fevers, but are attacked if they sit, and more particularly if they lie down on the ground, and that too whether they sleep or not; here the miasma has probably been entangled by plants, which frequently detain it.†

Sir J. Pringle observes, that among the soldiers quartered in marshy situations, those who occupied the lower stories of the barracks were subject to intermittent and remittent fevers; while those in the upper were comparatively exempt. An exact calculation of the height to which miasma ascends, of course, has not been made; but still an opinion may be formed form the following facts. About three miles north of the village of Canandaigua, are numerous ponds, about a mile in length. These are generally dry in summer, though never entirely so. About twelve rods from one of these, a house is situated on an eminence of thirty feet. During the summer of 1821, which was peculiarly favourable to the generation of miasma, the spring being moist and the summer warm, a whole family was seized with intermittent and remittent fevers, who had been exempt for fourteen years previous, during which time they had lived in the same place. The street on which Canandaigua is built, is about two miles long, from the lake, northward. From the lake, five or six furlongs are nearly level, and probably not more than twenty or thirty feet above its surface; the ground then ascends, and the

* Bancroft on Fevers.
† Edinburgh Review.

remainder of the street is high. This ascent divides the aguish and healthy districts; the former always furnishes numerous cases of intermittents and remittents; in the latter, they rarely or never attack those who have not been exposed to other sources of infection. The same thing occurs in the village of Geneva, which is similarly situated.

Organic derangements of the liver and spleen have long been known among the sequelæ of intermittent fevers. I believe, however, that they occasionally occur without the presence of fever, being directly produced by the operation of miasmata. A late celebrated writer, Signor Brocchi, on the malaria of Italy, observes, that the unfortunate inhabitants of pestiferous marshes, in vain flattering themselves that they have escaped the fever, fall victims to dropsy and other disorders arising from organic derangement. In corroboration of this, is the singular fact, that those animals which feed in marshes, where these fevers prevail, are found to have diseased viscera. In the town of Wolcott, Seneca county, where marshes and low lands abound, the hogs, when killed, are generally found to have eroded livers. Cleghorn also observes, "that large spleens and tumefied livers are not only common to the human species, but also to the brutes, particularly the sheep."*

Intermittent and remittent fevers are not the only diseases produced by marsh miasmata; but dysentery, cholera, and a great diversity of ailments spring from the same source, and, with the exception of particular local affections, are in the incipient stages susceptible of the same treatment. Dysentery, as arising from miasma, has been particularly noticed by many eminent writers. Pringle observes, "that cholera and dysentery, in moist countries, appear at the same seasons, and seem to be particular determinations of the vitiated humours, which, if the first passages give vent, a cholera ensues, but if they are retained and carried into the blood, they produce intermittent and remittent fevers."† Dr. James

* Cleghorn on Diseases of Minorca.

† Pringle's Diseases of the Army.

Clarke says, "that a dysentery generally prevails, at the same time that the intermittents do, in the West Indies, and probably from the same cause."* Cleghorn and Moseley express similar opinions. The following fact appears corroborative of the same doctrine. A mill-pond, in the vicinity of Lyons, Ontario county, which overflowed ten or fifteen acres of land, was drained in the summer of 1822 for the first time, the mill having been built about five years. In consequence, about thirty people in the immediate vicinity were taken suddenly ill, seven or eight of whom died. In the same family, persons were seized with intermittents, remittents, cholera, and dysentery. Some of the remittents were very malignant. In one case, the paroxysm left the patient with perspiration on his extremities, while his body remained hot and perfectly dry. M. Alibert also notices a similar fact, where "some soldiers, clearing the land in a very humid and marshy situation, were taken ill suddenly. Three died of cholera, five of dysentery, and four of malignant fever."† The phenomena which this mysterious agent produces are so various, that it would be useless to enumerate those which have not particularly fallen under my own observation. I shall, therefore, reluctantly quit this interesting subject.

Mode of Invasion. The usual symptoms of attack are too well known to need description. I shall therefore confine myself to a brief notice of such peculiarities as I have observed.

Occasionally the patient, on the accession of the paroxysm, becomes comatose, which M. Alibert has defined the "soporose state." This is, however, rarely met with, except in those who are very plethoric, or who are predisposed to determinations to the brain.

I have known a tertian, for the first seven or eight paroxysms, to be regularly ushered in by colic; again by cholera, which would last three or four hours; also a quotidian, where subsultus tendinum was an invariable attendant through-

* Clarke's Treatise on the Fever at Demarara.

† Alibert on Intermittents.

out the disease. That chills are by no means constantly present, will be shown when treating of intermittent without chill. Such, however, is the variety attendant on the mode of invasion, that it would be useless further to particularize.

Termination. The most common termination of intermittents is in health. During the summer months they become remittent, and again intermittent as the winter approaches. Swelling of the epigastrium, abdomen, feet, &c. frequently follow the paroxysms. In long protracted cases, or when improperly treated, chronic affections of the liver, spleen, and intestines, are the result. In children, when they do not terminate favourably, hydrocephalus is a frequent consequence.

That species of phthisis pulmonalis, which arises from an affection of the liver, may be considered as one of the sequelæ of obstinate intermittents, in those cases where a predisposition exists. Here they are apt to be confounded with a quotidian remittent. The paroxysms of hectic fever are however longer, the several stages less defined, and the sweats less profuse.

Treatment. The particulars of the treatment to be pursued in the several stages, are so generally understood, that a detail would be unnecessary. A general view of the practice found to be most successful in this country, will be all that my limits will permit. The first object is to render the disease as regular as possible. In the hot stage, if there is much pain in the head, with a hard pulse, or comatose symptoms present, bleeding is indispensable. About two hours previous to the accession of the next paroxysm, an emetic of tart. antim. and ipecacuanha should be given, followed by antimonials or Dover's powder every hour, in as large doses as can be borne. If the emetic does not move the bowels, a mild cathartic should be given; and if, by these means, the head is not relieved, a blister should be applied to the nape of the neck. When, by these remedies, the pain in the head is nearly subdued, the tongue becoming somewhat natural, and the paroxysm going off with sweat, a drachm of powdered bark may be given every fourth hour, while there is no fever, con-

tinuing the antimonials every hour during the paroxysm. If the disease prove obstinate, the emetic should be repeated, and the regions of the liver and spleen examined; and if any enlargement or tenderness should be manifest, blisters should be applied; but if no irregularity appears, the dose of the bark may be increased. When the disease is at first regular, an emetic and a dose of bark frequently succeed in checking it at once. The paroxysms being stopped, the bark is to be discontinued very gradually, and a few doses should be taken every week throughout the season, which, with generous diet and an avoidance of exposure, is all the prophylactic treatment necessary.

If the disease has been properly treated, relapses are rare; but sometimes slight attacks occur, after a renewed exposure to the remote and exciting causes. When a relapse does take place, the disease frequently assumes the remittent form.

There are various opinions as to the expediency of stopping the paroxysms by the use of bark, it having been supposed that obstructions of the liver and spleen are the frequent consequence. This is a prejudice which the common people have strongly imbibed, and accordingly they always prefer that the disease should run its course. On this point Lind expresses himself strongly. "An ague cannot be stopped too soon: the more severe it is, the more urgent is the necessity of applying a remedy, as the constitution is always found to suffer least when the ague is early removed."* Experience has proved this to be the case.

The most common substitutes for the cinchona in use among the country people, are the barks of the *Liriodendron Tulipifera*, *Cornus Florida*, and the *Prinos Verticillatos*, or black alder. All these indigenous barks resemble the cinchona in their effects; and when we consider the common adulteration of the latter, may be deemed nearly as efficacious. Many other indigenous plants of tonic properties are also frequently

* See Lind on Hot Climates.

resorted to, as the *Aralia Nudicaulis*, or American sarsaparilla, and the *Frasera Caroliniensis*, or American columbo. These are sometimes successful where cinchona fails. "Intermittents will yield to the most feeble remedies of another class, when they will not to bark and other powerful stimuli."* Arsenic is but little used in this country, except in very obstinate cases: its great inferiority to bark consists in its not giving tone to the system. Hence those who are cured by arsenic recover less readily than those who are cured by bark. Spiritous liquors are much resorted to by the common people for the prevention of the cold stage, and frequently with fatal effects. I have known a person drink a pint of brandy for this purpose. The chill did not occur, but a high fever ensued: he became comatose, and expired. Lind recommends opium to be given during the hot stage. It probably is useful in warm climates, where there is a greater tendency to the skin than here. There can be no question of its efficacy in checking the paroxysms, after an emetic has been premised.

The treatment of vernal intermittents varies from that of autumnal They are always of a more inflammatory nature, partaking of the character of the winter diseases. Their intermissions are generally distinct, and they are seldom obstinate. In their treatment the lancet is indispensable, but bark should be administered with caution, inflammation of the intestines being sometimes the result, where free depletion has not been premised. During the winter and spring, pleurisies, rheumatisms, and many other affections, assume the garb of intermittents. Here the miasma has probably lain dormant in the system since the preceding summer, and has been called into action by these inflammatory diseases, which become exciting causes. Pringle observes, that "predisposition to a disease may remain long after a disease is cured. Influenza in February became an exciting cause of ague in persons who had them the preceding summer."† M. Alibert has termed these

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* Hillary. † Sir J. Pringle on Diseases of the Army.

the pleuritic and rheumatic states of intermittents.* In these complications bleeding and emetics are indispensable; they are in general speedily subdued by active treatment.

Dumb Ague. This form of intermittent is generally of the quotidian type. It commences in March, and continues until the middle of June; it appears again in September, and is not arrested until cold weather. The paroxysms, with the exception of the first, are not ushered in with chill, which, as well as the sweating stage, is wholly wanting throughout the disease. Some four or five days previous to the attack, the patient complains of languor, great debility, and loss of appetite, slight headach, with severe wandering pains about the joints, which may be considered as one of the characteristic symptoms of this form of intermittent. The vessels of the conjunctiva are distended with blood, the tongue is covered with white fur, the pulse but little accelerated. About the fourth day, the patient is attacked with a severe chill, which is succeeded by fever, but no sweating stage. The symptoms are now aggravated, there is an entire loss of appetite, with dizziness and pain in the head, the adnata of the eye are yellowish, and there is a want of power over its muscles. The nausea is incessant, with sometimes a slight vomiting, when nothing but *mucus* is brought up, accompanied with great exhaustion and tendency to deliquium; the tongue is yellow, with a very long fur; the pulse is small, quick, and tense; the bowels are costive, or else there is diarrhœa.

Treatment. The best is venesection from ℥xx. to xxv. followed by an emetic. This generally brings up large quantities of mucus, but no bile. Then a cathartic of calomel and jalap, gr. xx$\overline{aa}$. The evacuation produced will consist of dark bilious matter mixed with a great quantity of slime. On the fifth or sixth day the patient will require bleeding again, with a repetition of the cathartic. About the seventh, there is commonly an increase of headach, when another emetic should be given, by which large discharges of

* Alibert on Intermittents.

bile are produced. This, followed by active cathartics, will generally cure the patient by the ninth or tenth day. There is another variety of this form, the symptoms of which are like the one just described, with the exception of the pulse, which here is slow and feeble, with cold extremities. A different course of treatment is now to be followed. As soon as the warmth is somewhat restored, by the means usually employed, an emetic is to be given, by which nothing but mucus is evacuated. This is to be followed by a cathartic. After these have operated, the pulse will generally rise full and hard with much fever. A large bleeding is now admissible, say ℥xx. to xxv. The following day another will probably be required; after this, a moderate cathartic will commonly cure the patient in six or seven days.

These forms are sometimes very obstinate, and appear to be an intermediate grade between fever and ague and ordinary remittent. They are more common now than they were on the first settlement of the country, and are more apt to terminate in typhus than the usual forms.

The large quantity of mucus contained in the stomach and intestines, appears by its viscidity to obstruct the biliary ducts; hence the first evacuations are wholly mucus, while the latter consist of bile in great quantities. The mucus is doubtless generated by irritation, just as we find it in the bladder.

It may be remarked, that more active treatment is necessary in this country than is usually practised in our cities; hence the larger bleedings and the increased doses of medicines.

Congenital Intermittent. Lind is the only author I can find, who notices intermittents as appearing among infants at the breast. The following singular cases, which occurred in the village of Canandaigua, were communicated to me by Dr. Hayes of that place:

Mrs. W—, wife of Dr. W—, was brought to bed of a child during a course of the fever and ague. Within *three weeks* after birth, the child was attacked with the same disease, and underwent a long course of it.

Mrs. G— was attacked with fever and ague, about the 1st of August. The disease continued, with some interruptions, during the autumn, winter, and spring. In May, about a week after the paroxysms had ceased, she gave birth to a daughter, who, within eight or ten days, was attacked with the same disease, and which continued, with some interruptions, for nearly two years, during which time little hope was entertained that the child would survive. It finally recovered, but was always weakly. *The mother never afterwards had the disease.*

Mrs. R— had fever and ague at two different times; the latter six or seven years before the birth of her last child. During the last stage of her last pregnancy, intermittents were very prevalent. Having for several days suffered some of the precursory symptoms, she was, on Sunday afternoon, attacked with a severe paroxysm. Every stage of it was regular and distinct, the paroxysm terminating in diaphoresis. On Monday morning she was delivered of a boy, apparently at the full time. On *Monday afternoon*, at about the *same time of day* at which the Sunday's paroxysm had occurred, the *child was attacked.* The cold stage was severe and long; the skin being livid, and the child was thought to be dying. This was followed by the hot stage, and, in due time, by diaphoresis. The paroxysms continued to recur daily, for about a fortnight, when small doses of Peruvian bark were given. The disease soon ceased; but in about a week, the child had two fits more, when the bark again arrested it. The child is now more than two years old; is fat and healthy, and has had no more attacks of the fever. The disease *did not recur in the mother after delivery.* Both still reside in the same house, which is situated on aguish ground.

These cases seem to prove very satisfactorily that the disease is sometimes congenital. The second case appears to show that a regular course of disease in the mother, during pregnancy, does not remove the susceptibility of the fœtus in utero. The third is remarkable for the regular transfer of the disease from the mother (in whom the susceptibility had been

worn out) to the child, who, like others who never had the disease, was perfectly susceptible of it.

Remittents. The remittent fevers of this country usually commence about the middle of July, and continue until the end of October, when they either cease, or terminate in intermittents or dysentery. Occasionally a case will continue remittent after cold weather has appeared, but it soon becomes continued or typhus.

The paroxysm of a remittent differs from that of an intermittent, by the cold stage being shorter, the hot stage longer, and the sweating stage but partial. In a remittent also there is no apyrexia. But there are other appearances equally diagnostic. In the remittent there is a slight pain in the forehead and eyes, during the remission; the pulse also retains its sharpness, and the skin, though moist, is hotter than natural. Notwithstanding these palpable distinctions, they appear to be but different forms of the same disease, arising from the same causes, and continually terminating in each other; remittents, when they first appear, being easily convertible into intermittents, but, as the season advances, they become more formidable, offer greater resistance to remedies, and are frequently complicated with dysentery.

In particular situations, and in particular seasons, they become typhoid. These will be noticed under a distinct head.

The autumnal remittents generally have a local tendency, either to the bowels, brain, or lungs, which alternate in different years, and in different sections of the country. Thus in Geneva, during the last year, the bowels were particularly affected, while at Lyons the force of the disease was directed to the lungs. These varieties are, however, too numerous to be particularized.

The usual symptoms preceding, and attendant on the paroxysms of a simple remittent, are the same here as elsewhere. The occasional peculiarities in the mode of attack, have been noticed under the head of intermittents, they being equally applicable to both.

Treatment. Bleeding is rarely required. An emetic is to be given, and this should be followed by a blister to the nape of the neck, and antimonials as often as the patient will bear them, or Dover's powder. By this treatment, a copious perspiration is usually induced, and frequently a considerable intermission obtained. The treatment should not be relaxed, but pursued closely, giving, during the intermission, a decoction of R. serp. virg. As soon as the intermissions become regular, cinchona may be given, with a view of arresting the paroxysms. During the course of the fever, particular symptoms require particular treatment. Headach may need additional blisters behind the ears. Accumulations in the stomach may call for a repetition of the emetic. Laxatives may be needed to remove the contents of the bowels; anodynes to procure sleep, or to allay irritation; diuretics to promote urinary secretion, and bleeding to diminish inordinate action of the heart and arteries. The dyspnœa is best relieved by blisters in the course of the medulla spinalis. A furred and dry tongue, by one or two doses of calomel; dysenteric, pneumonic, and comatose symptoms, require to be treated on general principles.

A demulcent in general use in this country, is the root of the *viola cucullata*, or blue violet. It affords as great a quantity of mucilage as the *mimosa Nilotica*, and is found in large quantities.

The remittents of last summer (prevalent in Geneva and its vicinity) frequently terminated in large discharges of blood from the bowels, without being preceded by any pain. Many of these terminated fatally, among which were the following cases:

Miss B—, aged eighteen years, an inhabitant of Geneva, Ontario County, having been slightly indisposed with a pain in her side for some months previous, was attacked on the 1st of September, with the usual symptoms of remittent; as chills, head-ach, hot skin, frequent pulse, and nausea. The fever continued without any susceptible remission, until the sixth day. During this period she was bled, took an

emetic, which evacuated large quantities of bile, and underwent the usual course of treatment. On the seventh, she had a remission of twenty-four hours: from the eighth until the twelfth the remissions were imperfect. Her case until now had not been considered dangerous, when a copious discharge of blood took place from her bowels; after this she had severe griping pains and tenesmus, with frequent evacuations of mucus, bile, and blood. Previous to the first discharge, she had complained of no pain in her bowels. She died on the fifth day after this took place.

In another case, the remittent fever, after a continuance of twenty-one days, became distinctly intermittent, and the patient appeared to be improving until the twenty-sixth, when a quantity of blood was voided from the bowels; after which great prostration ensued, with a slow and feeble pulse; the skin being universally covered with moisture, the discharge recurred in three or four days, and the patient sank under it.

In this case tonics had been administered early in the disease.

Alternations of remittent fever with dysentery. When treating of marsh miasma, it was observed, that dysentery might be enumerated among its occasional productions. There is, however, a distinction to be made between epidemic dysentery and the form I now allude to, which is much less rapid in its progress, and fatal in its consequences.

Remittent fevers, in certain seasons during the autumnal months, become complicated with dysentery; when these diseases frequently alternate, the dysenteric symptoms continuing about five or six days, when they are succeeded by fever, the patient not having both at the same time, and thus verifying the aphorism of Sydenham, "Febrem eum esse sui scilicet generis, in intestina introversam." Cleghorn observes, "Sometimes a tertian is changed into a dysentery, or a dysentery becomes a tertian; and when one of these diseases is suppressed, the other often ensues." Pringle says, "That those who had dysentery seldom had fever, or if any man had both, it was alternately, so that when the flux began, the fever

ceased, and when the former was stopped, the other returned;" here proving the unity of autumnal diseases.

The most *remarkable variety of remittent fever* prevalent in this country, is that in which the stomach is particularly affected. These fevers commence about August, and continue through the fall and summer. The patient is attacked with chill, severe pain in the head and eyes; the vessels of the latter being much distended with blood; the skin is hot, and communicates a pungent sensation, but has not the usual bilious colour; there is great thirst, the mouth being lined with a thick mucus; the tongue is covered with a white fur, and the pulse is strong and full. There is a constant *nausea of the stomach*, with great irritability, which is a characteristic symptom of this form of fever, and which continues throughout its course. The bowels are sometimes constipated; again there is diarrhœa, but always a great tenderness on pressure. The febrile stage is not succeeded by any sensible moisture on the skin. These symptoms appear suddenly, without the previous indisposition attendant on the usual form of remittents.

The treatment found most effectual is, in the first place, a copious bleeding, say twenty to twenty-five ounces, followed by a mild cathartic every day. The discharges thus produced consist of a dark bilious matter, very offensive, and mixed with a quantity of slime and mucus. About the fourth day, an emetic is requisite, which brings away large quantities of mucus, mixed with bile. The symptoms now are generally removed, except the tenderness of the stomach and bowels, which is at length effectually overcome by active emetics and cathartics, within the three or four succeeding days. This form, if timidly treated, will occasionally continue thirty or forty days, frequently terminating in organic affections. Sometimes, a spontaneous diarrhœa will relieve the patient. It is also more apt to run into typhus than the common forms of remittent.

Occasionally the cases are more severe, the stomach being so irritable that nothing can be retained. There are perpetual efforts to vomit, which cannot be checked by the usual re-

medies; the patient becoming cold, livid, faint, and on the verge of immediate dissolution, which sometimes takes place from the great exhaustion. Sometimes, however, laudanum applied to the spine will succeed, where blisters and internal stimulants fail.

I cannot find any notice of this peculiarity by authors, except a communication in the Quarterly Journal of Foreign Medicine and Surgery, for April, 1822, by John Peter Frank, who terms it *gastric remittent*, and makes two species, the inflammatory and nervous. The latter he thinks more apt to run into continued. I am not aware of having seen any of these varieties.

Remittents terminating in Typhus. A few cases of this description occur every summer, in particular sections of the country, in some instances terminating fatally in six or seven days, with highly aggravated symptoms; while again, their duration is much longer. As a particular notice of the symptoms and treatment can be best exemplified by the detail of a case, I have selected one of the kind most frequently met with, and in which the duration gave an ample opportunity for the full development of the disease.

E. F., aged 25, an inhabitant of Syracuse, Onondaga county, while attending a saw-mill in that vicinity, the pond of which overflowed many acres of low-land, was, on the 6th of August, 1822, attacked with slight cold chills, pain in the head and limbs, and great debility. His skin was yellow, his tongue a little furred, his pulse slow, and his eyes a mixture of red and yellow, and very sensible to light. His bowels being costive, a cathartic of calomel and jalap was administered, which operated well. On the 7th, he was much better in the morning, having little fever. About 2 P. M. the paroxysm appeared, preceded by horripilatio and delirium, the pulse full and strong, about 65; increased as he became warm; and at 6 P. M. was 100. After bleeding ℥24, his pulse fell to 90, and became softer. His tongue was now covered with yellow sordes, and his eyes more yellow and painful. During the paroxysm, which lasted six hours, a diaphoretic of sal.

nitre, tart. emet. and laud. was given frequently, with cold applications to the head. As soon as the remission took place, an emetic was administered, which brought off large quantities of bilious matter, which was also discharged from the intestines. On the 8th, he was much better, his tongue was less furred and more moist, and all his symptoms were improved. In the afternoon, on the accession of the paroxysm, he was again delirious, his pulse full and soft, about 70: his skin, however, was hot, with a biting sensation; his bowels open. He was kept under the former diaphoretics.—9th, he was much improved, until afternoon, when he became quite comatose, his tongue having a brown streak in the middle, and his eyes and skin very yellow. During this paroxysm, antimonials were principally given.—10th. Paroxysm came on much earlier; perfectly comatose; could not be awaked, having to force open his mouth to give him medicine. This lasted ten or twelve hours; and as soon as a remission appeared, Fowler's solution was given 10 gt. every five hours, with bark and serpentaria.—11th, morning, much better: the afternoon accession was much later in its appearance, and there was less coma. He was sponged with cold water during this paroxysm; and on the remission, a repetition of Fowler's solution and tonics.—12th, better.—13th, better.—14th, relapse: coma again supervened, with coldness of the extremities; pulse small and feeble, tongue brown. Put him again on Fowler's solution, with tonics, and about the 20th, he was out of danger.

In this case, and in many others of a similar nature, I had an ample opportunity of observing the marked effect produced by Fowler's solution, which succeeded almost in every instance in curing the disease.

Fever at Salina. On referring to the locality of this village, as detailed in the topography of the Genesee country, it will be apparent that it must necessarily be subject, during particular seasons, to fevers of a highly aggravated nature. Indeed, every few years the attention of the public has been directed to this place as the hot-bed of pestilence. During the last summer, much alarm was excited from four or five deaths

occurring in succession; only two of them, however, were cases of fever, and these are now subjoined.

J. M'C., aged 23, a clerk in a store in the village of Salina, Onondaga county, of a slender habit, and predisposed to pulmonary affections, had been somewhat unwell during the spring of 1822. On Saturday, the 1st of August, he was attacked with slight chills, which alternated with fever for the first twenty-four hours. He had severe pain in the head, back, and extremities, and great restlessness: his pulse was full and slow. On Sunday morning he was bled about ʒ xiv. and took an emetic. The fever had now distinctly assumed the type of a remittent. In the afternoon, a cathartic of calomel and jalap was given, his bowels not having been moved by the emetic. On Monday morning he was quite comfortable, and had a little appetite. In the afternoon, on the accession of the paroxysm, he had a slight chill, which was succeeded by great heat of skin; his eyes were red, tinged with yellow, his pulse small and quick. Coma now ensued, and continued throughout the paroxysm, which lasted twelve hours, and went off with a slight moisture. In the course of the day, he was bled, and took a mild cathartic.

On Tuesday afternoon, the paroxysm supervened earlier, with the same symptoms, in a more aggravated degree. There was a pungent heat of skin and great thirst, his tongue was covered with a brown fur, and he remained perfectly insensible during the paroxysm, which lasted fifteen or sixteen hours, and then gradually abated with but little moisture of skin; he now became sensible, and took some nourishment. On Wednesday, the paroxysm anticipated some hours, and was more severe than the last, and did not entirely leave him before the accession of the next. During this period, he was as before perfectly insensible, and vomited large quantities of dark coloured fluid. On Thursday, he was to appearance in "articulo mortis;" his pulse was hardly perceptible, his extremities cold, his breathing laborious, and the whole surface became very yellow, which is not uncommon. He remained in this

situation until Saturday, the eighth day from the attack, when he died.

J. B. aged thirty-three, a merchant in the village of Salina, of a feeble constitution, had been quite unwell during the spring of 1822, but refused to take medicine of any kind. He was attacked on the 8th of August following. in a manner similar to the subject of the last case, his skin assuming the same yellow colour. He had no fixed pain, but a great degree of uneasiness and distress, accompanied with frequent sighing; each paroxysm became more severe, he being comatose throughout. On the seventh day he died.

The vomiting of black matter is the only uncommon symptom in these two cases; and I have seen this discharge occur in two or three instances in which the patients recovered, and where it evidently arose from congestion of the liver. As the subject is one of interest, I will subjoin an account of them.

J. W. aged fifty, a workman on the canal, engaged in its excavation across the Cayuga marshes, was attacked in the month of June, 1821, with intermittent fever, which readily yielded to the usual remedies, and in a short time he resumed his occupations. About the middle of the ensuing August, he was seized with bilious vomitings, resembling cholera, his skin was very yellow, his tongue covered with a brownish fur, his pulse chorded, and he complained of much pain in the region of the liver; the vomiting continued three hours, and then changed in colour, becoming like coffee grounds. This black matter was also copiously discharged by stool, and produced extreme prostration. With the aid, however, of the most powerful remedies, it was checked, and the patient had a low remittent fever for fifteen days, which changed into an intermittent, and he slowly recovered.

In 1822, G. M. aged 32, a lock tender, where the canal intersects the Seneca river, (being the same place where the previous case originated) about the 20th July was attacked with intermittent fever, which continued four or five days, and then subsided, leaving him in his usual health. Fifteen days afterwards, he complained of pain in the right hypochon-

drium, with nausea. An emetic was given him, which produced no sensible evacuation, this was followed by a cathartic. He continued in this state, complaining of pain in the region of the liver and spleen, until the 20th, when he began to vomit black matter in large quantities, resembling coffee grounds, or coagulated blood, accompanied with pulsation in epigastrio. Similar matter was also discharged by stool, but after some time the stomach was quieted by blisters, and the draught of Riverius; leaving him, however, much prostrated with continued faintings and difficult respiration. These alarming symptoms were removed by powerful stimulants, when a fever of a remittent type supervened. After some days had elapsed, an emetic was given, which brought up large quantities of common bilious matter, the patient slowly recovered, but his health is delicate, complexion sallow, and he has a constant pain in his right side.

J. M. a farmer in the vicinity of Geneva, (N. Y.) aged 60, of a healthy constitution, was attacked in April, 1822, with a tertian; he called in no physician, but began the use of bark and tonics without depletion of any kind. By these means he broke the paroxysms entirely, and soon returned to his occupations. About four weeks afterwards, he was attacked with remittent fever, his skin and eyes were very yellow, his pulse feeble, his tongue covered with yellow sordes. with great pain in the right hypochondrium; in a day or two he was seized with a constant vomiting of large quantities of dark matter resembling tar, both in colour and consistence. The same was discharged from the intestines, his extremities were cold, and the general prostration excessive. The discharges were arrested with some difficulty by means of tonics, blisters, and mild cathartics, but returned for three days in succession. He, however, eventually recovered, but is still feeble, with pain in the region of the liver.

I have detailed the following case with a view of showing the great efficacy of calomel, when given in large doses, in arresting uncontrollable vomiting.

J. C. aged 30, of a corpulent habit, having been for some time in the vicinity of the canal, where it passed through marshy land, was attacked in the month of April, 1821, with the usual symptoms of a quotidian, which after a few days continuance became a remittent. He had much languor, with a sallow countenance. The usual evacuations having been premised, tonics were now resorted to, and with good effect, the paroxysms becoming lighter; but this was of short duration, he being suddenly attacked at the commencement of the cold stage, with excessive vomiting of bilious matter, accompanied with hiccough and pain in the right side. A blister was now applied, which arrested the vomiting. During the next paroxysm, however, it returned with increased violence. The fluid discharged was slightly bitter, of a greenish cast, and in enormous quantities; the hiccough now became very distressing, and an inverted action of the intestines appeared to have taken place; part of an enema, containing ol. anis. being thrown up, which had been given him half an hour previous, the symtoms now partially abated, the matter vomited having the same colour and consistence as in the preceding case.

In this extremity, the usual remedies having failed, calomel was given in doses of sixty or seventy grains every two hours, which, after being repeated three or four times, effected a copious evacuation from the intestines of the same black matter which had been ejected from the stomach. The hiccough and vomiting now gradually abated, and he slowly recovered his health by the use of tonics.

FINIS.