

# ROCHESTER HISTORY

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## **Snowstorms and Snow Fighting —The Rochester Experience**

By BLAKE MCKELVEY

Ever since a two-inch snowfall greeted the Scrantoms, Rochester's first permanent settlers, on May 1, 1812, residents on the lower Genesee have counted on long winters with snow in abundance. Even before the collection of official records commenced, with the establishment at Rochester of one of the nation's first fifteen weather stations in 1870, the prospect of long and hard winters was firmly set. Local weather observations had, in fact, been made in the city for three decades before that date, and although measurements of the snow and rainfall had not been tabulated, reminiscent accounts of the early storms helped to support the tradition. Moreover, the periodic recurrence of severe storms and the white blanket that generally covered the landscape from December to March supplied further confirmation. Few residents were surprised, therefore, when a comparison of the precipitation records of Rochester and other cities for the years after 1870 showed that among large cities only Syracuse and Buffalo rival Rochester in the average depth of snow and the number of storms.

The expectation of heavy snows remains the same, but the city's response to them has changed dramatically. Indeed, it has

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changed repeatedly, and the character and direction of the successive shifts tell us much about the city's history. From the somewhat fabulous challenges they presented to the early settlers, the great storms became at one time the source of river floods, at another, the dread scourge of the transit company, and at still another, the malefic bugbear of the automobile. Although the prevailing attitudes have been marked by fears and forebodings, more cheerful and appreciative responses have repeatedly burst forth as irrepressible youths frolicked in the snow, as numerous young adults drove with gaiety in cutters and other sleighs over crisp roads or, later, glided with excitement on flashing skis down glistening hillsides, and as their elders rejoiced in the fresh loveliness of the white blanket. Even today, as we battle annually to keep the streets open, we can sometimes regard winter storms as the hazards of a great regional sport, one in which a Rochester team contends for points against those of Buffalo, Syracuse, and other cities, just as we privately vie with our neighbors to open our driveways.

### **Snowstorms in Horse and Buggy Days**

More familiar with nature's changing moods than their urban successors would be, the first settlers accepted a deep blanket of snow as the proper symbol of winter. The Scrantoms, coming from Vermont and northern New York, were not surprised in 1812 by a snowfall on the first of May, and 67 years later when Edwin, one of the Scrantom boys, penned his 169th "Old Citizen Letter," he could not, he said, "recollect any remarkably severe winters from 1812 to 1825, though the rule was to expect snow, and plenty of it, in the winter—and we were not often disappointed." He was forgetting for a moment the cold summer of 1816, when snow fell late in May and frosts plagued the area in June, forming icicles at Rochester on the 9th, according to one account.

Edwin Scramtom had kept a diary for several years, commencing on March 1, 1837. Almost a year later, on February 16, he recorded: "This has been a very blustering day—snow has fallen about 18 inches, and everything is blocked up. One year and one day ago we had snow 2½ feet deep—considered the biggest storm ever known in this County. During the whole of this month thus far we have had good sleighing." The next January was much worse. On the 26th, Scramtom wrote: "It is a day of Storms. The wind has blown from the west, accompanied with snow which is now very deep. . . Business in this city has been at a stand for a month." On the following day, Sunday, he recorded: "The snow is supposed to be 2½ or 3 feet, and is drifted in many places 10 feet deep. . . Nearly all the churches suspended meetings and the storm, the storm, is the general wonder." A week later he observed, "The mails are three days behind their time."

After Scramtom's reminiscences of the early storms appeared in 1879, another old-timer wrote to report a trip he had made to Charlotte following the 1839 storm. At Hooper's Hollow, below present Kodak Park, he had had difficulty, he recalled, in driving his horses into the dark passage some residents had tunneled through the drifts. Scramtom's diary for the next January (1840) recorded another storm or succession of storms that piled up over four feet of snow. "Vermont is beat all hollow," he wrote, adding that "business is as deeply buried as the earth and will not thaw out, I fear, until the snow is gone." The only activity he mentioned was that of burying "Brother Timothy Haskell," a last service performed at his request by his close friends but with great difficulty.

Succeeding winters brought varied storms. One in 1843 again "topped four feet," as Scramtom put it, halting all travel including that on the newly opened Auburn railroad whose cars became stuck in the drifts at Pittsford. Fortunately, "good sleigh-

ing" was a more frequent entry in his diary throughout the next decade. Although not remarked by Scrantom, cold winters generally freed Rochester from crippling storms, dropping them instead on cities to the west, south, or east, but treating Rochester to a daily deposit of a half inch of crisp snow, just enough to freshen the landscape and smooth the ruts for the shiny runners of dashing cutters. The mid-fifties, however, brought another succession of heavy storms, blocking the roads, delaying the mails, and halting business on occasion. Yet the storms eventually abated, the snow melted, and the city, numbering over 40,000 residents in the 1850's, resumed normal activities.

As early as 1827, the village ordinances had instructed all householders and occupants of shops to keep adjoining streets and sidewalks clear of obstructions. No penalties were attached, however, until 1844 when the superintendent of streets was directed to collect \$3 fines from those who failed to clear their sidewalks of ice and snow. Apparently the results were not always satisfactory, for in 1861 the council gave the superintendent authority to clear the sidewalks of negligent shop owners after 24 hours and to add his costs to their assessments. The first local mention of snow plowing appeared in the *Union and Advertiser* on January 20, 1864, but it described the efforts of the New York Central to open its tracks to the east with an engine plow.

The chartering of the first horsecar line in 1863 posed a new snow-removal problem. The Common Council stipulated in its franchise that the Rochester & Brighton Railway Company should endeavor to keep its tracks open but, in doing so, should avoid blocking the streets to other traffic. It was permitted, if circumstances warranted, to replace its cars with sleighs and await a shift in weather to clear the streets.

Sometimes the thaws came too suddenly for the city's good. Thus, in March 1865, warm weather and heavy rains up the

valley loosened a deep blanket of snow and sent a rushing torrent down on Rochester, where it overflowed the aqueduct and Main Street bridge and flooded the central district, inflicting great damage. Floods were recurring threats for many years, but a more frequent hazard was the collapse of a roof or awning from an overload of snow, yet merchants were restrained, after 1862, from throwing snow or ice from their roofs onto the sidewalks.

The first weather maps issued in America were hung in the public concourse in the old Reynolds Arcade in December 1870. Rochester's weather station had opened there a few weeks before, one of the first fifteen in the country, and its recordings had contributed to the data upon which Palmyra-born expert Increase Lapham, then stationed at Chicago, based his forecast. The map had arrows and weather symbols attached, and the local agent was greatly disturbed to see that many curious citizens reached out to move these around, apparently "to see how they work," thus defeating their purpose. One elderly gentleman ascended to the weather bureau's office with an urgent inquiry. "He wanted to know," the agent wrote in his journal, "if I could tell him if there would be a thaw soon so as he might plow." Thus the major concern over the weather was still of a rural character.

The first public hassle over a snowstorm in Rochester occurred in February 1871. A late and heavy storm the previous March, which blocked the horsecars for several days, had prompted the company to acquire a number of plows to open its tracks. Sleigh owners had complained of the mounds of snow pushed into the streets, but a few sunny days had relieved the situation. The use of plows attracted interest, and a plan to clear all downtown sidewalks with horse plows was seriously discussed in December, yet the superintendent decided to rely as before on shovelers. When a heavy snow hit in February,

however, the transit company again sent its plows into action. This time the city mustered a crew of shovelers to throw the mounds of snow pushed into the streets back onto the tracks. Many residents gathered along Main Street to watch the contest that ensued between the shovelers and the plows.

Public indignation over that unseemly fracas prompted the Common Council to revise its ordinance and to require that the transit company, in clearing its tracks, should spread the snow evenly over the street so as not to obstruct sleighing. Four years later, when a report from Buffalo told of a similar battle there, Rochesterians congratulated themselves on their more reasonable solution. Unfortunately, the "solution" proved inadequate in the heavy snows of 1876 and 1877 and, after a second battle between the plows and citizen shovelers, the Executive Board ordered the Rochester & Brighton to bring out its old sleighs in 1877 and 1878. In January 1879, the snow blanket proved too deep even for sleighs, but an army of shovelers, employed jointly by the city and the company, finally broke the blockade towards the end of the month and, in the process, enabled many poor householders to replenish their larders.

On reorganizing the Executive Board in 1880, the city gave it full responsibility for the opening of downtown crosswalks, sidewalks, and bridges after each storm. In 1886 it spent \$2,385 on these services and served 227 notices on delinquent shop owners. The transit company resorted to sleighs on at least two occasions during this decade, but that possibility would vanish after 1890 with the electrification of its lines and the sale of its horses.

### **Snow in the Electric Age**

Of course, the incompatibility of snow and electricity was not a new discovery in the 1890's. Sleet storms had been playing havoc with telegraph wires since the middle fifties, and the

early electric and telephone companies had faced similar problems shortly after their arrival at Rochester in 1880. The hazards presented by fallen wires were multiplied as the trolley company strung its high-voltage lines along the principal streets in 1890. Two fatalities from fallen wires that winter brought an outburst of indignation, and property owners on Main Street demanded that all its wires be buried in underground conduits. Spurred by this demand, the three local electric companies, each with festoons of wires on that street, effected a merger and secured a franchise to build underground conduits throughout the city.

While this work commenced, the trolley company faced other snow hazards. Everybody rejoiced when the cars moved forward successfully through the first light fall of snow late in December 1890, but on New Year's Day, when a heavy fall forced the company to bring out its plows to clear the tracks, merchants protested the uneven piling of snow into the streets. They also protested the use of salt on switches at the Four Corners, which created great puddles at the crosswalks. Denying that it had agreed not to use salt, the company maintained that it could not keep its switches in operation without salt, but it did promise to distribute the plowed snow more evenly over the streets.

Open winters eased the situation until late December 1892 when a succession of blizzards paralyzed the company's service for several days. Unable to break through the drifts, many residents on the city's outskirts had to bunk for a few nights in the central hotels. An ice dam in the river, which posed a serious flood threat a month later, added to the excitement as the officials set off several charges of dynamite to break the dam. The city's outlays for clearing ice and snow from the crosswalks and bridges mounted to over \$16,000 that year. But these hardships seemed insignificant a year later when a sudden blizzard, in

January 1894, dropped 15.6 inches of snow on the city in nine hours. With considerable difficulty, the company dug open its tracks and resumed operations by the close of the second day. But two months later, when a second blizzard dumped ten inches of wet snow on top of the winter's earlier blanket, the situation became somewhat desperate. The havoc created as tree limbs and wires tumbled throughout the city prompted the authorities to shut off all electricity, plunging the city into darkness and halting the trolleys. Only the horse plows and shovellers were out, working in gangs under supervision of the police, and the crews of the power company endeavoring to untangle and restore its broken lines. Pressure mounted for an extension of the underground conduit system that summer.

Another paralyzing storm hit Rochester late in December 1894, when a fall of 17 inches blanketed the city, stalling all trolleys. Blizzard winds, piling great drifts in many streets, trapped a number of tired horses and compelled their drivers to seek aid in digging them out. The trolley company mustered an army of shovelers and successfully cleared three of its mail lines by eight the next evening; side streets remained blocked for several days.

A succession of cold winters afforded Rochester some relief in the late nineties. Light snows off the lake each morning freshened the white blanket and brought out a daily parade of cutters on East, West, and Lake Avenues. Skaters helped to sweep the ice on the widewaters and within the sheltering walls of the aqueduct; iceboats multiplied on Irondequoit Bay, prompting a dozen of their owners to form a racing club in 1899.

But cold winters can deliver a punch, too, as 1900 demonstrated. It was on March 1 that Rochester's greatest snowstorm swept in from the southwest. A fall of 6 inches that afternoon grew to 36 by the next evening and continuing through the night, established an all-time record of 43.5 inches by the next



day. The trolley company battled valiantly to open its tracks. It employed 300 extra men and 200 teams to plow deep channels through the principal streets. Another army of shovelers, employed by the city, cleared some of the sidewalks and opened passageways for the coal dealers who were striving to fill urgent orders. Although mindful of the loss of trade and concerned about the costs to the city, "a few grave businessmen," as one reporter observed of those who ventured forth, "felt and yielded to a temptation to throw snowballs at other grave businessmen and even to tumble them into the snowbanks." In this jolly mood and warmed by the sun, Rochester opened most of its streets by the evening of the 4th at a cost to the city, after charges against the transit company and private shopowners had been collected, of only \$5,608 for the year.

That storm has remained unequalled, but the season's total of 131 inches was promptly surpassed by 141 in the 1900-01 season. Fortunately, the storms that winter were spread over a period of six months, lightening the burden at any one time and prompting the city to maintain a force to plow unshoveled sidewalks in the business district, adding the costs to their assessments. The city now also engaged contractors to remove some of the snow piled by the trolley company's plows in the streets and charged the company \$2,000 for the service. Modest as its efforts would seem to later generations, no city in America could rival Rochester's snow-fighting program in the early 1900's under its successive "Good Government" administrations.

The words "snow fighting" still connoted only an exchange of snowballs at the turn of the century. A few scattered articles in national journals had described the work of large snowplows on the railroads in the early nineties, but the first to deal with a city had appeared in 1898 and criticized the haphazard character of snow removal in New York City. Treated there and elsewhere as an emergency job, snow removal was winning recog-

dition as a recurring responsibility only in Rochester. There, in contrast with other large cities, the superintendent began to assemble and dispatch his crews when the storm struck, rather than waiting until the snow stopped. And when a shift in ownership of the transit company took place in 1904 and the new owners from Philadelphia failed to respond quickly at the onset of a storm, the city dispatched a sharp protest and received a hurried promise of full compliance. The city assumed responsibility for plowing the sidewalks on twelve residential streets as an experiment that winter, adding the costs to their assessments. Gratified by the results, the officials extended this service to 83 streets in 1905.

One reason for Rochester's increased precautions was the difficulty encountered in the great Sibley fire of February 1904. Huge piles of snow and ice had so hampered the fire fighters that the city was ready the next winter to engage additional contractors, who removed 70,000 cubic yards of snow and ice from the central district, as contrasted with 18,000 the year before. At the height of a storm in January 1905, the city mustered 75 teams and 300 men in its battle to clear the streets. Carts and wagons laden with snow had dumped their contents into the river at Clarissa and Platt Street bridges in earlier years, but in 1905 the canal docks and bridges at Court and Andrews Streets were also pressed into use. As these services won approval, City Engineer Edwin A. Fisher asked and received \$115,000 to clear the streets of snow in 1906, a \$10,000 increase over the previous cost despite lighter snows. Commissioner of Safety Elwood was praised for initiating a new practice that winter—the sanding of downtown crosswalks in icy weather.

Though gratified by its progress, Rochester could not relax its efforts, as a big fire on North Water Street early in February 1908 demonstrated. Breaking out in the midst of a raging blizzard, before the snow-removal crews had reached that street,

the fire threatened the heart of the city, and the fire companies had great difficulty in checking it. Three months later, a six-inch snowfall on May 1 not only broke all records for that date but also brought down many limbs of budding trees and a tangle of wires in the residential districts not yet reached by the underground conduits.

Additional pressure for snow removal came from the owners of automobiles who had increased in Rochester from 50 in 1901 to 1,525 by 1907. Many were no longer content to store their cars for the winter. Indeed, the Rochester Automobile Club staged its first endurance run to Buffalo in February 1907 to demonstrate that cars could be operated even on rural roads throughout the winter. Yet the hazards of becoming trapped in snow-clogged streets were graphically revealed after a big storm hit Rochester on January 3, 1913, when a *Herald* photographer snapped several views of the wreckage of tree limbs and wires draping scores of the city's automobiles, which numbered 4,000, buried in the snow. One estimate placed the city's losses from that storm in excess of \$100,000.

Yet despite their snow headaches, many Rochesterians still enjoyed the winter seasons. School children, particularly boys, squirmed in their seats whenever the snows commenced outside, anticipating an early dismissal and perhaps a day off on the morrow to frolic in the snow. A succession of cold and relatively open winters after 1904 encouraged a revival of winter sports and prompted the city parks to open toboggan slides and to clear several skating rinks. Ice hockey became popular, and six local teams formed a league to schedule games and assure the maintenance of suitable rinks. Spurred by reports from Canada, these and other groups joined to promote an elaborate Ice Carnival at Genesee Valley Park in February 1910. Several snow castles, an ice tower 30 feet high, and an ample skating rink drew gaily costumed skaters and several thousand spec-

tators to watch a hockey game, ride a dogsled, or listen to the park band and marvel at the display of Japanese lanterns swaying in the crisp frosty air. Unfortunately, a warming spell soon terminated the fun.

If somewhat beguiled for a few years by its winters, Rochester was again alerted to their hazards by the blizzard of January 1913. The telephone company alone reported damages approaching \$100,000, and the city renewed its precautions. It was thus ready 14 months later for the big storm of March 2, 1914, the worst to hit the city in 14 years. Most of the city's 124 contract teams, assisted by 742 laborers, were out before daylight battling the storm, and the trolley company soon had 30 teams and 150 men on the job, too. Although snow continued to fall throughout the day, the plows and shovelers had the sidewalks and the central traffic lanes open by the next morning, permitting the trolleys to resume their schedules and bringing many automobiles back onto the streets.

Rochester's achievement contrasted sharply with the havoc wrought by the same storm in New York and Philadelphia where the authorities were neither so adequately prepared nor so prompt in their response. New York had an additional handicap, for its slow recovery from an earlier storm had left piles of snow in its streets to aggravate the mess created by the new storm. Despite the employ of 12,000 shovelers and 2,000 teams, the great metropolis was still battling a week later and paid dearly for its release from the wintry blanket.

For some reason Rochester did not send delegates to the first intercity conference hastily called a month later at Philadelphia by its director of public works to consider the best methods of battling snow storms in cities. Several of those in attendance, from Boston, New York, Scranton, and Pittsburgh as well as Philadelphia, reported a practice over the past decade of contracting for carts and teams as well as shovelers on an emer-

gency basis. Two city engineers stressed the need for a more effective organization of these forces and advocated planning; one urged a search for new techniques, possibly some to be derived from the snow-fighting experience of the railroads. A flurry of articles in *Scientific American*, *American City*, and other periodicals placed snow removal in the topical indexes for the first time that year.

Although Rochester took no direct part in this discussion, its leaders soon became aware of the awakened interest in the problem. When, at the invitation of George Eastman, the New York Bureau of Municipal Research made its comprehensive study in 1915 of all government practices in Rochester, it devoted ten pages to a review of the city's snow-removal program. The report recommended several improvements, including a use of the trunk sewers for dumping purposes, as tried out successfully at New York, and urged a more extensive reliance on the street-cleaning crews, which should be expanded and retained through the winter to reduce dependence on contractors. But in general the report commended the city's alertness to the problem and saw a possibility only for minor economies through tighter organization. The final costs in 1914, after deducting the sums charged to the trolley company and to private assessments, had come only to \$74,418 and could not safely be much reduced.

Rochester hastened to adopt most of the New York Bureau's recommendations. City officials were not averse to an expansion of their staffs or to the acquisition of additional equipment, and within a year the Division of Sanitation was ready to tackle not only the collection of garbage throughout the year but also the cleaning and sprinkling of streets in summer and the removal of snow in winter.

A second survey two years later by the newly created Rochester Bureau of Municipal Research recommended some further

refinements in the program. The hard winter of 1916-17 had proved too much for the 60 dumpcarts operated by the sanitation division, and the Bureau proposed that, instead of expanding to meet the maximum need, the division should again compile a list of available contractors and additional teams and men to be called on as the emergency required. Instead of endeavoring to clear all the streets simultaneously, the Bureau urged the city to prepare a schedule in advance so that the principal arteries would be tackled first. Moreover, a number of streets to be used as sleigh routes should be reserved without a break from the outskirts into the market area, and the city should publish a map showing the network of sleigh trails in order to encourage farmers to bring loads of produce into Rochester during the winter months.

In addition to that proposal, reminiscent of the past, the Rochester Bureau also recommended that the city attach plows to the two flushing trucks it had recently acquired and thus follow the lead set in New York that year of plowing snow with motor power. With 15,000 automobiles now operating in the city, speed in the clearing of snow-clogged streets was becoming more urgent, and the mounting costs, which had reached \$120,928 in 1916, did not appear exorbitant.

### **Motorized Snow Fighting**

The motor-driven snow plows of 1917 were but the first of an expanding battery of snow-fighting machines. By 1924 Rochester had a dozen straight-blade plows, which it attached to the heavy trucks normally used to collect garbage. It engaged an extra night force that year so that the fleet of trucks could be used more effectively in both capacities. To expedite the removal of snow and ice from the business district, the city, in January 1925, purchased one of the new Barber-Green mechanical snow loaders.

Yet Rochester no longer matched the snow-fighting equipment boasted by several other large cities. A succession of cold but open winters following 1917 had relaxed the pressure for improvements. The great blizzards that swept Chicago in 1918, New York, Philadelphia, and Boston in 1920, and other cities on the fringe of the snow belt, by-passed Rochester. Heavy snows returned in 1922-23, but again they were fairly well distributed over a four-month period, enabling the regular snow-fighting forces to ride the storm. Rochester escaped the record-breaking blizzard that buried Syracuse in 27.5 inches of fresh snow on January 29, 1925, making a total of 34 inches on the ground. Accustomed to frequent storms, the snow-fighting crews mobilized quickly at the start of each storm and did not need to make use of weather bureau forecasts as Worcester started to do in the mid-twenties.

Another decade of relatively light snowfalls, accompanied by a drop in fatal automobile accidents, as Rochester won its first "safest city" award in 1929, strengthened official complacency. While a number of other cities, reeling from one or two storms, hastily drafted their road graders, tractors, and other heavy equipment for winter use as snow fighters, Rochester was content to attach Champion plow blades to the new trucks added from time to time to the garbage fleet, which in December 1935 numbered a score. A succession of heavy storms in that and the next month forced the city to engage 25 privately owned plows to assist in opening the streets. Its expenditures on snow removal mounted to new heights. They topped \$330,000 for the fiscal year and advanced again in 1937 when the partial substitution of buses for trolleys diverted the responsibility of plowing many streets from the company to the city.

Confronted with that additional burden and spurred by a resurgent accident rate, Rochester again expanded its mechanized equipment in 1939. A decision by one of its contractors,

who had plowed for the city for 25 years, to sell his 37 horses, precipitated a move by the city to purchase nine baby-tractor plows for use on residential sidewalks. Rochester also bought two more mechanical loaders, making seven in all, and acquired a mechanical sander to expedite the work of sanding the downtown crosswalks. As a result of these improvements, Rochester again took top place among the leading cities concerned with snow fighting in a survey conducted by *American City*. The practice of issuing periodic news casts, adopted by the two local radio stations in the mid-thirties, brought current weather reports into most homes by the end of the decade, when the custom of reading off the lists of school and institutional closings helped further to dramatize the big storms.

Snow removal costs fluctuated between 3 and 5 hundred thousand in the early forties. A 10-inch snow storm in January 1943 brought out the city's 85 plows and prompted the Department of Public Works to engage 125 emergency workers. Yet light snows for the rest of that and the next season resulted in welcome economies and lulled the officials into a state of complacency. Thus a record-breaking snow on December 11-12, 1944, caught them unprepared and so clogged the streets that traffic circulation was crippled for several months. The Republican administration, stung by a barrage of criticism, took vigorous measures to correct the situation, even importing a contingent of German war prisoners to help widen the narrow channels plowed through the streets. After important additions were made to the snow-fighting equipment, the City Manager proudly announced, early the next November, that the city was ready for the winter's blasts. Unfortunately, that unpredictable adversary again slipped in a quick and severe punch—on November 29 this time, when it dropped 11 inches of wet snow overnight and paralyzed the city for a second time.



Business losses suffered in Rochester from these two snow blockades convinced the city that major efforts should be made without regard to the cost. An attempt by the Democrats to exploit the miscalculations of the Republican administration spurred the latter to bolder policies. Not only were eleven road graders and heavy bulldozers fitted with plows, but also six Sno-go's, or blowers, were purchased to assist the mechanical loaders in the vital task of snow removal. In order to secure the earliest warning of approaching storms, the city made frequent checks with the Rochester Weather Bureau and established contact with its Public Service Teletype loop after its installation in July 1958. The outlays soared for 1944-45 to \$834,949, yet the chief concern now was efficiency, not costs.

A major check on efficiency had long been the presence of parked or stalled cars in the streets. Ordinances banning the parking of cars in streets during a snowstorm had proved ineffective, and the police sought and secured authority to proclaim an emergency and remove such obstructions. The department acquired several tow trucks to expedite this work, but a steady increase in the number of cars, greatly exceeding the garage and off-street parking facilities, made enforcement especially difficult in crowded districts where the need for clear streets was urgent. Fortunately, a rapid expansion of public and private off-street parking lots in the late forties and fifties somewhat relieved the situation, though it increased the volume of snow that had to be plowed and removed by private contractors. The practice followed in many cities (sometimes with disastrous results) of withholding the plows until eleven or twelve o'clock, thus giving drivers ample time to store their cars at home or elsewhere, was impractical at Rochester where heavy storms could tie the city up tight if the plows were not sent out as soon as the fall began to accumulate.

If Rochester found no easy solution for parked cars, it did see

a much older snow hazard removed when the completion of the great storage dam at Mt. Morris up the valley in 1952 greatly reduced the threat of major floods from the spring runoff of heavy blankets of snow.

### **Chemical Warfare**

But the most significant decision made in these years was little publicized at the time. A practice of sanding the roads in icy weather had developed slowly over the decades from the original application of sand on downtown crosswalks in 1906. Later a substitution of cinders for sand had proved effective but left a greater mess. Rochester first began to add a mixture of salt with the cinders in 1941, following a demonstration in New York a few years before. Several cities, following Detroit's lead, had switched entirely to salt, and after a careful study the Rochester Chamber of Commerce in January 1946 recommended that policy for Rochester. In reply, Commissioner Wagener revealed that Rochester, too, had already switched exclusively to salt as a first treatment at the start of a snowstorm. That strategy, he declared, sufficed if the storm stopped quickly, and, if it continued, the plows could scrape the roads more easily and more effectively when the bottom layer of snow was softened by salt.

The use of salt precipitated a lively controversy in the press between those who blamed it for corroding the metal frames of their cars and those who praised it for reducing accidents. Most city officials in Rochester and other cities were content to deny the corrosive effect of salt, but John A. Temmerman, city chemist, while minimizing the corrosion, determined to find a means of eliminating it. After extended experiments with a polyphosphate compound, he secured authorization from the city to use a 2 per cent mixture of his compound with rock salt and applied it successfully on the Rochester streets in 1949. The experiment attracted wide interest in other cities and encour-

aged Rochester to discontinue the use of cinders and to expand its application of salt plus the inhibitor.

The city purchased six new salt spreaders in 1949 and replaced several of its early plows with more modern tractor plows, retaining only one horse plow for use on uneven park roads. Undaunted by continued criticism of the use of salt, Rochester appropriated \$900,000 for snow removal in December 1950. Neither Buffalo nor Syracuse or any other city approached it in outlays per resident, and only New York City matched it in the extent and variety of services rendered. These included sidewalk plowing throughout the residential streets (undertaken elsewhere only in New York), successive salt runs and plow runs through the entire street system, and a schedule of operations that commenced with the first fall of snow and continued through to its removal. Many citizens attributed Rochester's success in reducing its traffic fatalities to 12 in 1952 at least in part to its efforts to keep the streets clear of ice.

Yet another cycle of cold but open winters again relaxed official concern. Complaints against the mounting costs of salt, as other cities turned increasingly to its use, prompted Rochester to cut down somewhat on the quantity of the inhibitor mixed with the salt, in order to reduce that expense. When, however, a slow application of salt, following a storm in 1954, brought many protests, the administration reaffirmed its faith in salt. To meet a criticism of the spreaders, which scattered salt over passing or parked cars, the city in 1955 purchased five machines of an improved design that distributed the salt closer to the road surface. As a further comprise, the manager prepared a revised schedule in 1956, limiting the number of streets to be salted under Plan A at the start of a storm, plowing all streets, Plan B, when the snow reached three inches, and, if it continued, salting and plowing all streets again under Plans C and D.

Rochester's crucial test came in February 1958. The city had

successfully cleared most streets after a 14-inch snow on January 18, and it quickly dealt with a second storm on the night of February 4 which left a 15-inch blanket on the ground. Thirteen days later, a third storm deposited 13 inches more within a few hours, closing all schools and many business establishments and causing the death of three residents who collapsed under the strain of shoveling their sidewalks. In spite of some criticisms, chiefly from householders who found their driveways plowed shut after laboriously shoveling or plowing them out, the city's program proved its capacity to handle a big storm. Still another big storm on March 12, which dropped over 17 inches, helped to boost the total for the season to 130.8 inches, making it the third most snowy winter on record. The cost for snow removal also mounted to \$975,000, exceeding that of any previous year.

These public costs did not, of course, include the uncounted outlays of private concerns and individual residents. Although the city had in 1905 assumed responsibility for plowing the residential sidewalks, its ordinances still required that householders keep them open, and, of course, the additional job of clearing private walks and driveways devolved on the occupants of homes and shops. Numerous heart attacks each winter among aging residents who used their shovels too vigorously demonstrated the serious character of this responsibility and spurred a wider use of contract plows. Neighborhood gasoline stations had offered that service for many years, but it was not until 1951 that two of them listed their names under Snow Removal Contractors in the Rochester Telephone Directory. The number grew steadily in succeeding directories, however, and included 24 companies in 1964, with six dealers advertising snow plows, blowers, and melters for private use.

Confident of the adequacy of its equipment, Rochester dispatched a crew of experienced snow fighters and a number of

plows to Oswego in December 1958 when an early and severe storm paralyzed that community. Fortunately, the plows and the crews were back in Rochester in ample time to join in the battles of another record-breaking year. The total for January, 46.8 inches, exceeding all previous records for that month, and the 40.3 inches in March closely pressed that month's maximum depths in 1900 and 1916. The total for the year 1958-59 topped all but the 141.5 of 1900-01.

Fortunately, Rochester's comprehensive snow-fighting program gave it a new sense of security and enabled its residents again to take delight in their winters. John Williams, chief meteorologist at the weather bureau, remarked, when consulted during a snowstorm on December 24, 1959, that Rochester was assured of a white Christmas for the fourth time during the fifties. The park department had recently completed one modernized skating rink and was planning to maintain several others in active use. Ice hockey had established itself as a professional sport in the War Memorial, and the ice skating rink of the Rochester Institute of Technology was enjoying great popularity among students and adults. These indoor facilities quickened public interest in outdoor rinks at the parks and elsewhere. Ski slopes in nearby parks and at more distant resorts attracted hundreds of enthusiasts from the city each weekend during the snowy season, which now appeared to last from late November to the middle of March or later each year.

But although the city was now well equipped and fully prepared with trained personnel and plans to meet the heaviest snowstorms, it could not avoid the blows, some of which still had their sting. Thus a severe ice storm on December 29, 1959, again proved devastating, particularly in the suburban areas. Downed power lines, which had once meant darkness, now shut off electric and other motor heaters and forced many residents to flee their cold homes. Within the city, where most of

the wires were now safely buried in underground conduits, the havoc was not so great, but the ice brought down many limbs and trees and alerted the police as well as the salt trucks to guard against accidents on New Year's Eve.

The new year proved a blustery one, breaking all previous records in the total snowfall, 161.7 inches. Fortunately, the storms were again widely spaced, and Rochester's snow fighters managed to keep reasonably abreast of the job. Many driveways, however, were blockaded before householders could summon plows to clear them, and because of the depth of the snowbanks many small contract plows proved ineffectual, leaving residents stranded for the duration. The total cost of roadway and sidewalk snow and ice removal mounted to \$1,394,889 in 1959 and to \$1,415,530 in 1960. These outlays considerably exceeded all earlier appropriations and trebled the high figure of two decades before, but the results fully justified the expenditures. Although similar sums were not needed in succeeding years, the budget annually provided \$1,500,000 for the purpose.

Fortunately, Rochester's cycle of record-breaking years was again followed by one of cold but relatively open winters. The total snowfall for 1960-61 (89 inches) exceeded the city's average yet marked a sharp drop from the previous year; the next two winters saw it down to still lower levels. Rochester enjoyed another lucky break in 1961 when the price of salt, which had been climbing slowly as the demand for it rose, was suddenly cut \$2 a ton that November as a result of an anti-monopoly suit, and tumbled again the next September, granting the city a total drop of 25 per cent from earlier costs for salt and hauling—a considerable saving on the 34,260 tons purchased in 1962-63.

Although Rochester has thus evolved an efficient snow-fighting program and has displayed civic responsibility in this field for a longer period than most cities, many others have exerted considerable efforts and a few have developed new

techniques not yet widely applied in Rochester. The use of portable snow melters, first introduced in Helsinki, Finland, has been tried out in New York and several other American cities; an agent for these devices has recently opened shop in Rochester, but only two firms have as yet experimented with snow melters, both of a stationary character. The use of hot water pipes and electric wires buried in sidewalks and driveways is another snow-melting device employed to some extent at Boston and several other cities in recent years; a check reveals that the Rochester Gas & Electric knows of only 75 such installations in the Rochester area, 50 of them electrically wired residential driveways and 25 on commercial properties, half of them also electric. The steam pipes built into the floor of the new Civic Plaza will provide Rochester with its largest snow-free area.

Rochester, with its tradition of heavy snows, will probably see a great expansion of these snow-melting devices, especially on commercial and residential properties. Of course their utility depends on the availability of rapid drainage, and that, in cold weather, is related to the prevailing temperature. New and more scientific studies of the amounts of heat, or of salt, required to melt a cubic yard of snow or ice under varied temperatures have been launched by the A.P.W.A. Research Foundation in which Rochester and some 60 other cities are participating. The results of this and other research will help to guide further developments in the snow-fighting programs of Rochester and its suburbs as well as those of its householders and firms.

Refinements in weather forecasting are also proving useful. Situated as it is in close "proximity to the so-called St. Lawrence Storm Track," as the U. S. Weather Bureau's analysis of the Rochester weather describes it, Rochester must continue to expect heavy storms; at the same time, its position south of Lake Ontario assures it a light new deposit almost daily in cold

weather. The delicate balance between these two systems explains the keen interest displayed at Rochester in the maintenance by its weather station of radar devices for the detection of approaching storm clouds. Thus when a federal economy drive prompted the U. S. Weather Bureau to remove its radar equipment at Rochester, active protests from the city brought an announcement that the local station would be equipped instead with a reactoscope which would enable the staff to watch the radar findings of the Federal Aviation Agency at the airport; it would also have a teletypewriter to keep in constant touch with the high-power radar screen at Buffalo.

Somewhat doubtful that the economy, estimated at about \$6,000 a year, was justified, many citizens prepared to check the performance of the substitute apparatus with care. Indeed as this article goes to press on November 30, the new equipment seems to have flunked its first test. The light snow flurries predicted at 8 A.M. had intensified enough by 8:20 to glaze the Expressway and other major highways, producing a series of traffic snarls that delayed the salt trucks and effectively blocked traffic in some stretches for over an hour. Although the city rose to the occasion as that early squall continued and dropped a total of four inches instead of the predicted one or two inches in the course of the day, the need for an accurate warning of the first half-inch fall was re-emphasized. Thus while Rochester's record of responsible action in battling its exceptionally heavy snow blankets over many years has proved its value, it has also justified continued efforts to make its snow-fighting program still more effective.