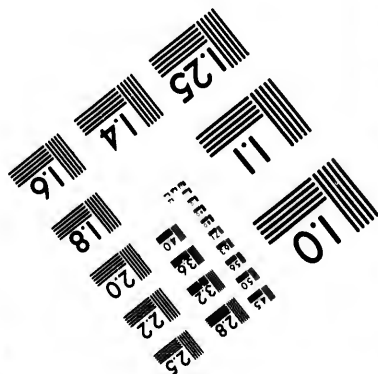
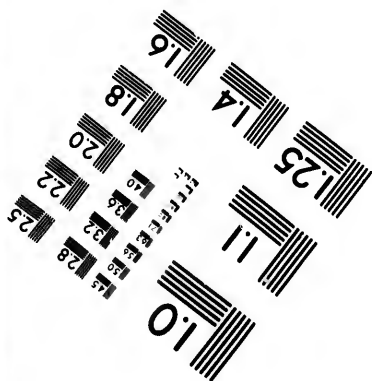
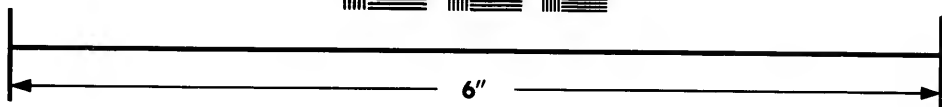
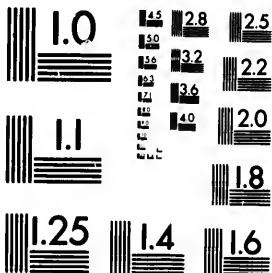


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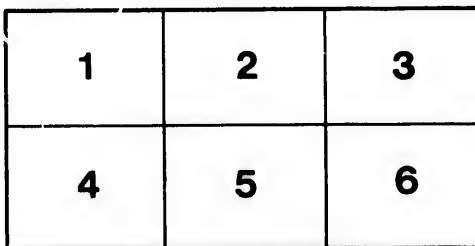
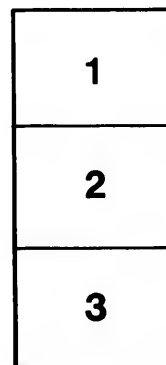
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SPECIAL REPORT  
OF  
NEW YORK STATE SURVEY  
ON THE  
PRESERVATION OF THE SCENERY  
OF  
NIAGARA FALLS,  
AND  
FOURTH ANNUAL REPORT ON  
THE TRIANGULATION OF THE STATE.  
FOR THE YEAR 1879.

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JAMES T. GARDNER, DIRECTOR.

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ALBANY :  
CHARLES VAN BENTHUYSEN & SONS.  
1880.

42508.

STATE OF NEW YORK.

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No. 37.

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IN SENATE,

MARCH 22, 1880.

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FOURTH REPORT

OF THE BOARD OF COMMISSIONERS OF THE STATE  
SURVEY, AND REPORT OF THE DIRECTOR, FOR THE  
YEAR 1879.

OFFICE OF THE BOARD OF COMMISSIONERS OF THE }  
STATE SURVEY, ALBANY, *March 22, 1880.* }

*To the honorable  
the Legislature  
of the State of New York:*

I have the honor to transmit a Special Report of the Commissioners of the State Survey, on the Preservation of the Scenery around Niagara Falls, in accordance with a concurrent resolution of the Legislature of May 19, 1879, and the Fourth Report of the Board, containing their proceedings during the year 1879, as required by the statutes organizing the said Board.

I remain, very respectfully,

Your obedient servant,

HORATIO SEYMOUR,

*President of the Board.*



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# CONTENTS.

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## PART I.

	PAGE.
Letter of transmission to the Legislature .....	3
Special report of the Commissioners on the Preservation of the Scenery around Niagara Falls.....	7
Report of the Director on the Plan for a proposed State Reservation at Niagara.	19
Notes by Frederick Law Olmsted.....	27
Father Hennepin's description of Niagara; facsimile of the first London edi- tion .....	27
Memorial to the Governor of the State .....	31
Extract from the Message of Gov. Robinson, 1879.....	41

## PART II.

Annual Report of the Commissioners on the Triangulation of the State.....	45
Detailed statement of expenditures for the year 1879.....	46
Report of the Director on the progress of the triangulation .....	49
Explanation of tables.....	55
Table of preliminary geographical positions of State Survey monuments and prominent landmarks.....	58
Table of geographical positions of county-line stations and monuments.....	81
Special table of geographical positions of State Survey stations and monu- ments, along the Hudson river, from Albany to New Baltimore.....	83
Table of geographical positions of lot corners of the old rectangular surveys..	92
Table of elevations of prominent points.....	94
Table of declination of magnetic needle at various points .....	96

## LIST OF ILLUSTRATIONS AND MAPS.

### PART I.

- Plate I. Ideal view of the American Rapids, after the Village Shore and Bath Island are restored, according to the proposed plan.  
Drawn by Francis Lathrop and engraved by Mr. Marsh.
- Plate II. General view of Niagara Falls and Goat Island . . . . . Helio-type print.
- Plate III. The American Falls and Prospect Park Shore . . . . . Helio-type print.
- Plates showing the Banks or Shores of the River around the American Falls, disfigured by constructions.
- Plate IV. The Village Shore, just above the American Falls . . . . Helio-type print.
- Plate V. Village Shore of the Upper American Rapids . . . . . Helio-type print.
- Plate VI. Bath Island, in the American Rapids . . . . . Helio-type print.
- Plate VII. Lower American Rapids, Bath Island Paper Mill and Goat Island Bridge . . . . . Helio-type print.
- Plate VIII. Repulsive scenery surrounding the visitor approaching Goat Island Bridge for first view of the Rapids . . . . . Helio-type print.
- Plates showing the part of the Banks of the American Rapids which still remain in natural condition.
- Plate IX. Upper American Rapids and Goat Island Shore . . . . Helio-type print.
- Plate X. View in the primeval woods, on Goat Island.  
Drawn by Thos. Moran ; engraved by Mr. Karst.  
View showing the Disfigurement of the Canadian Shore.
- Plate XI. Brink of Horse Shoe Falls and Canadian Shore, seen from Goat Island.  
Helio-type print.  
Plate accompanying Father Hennepin's Description.  
Facsimile of the first picture of Niagara Falls : published in 1698.  
Photo-lithograph from the original.

### MAPS.

- Map showing the recession of Niagara Falls.
- Topographical Map of the region about Niagara Falls, showing the proposed State Reservation.
- Part of the Official Property Map of Niagara Falls Village, showing the lots and streets included in the proposed State Reservation.

### PART II.

- Map of Central and Eastern New York, showing the results of the Survey.
- Map of the triangulation along the Hudson River.

NOTE.—The helio-type prints are from photographic negatives taken by Mr. George Barker of Niagara Falls. The prints are by the Helio-type Printing Company, of Boston.

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PART I.

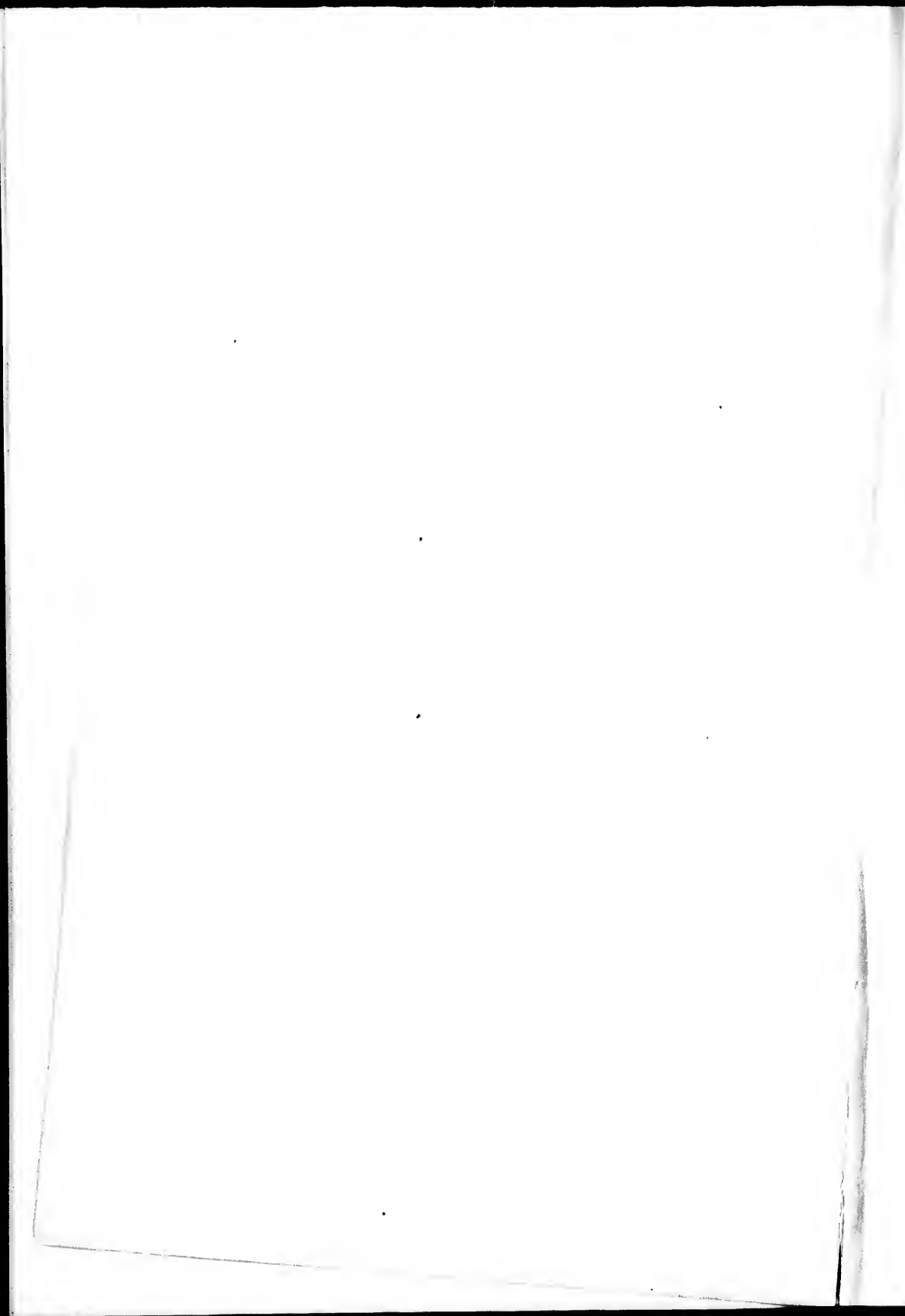
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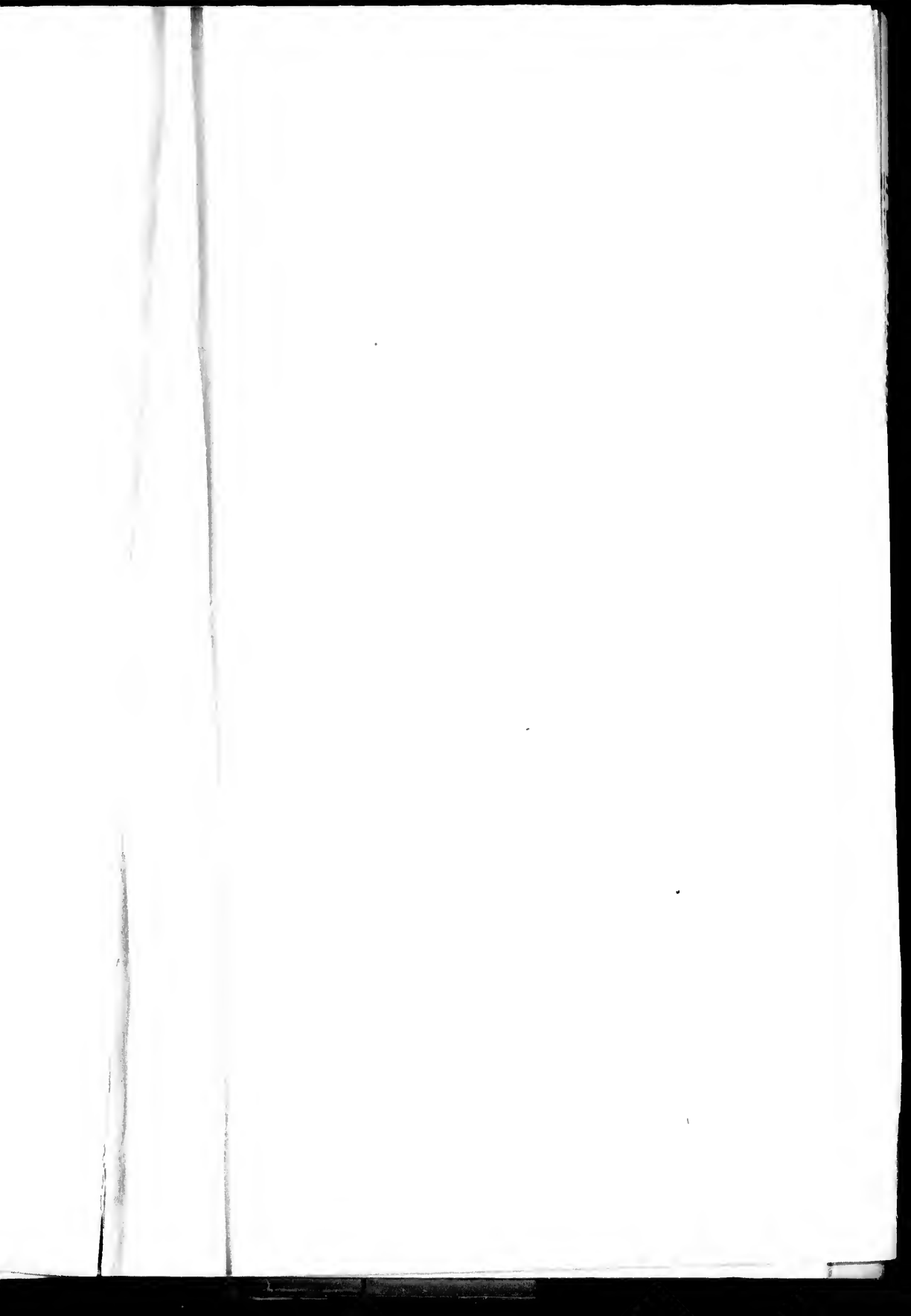
SPECIAL REPORT

ON THE

PRESERVATION OF NIAGARA FALLS.

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# SPECIAL

## REPORT OF THE COMMISSIONERS.

*To the Legislature :*

The Commissioners of the State Survey were instructed by a joint resolution of the Legislature of 1879, as follows :

“*Resolved*, That the Commissioners of the State Survey are hereby directed to inquire, consider and report what, if any, measures it may be expedient for the State to adopt for carrying out the suggestions contained in the annual message of the Governor, with respect to Niagara Falls. That said commissioners are hereby authorized, in behalf of the State, to confer with any commission or other authorized body, person or persons representing the Dominion of Canada or the Province of Ontario, making a similar inquiry or contemplating measures for a similar purpose.”

### I.

Under this resolution it became the duty of the Commissioners to ascertain how far the private holding of land about Niagara Falls has worked to public disadvantage through defacements of the scenery ; to determine the character of such defacements ; to estimate the tendency to greater injury ; and lastly, to consider whether the proposed action by the State is necessary to arrest the process of destruction and restore to the scenery its original character.

In pursuance of these objects, the Commissioners instructed Mr. James T. Gardner, Director of the State Survey, to make an examination of the premises and prepare for their consideration such a project as was had in view in the resolution of the Legislature, and they associated with him Mr. Frederick Law Olmsted.

### II.

Before stating the conclusions reached on the topics of inquiry above recited, a brief consideration seems desirable of a matter not directly comprehended in the instructions of the Commissioners, but





IDEAL VIEW OF THE AMERICAN RAPIDS AFTER THE VILLAGE S



FTER THE VILLAGE SHORE AND BATH ISLAND ARE RESTORED.

so related to those to be reported upon and of such public concern, that reference to it cannot properly be omitted.

Apart from the profound interest which belongs to the great falls, the river scenery of Niagara has many charms peculiar to itself. As with charms of scenery elsewhere, these are hardly to be known at first sight and are the more enjoyed the more they are courted. The summer climate of the region is most agreeable and those coming to it from the seaboard experience a decided tonic effect, as of mountain air. It is accessible by several favorite routes of travel, its inns are of good repute, their sanitary conditions uncommonly satisfactory, and their charges not higher than rule elsewhere.

Under these circumstances it might reasonably have been expected that Niagara would be the temporary residence of great numbers of those who every summer migrate from town to country, and one of the most popular places of vacation sojourn in all the world.

It has, however, no summer population of the class referred to, and though it receives a great number of transient visitors, it is believed that at no other notable pleasure resort of Europe or America is the stay of travelers so short. It may be added that, if the public press for years past is to be credited, from none do so many visitors depart in ill-humor. The explanation is generally assumed to be that they are driven away by the pestering demands and solicitations, the petty exactions and impositions to which, whenever a stranger goes out of doors, he is at every turn subjected. This nuisance is spoken of as if it were in a great degree peculiar to Niagara; the local authorities are considered responsible for it and are urged to bring it to an end by better and more resolutely enforced police regulations.

Both the explanation and the remedy thus proposed appear to the Commissioners inadequate. Wherever scenery of great general celebrity attracts strangers in large numbers, a similar inconvenience is felt to a greater or less extent, and at many places the population which, under various pretences, seeks to obtain a livelihood through the offer of various small services to visitors, and when this fails by more direct forms of begging and depredation, is much larger than at Niagara. It is indeed incredible that the people of these rich corners of the prosperous State of New York and the thrifty Province of Ontario should either be moved in extraordinary numbers to adopt such courses of life, or to exhibit in them a degree of rapacity elsewhere unknown.

Why, then, the evil should apparently be more felt by the public,

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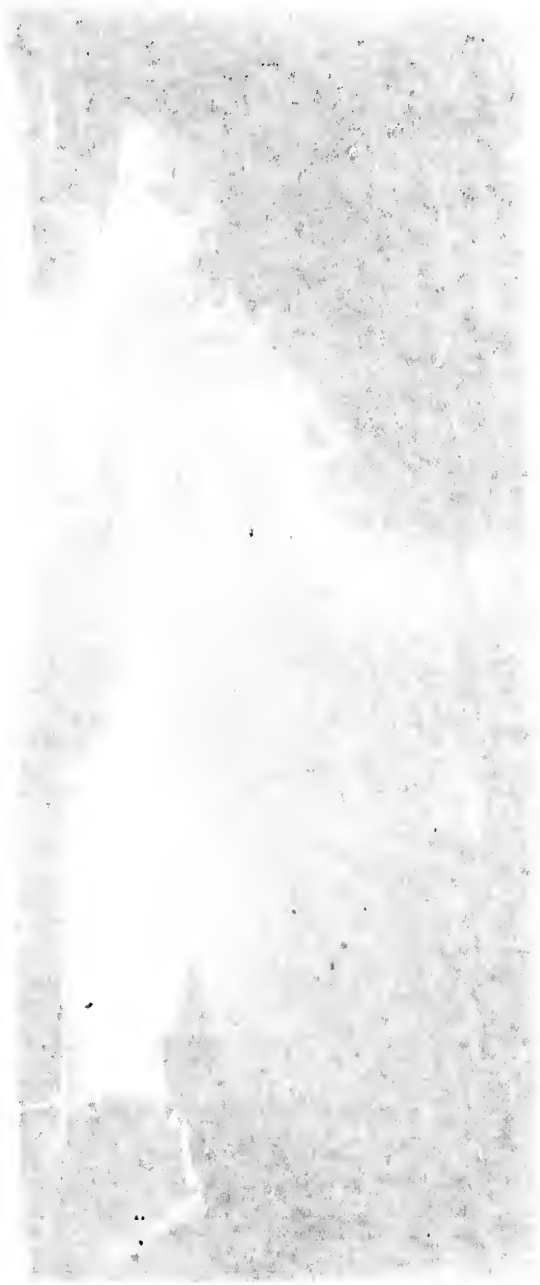
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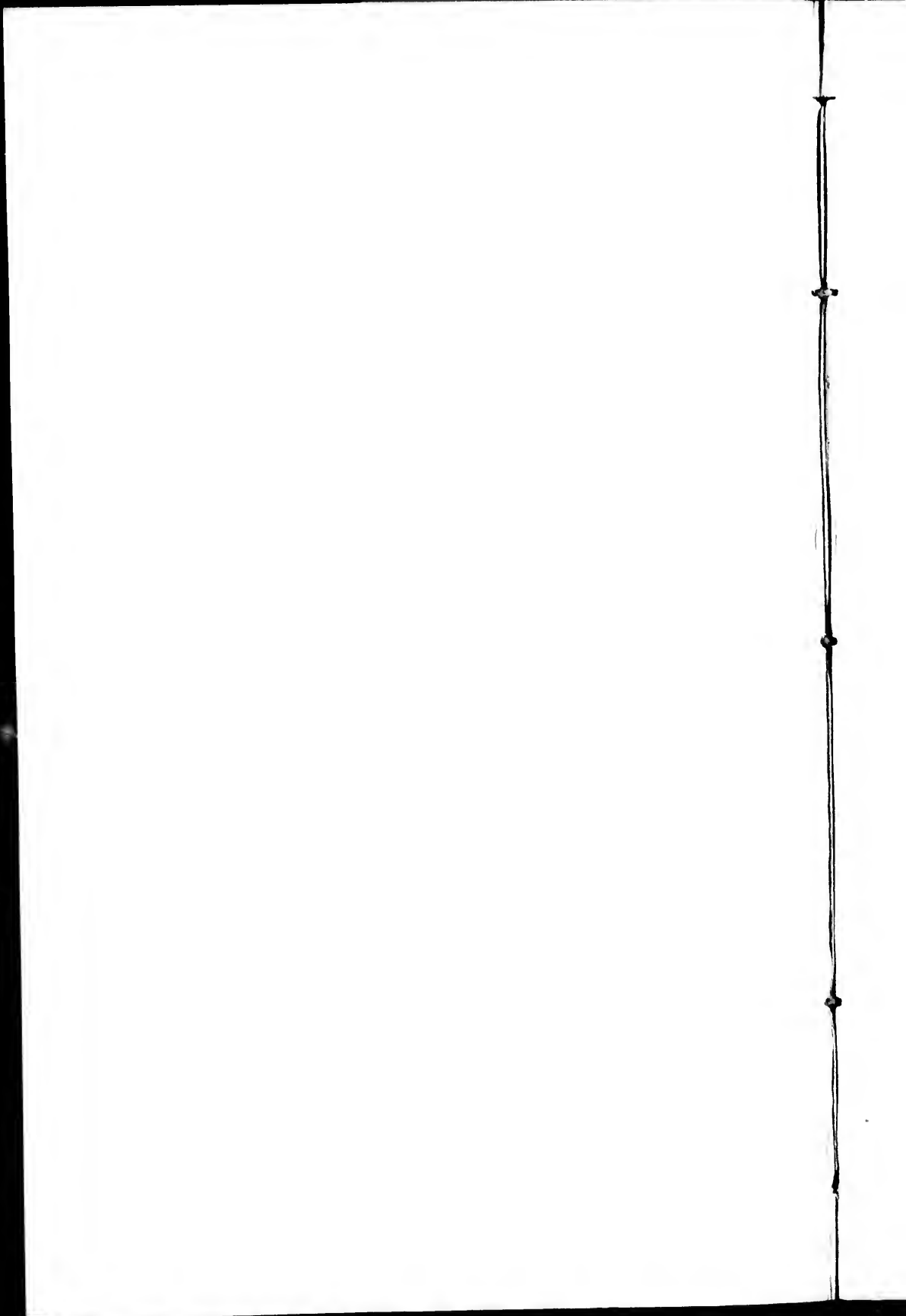
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and have such an unusual result as is attributed to it at Niagara, demands inquiry.

The question has too many minor branches to be thoroughly pursued in this report, but the following considerations appear to have more importance than has generally been recognized.

Within certain limits at Niagara there are probably a larger number of distinct and rare qualities of beauty in combinations of rock, foliage, mist, sky and water, than in any other equal space of the earth's surface, and although the gorge of the river for miles below is very interesting, and the broad, smooth water about the Rapids, with its low shores, is an important feature of a marvelous landscape effect, the grounds of attraction in these more distant parts being more nearly paralleled elsewhere, the distinctive interest of Niagara, as compared with that of other attractive scenery, is remarkably circumscribed and concentrated.

The difference in the demand upon the attention of such a passage of scenery and that required by scenery of mountain grandeur, is plain. In the latter the elements of beauty are much diffused, are to be enjoyed on all sides and in great distances, and, because of this pervading quality of its beauty, such scenery is not as much to be put out of countenance by the intrusion on the attention of incongruous objects or of impertinent palaver. Much pleasure may be taken in it while the observer is in rapid motion and even incidentally to other occupations; and a like comparison will hold as to the enjoyment of regions simply picturesque or those of more tranquil beauty.

The courses into which visitors are now generally drawn at Niagara, the facilities of conveyance offered them, and all the arrangements ostensibly designed for their aid, and for which they are constantly called upon to pay, are sufficiently well adapted to the bare satisfaction of curiosity in the waterfall as the largest in the world, and in those wonders of it which can be adequately set forth in words. Were nothing more desirable, the interruptions with which the visitor is now annoyed would be of little consequence.

But the value of Niagara to the world, and that which has obtained for it the homage of so many men whom the world reveres, lies in its power of appeal to the higher emotional and imaginative faculties, and this power is drawn from qualities and conditions too subtle to be known through verbal description. To a proper apprehension of these,



something more than passing observation is necessary ; to an enjoyment of them, something more than an instantaneous act of will.

It is then conceivable that whatever occurs to prevent or interrupt a composed, receptive and contemplative frame of mind is, at Niagara, a source of deeper irritation, offense and dissatisfaction than it can be elsewhere.

As to a possible remedy for the evil, it should be remembered that the local government is in the hands of two essentially rural communities, between whom travelers are constantly passing ; that the difficulty of concerting adequate measures for the protection of wayfarers from imposition and annoyance on the highways is the greater, because the two live under different national constitutions and different municipal laws and customs.

Could both the ordinary and these extraordinary difficulties be overcome, of providing, under such communities, an efficient police and magisterial system during the few months in which visitors flock in large numbers to the Falls, the points of interest of most importance would still mainly remain private property, divided among numerous land-owners, recognizing little interest in common, but each, as now, seeking to gain all he can through rents, fees, and a division of earnings with all sorts of petty speculators on the ignorance of strangers.

While these conditions continue, therefore, whatever temporary palliations of the evil may possibly be accomplished, it is likely in the long run to be aggravated and to operate still more decidedly to neutralize the proper public value of Niagara Falls. The only prospect of relief, or even of permanent and general improvement, lies in the adoption of some such measure as the Commissioners have been directed by the Legislature, for other reasons, to consider.

### III.

Taking up the matters with which the Commissioners were more particularly charged, the report of Mr. Gardner, hereto appended, shows that the scenery of Niagara Falls has been greatly injured, that the process of injury is continuous and accelerating, and that, if not arrested, it must in time be utterly destructive of its value.

The American shore is occupied by a village, and the land bordering the river has been divided into house lots. Many of these are already built upon : all are liable to be. There is no American soil from which the Falls can be contemplated except at the pleasure of a private owner and under such conditions as he may choose to im-

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PLATE III



pose; none upon which the most outrageous caprices of taste may not be indulged or the most offensive interpolations forced upon the landscape.

From the head of the Rapids to the Falls, the shore is already defaced by walls, platforms and buildings. Not a foot of it retains a natural character.

Years ago one of the loveliest features of the river was a little island with rocky shores overhung with foliage, in the dark shadows of which the waters whirled and sparkled as nowhere else. A small paper mill, at first set inconspicuously upon it, has been gradually enlarged and built out, until now it has not merely displaced the rock and wood, but stretches its sluice-ways, walls and wing-dams far into the most interesting part of the American Rapids.

The single fragment of the majestic primeval forest of the Falls which still remains, upon Goat Island, will probably soon pass from the protection of its present owners and be destroyed, to make room for gaudy places of popular entertainment or unsightly factories.

It must be expected that the subdivision of properties will be a continuous process and that each land owner will, hereafter as heretofore, strive to make his particular ground yield the largest possible private profit.

The elements of interest and attraction lie within such a limited area and so react on one another, that a like process might, as already suggested, extend much further in any other region of great landscape celebrity with less fatal effects upon its character.

#### IV.

The rational remedy is of the same class with that which it is the policy and custom of all civilized communities to adopt whenever the private ownership of land stands in the way of general interests, as when public highways or canals are carried through farms and buildings, or when private ferries are supplanted by free public bridges.

To give satisfactory access to the Falls of Niagara and preserve their value, the extent of land requisite to be withdrawn from private ownership is fortunately small. The area which Messrs. Gardner and Olmsted find necessary to be taken for these purposes, includes, besides the islands above the Falls, a strip of the river bank on the main land commencing at the head of the rapids and running along the shore to the upper suspension bridge. The breadth of this strip is mainly determined by the crest of a natural terrace generally about a

hundred feet distant from the water's edge, but so much wider in the immediate vicinity of the falls that at the point of greatest interest, a spacious area would be obtained for the accommodation of visitors, and incongruous objects would be more effectually kept out of sight.

It is designed that the buildings now standing upon this strip of land shall be removed, and that the immediate bank of the river shall be formed so as to have a natural aspect, with such slopes and so protected by rough, loosely piled local rock, as to be guarded against surges of floating ice and logs. Trees and bushes are proposed to be planted of such kinds and in such dispositions as are natural to the locality. Carried back to the boundary on the crest of the terrace, this planting would obscure the buildings of the village, and secure their landscape disconnection with the river.

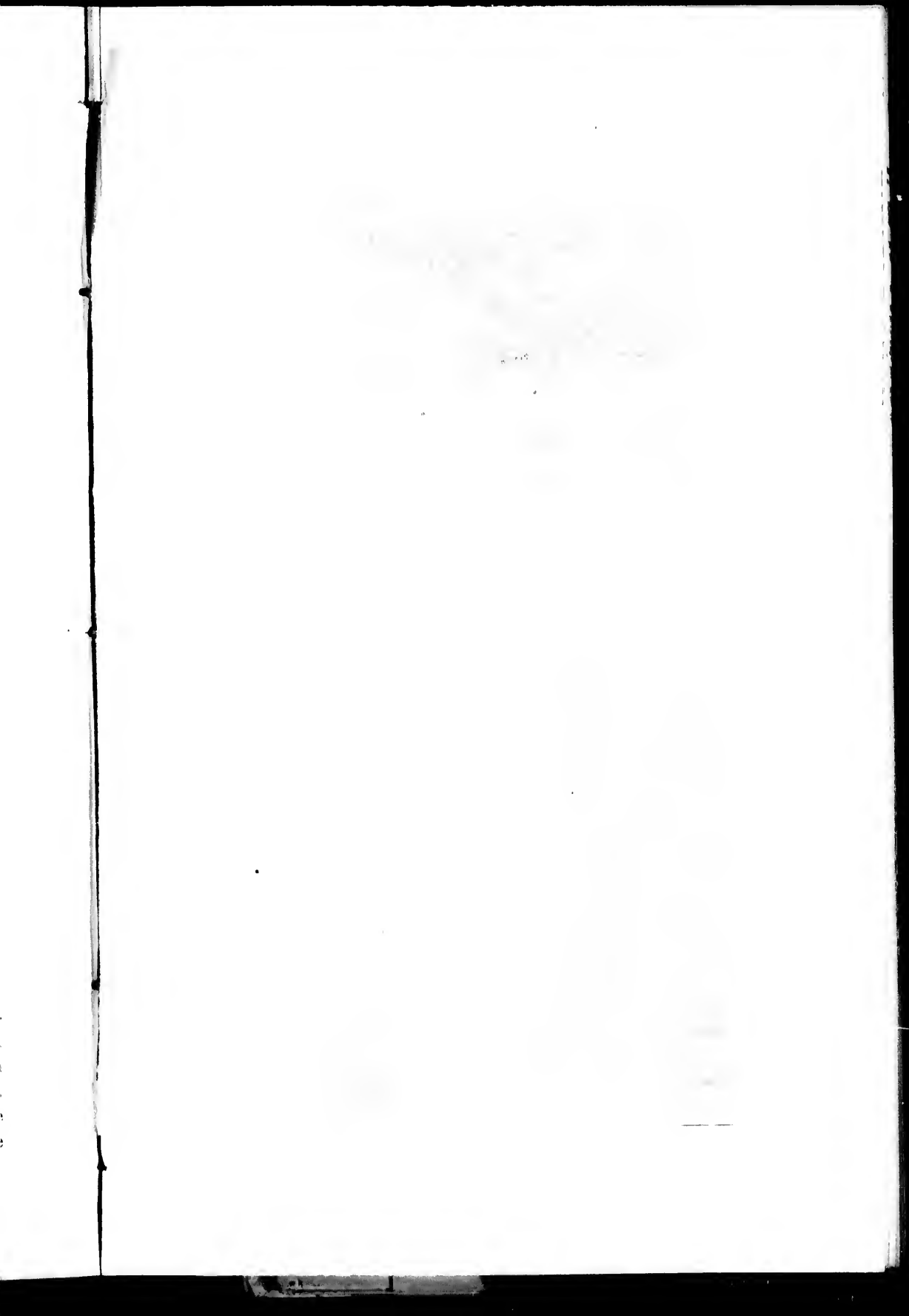
Within and along the rear of the narrow woodland, a road and walk would be laid out with branches from the walk to inconspicuous shaded seats commanding views of the rapids, and to a more extended platform overlooking the falls and chasm.

#### V.

The above suggestions indicate the considerations which determine the limits of the land proposed to be taken. Except with this motive, it is not the duty of the Commissioners to advise how it shall be used, and it is sufficient to say that they cordially adopt the views of Mr. Olmsted, who urges that the State should by no means undertake to provide a place of general pleasuring or any merely ornamental grounds, but simply to remove unnecessary artificial objects; make those necessary as little conspicuous as possible, and restore natural landscape conditions as far as practicable consistently with indispensable provisions for the conveyance of visitors and for giving them adequate opportunities for observation.

The main grounds of this advice are thus stated :

In whatever is done by the State there should be not only a wise consideration of immediate public requirements, but a prudent forecast of the future. When once visitors are relieved as far as may be from their present annoyances, the increasing population of the country and the multiplication and cheapening of the means of travel which is to be anticipated, will bring people to Niagara Falls in numbers far exceeding those of which we have present experience. Even now it often happens that several hundred visitors seek at the same time to enjoy a particular view of the Falls which can only be

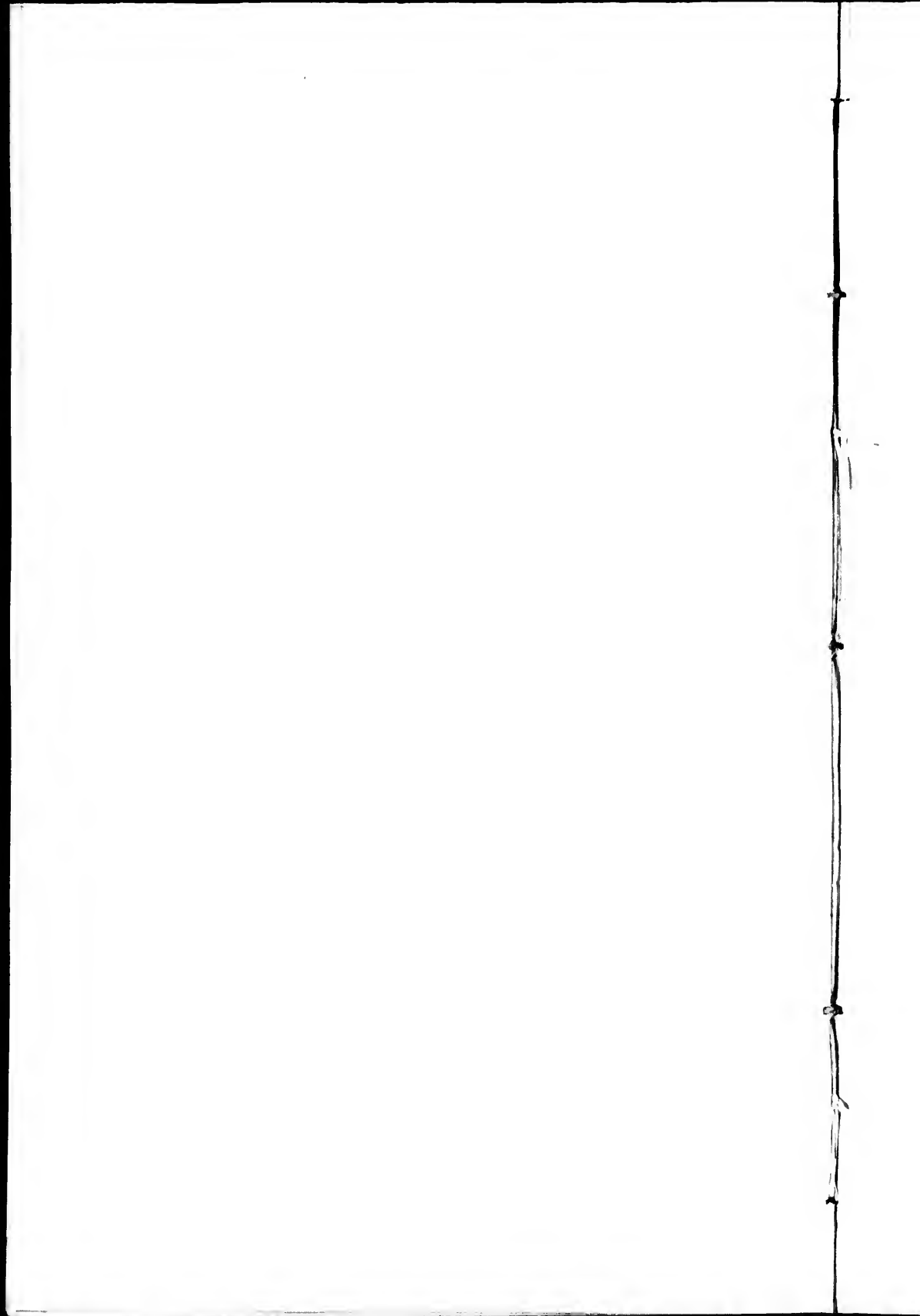




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had from a space of ground much too limited for them all to stand upon at once. In view of this consideration, it is obvious that to provide, with a single purpose, for the comfortable passing to and from the more popular points of view and for the standing room at these points of such multitudes as must be looked forward to, without ruinous sacrifice of the scenery, will be a task, to say the least, of extreme difficulty. It should be complicated by no other object, and all practicable legislative safeguards should from the outset be employed to prevent the introduction of such other objects as, under various pretences, are likely from time to time to be urged.

The distance from existing hotels and shops in the village to the most distant parts of the proposed State grounds is but a thousand yards. It will, therefore, be a hardship to no one if this ground is kept entirely free from houses of refreshment, shops, booths, and places of amusement and exhibition. Neither can extensive shelters be necessary. At one or two points something might be gained by the erection of belvederes or prospect towers, but if it is considered how conspicuous any structure of this class must be if conveniently spacious for the general public, it will be evident that even these will be better dispensed with.

## VI.

The removal and exclusion from the proposed State ground of everything interfering unnecessarily with the contemplation of the natural scenery will injure no general interest. Since the building of the paper mill, to which reference has been made, a channel has been formed by means of which a great volume of water is diverted from the stream above the rapids and carried through the village to the table-land overlooking the chasm below the falls, where the power can be applied to the greatest mechanical advantage. It is already in extensive use, and it is admitted by the proprietors of the paper mill proposed to be removed, that the situation would be even more favorable for their purposes than that they now occupy, or than any upon the ground of which it is proposed that the State should take possession. This would be equally true as to any considerable industrial undertaking. The provision thus secured can be enlarged, should this ever be required, to any desired extent, and the water power of the falls more economically utilized than if their immediate banks were to be occupied by factories.

## VII.

Before passing judgment on the project, the Commissioners have taken all practicable pains to be informed of the market value of the properties required to be taken. They do not present estimates because they could offer none that would not be in a great degree conjectural; and, with a view to the course which they will herein suggest to the Legislature, not of immediate importance. They point out, however, that the project stands on a much more favorable footing than it otherwise could, from the fact that the lines of the proposed State ground are so laid down as to leave out, not only the principal water works, factories and shops for which the Falls have given occasion, but also much the larger part even of the structures provided expressly for visitors. Comparatively little capital invested in improvements would, therefore, have to be bought out. The consideration is also important that the proposition excludes any future costly constructions or elaborate arrangements for the entertainment of the public, and any occasion for licenses or leases which might be corruptly dealt with.

The Commissioners are of the opinion that the real estate required could now be obtained, and the undertaking carried out at a cost less than has been commonly supposed, and which would not be thought by the people of the State to be immoderate.

## VIII.

Reviewing the scheme as a whole, the following comments are submitted to the Legislature:

Judged from the lowest point of view, States possess in the interest of their physical features sources of great public and private income. Though more striking proofs might be found abroad, we need not go beyond the limits of our own State for sufficient illustrations of this fact. There can be few intelligent citizens of New York who are not aware from personal observation that a large and rapidly augmenting revenue is flowing into all its channels of business and into the public treasury, because of the attractions which the people of other States and countries find in the scenery of the Hudson, the Mohawk, the Susquehanna, the Delaware and the Genesee; of Lake Champlain, Lake George and numerous smaller bodies of water; the Thousand Islands of the St. Lawrence; the mountain and forest wilds of the Adirondacks, and the picturesque glens and cascades of the central

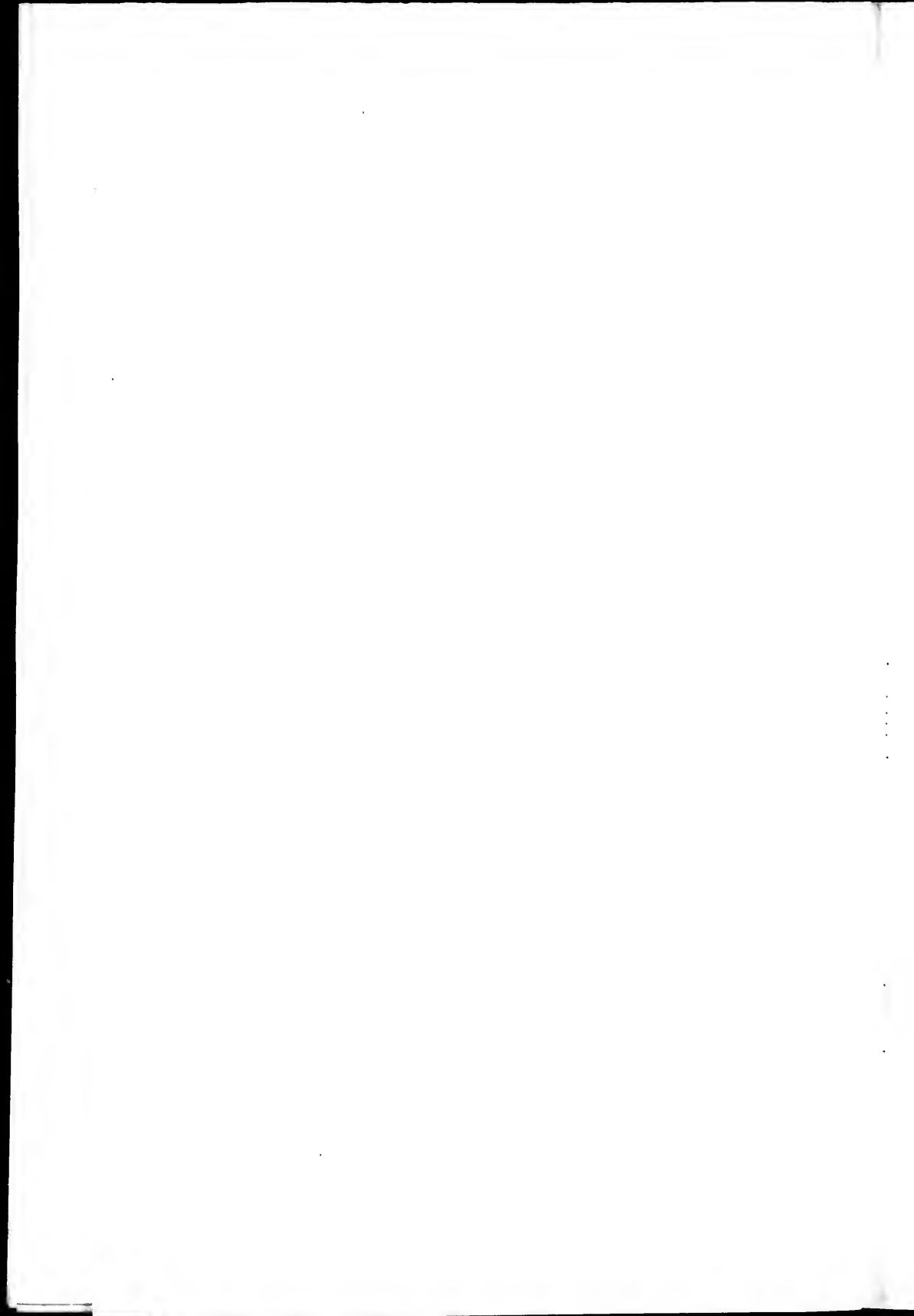
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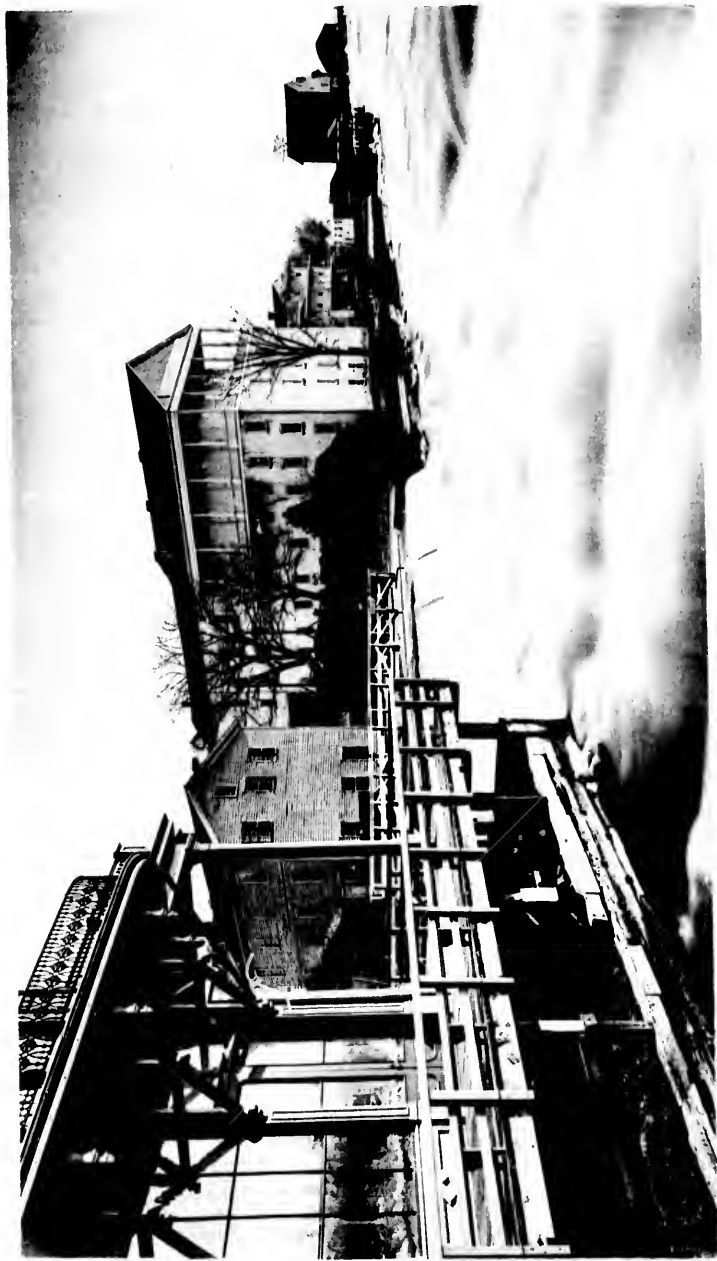
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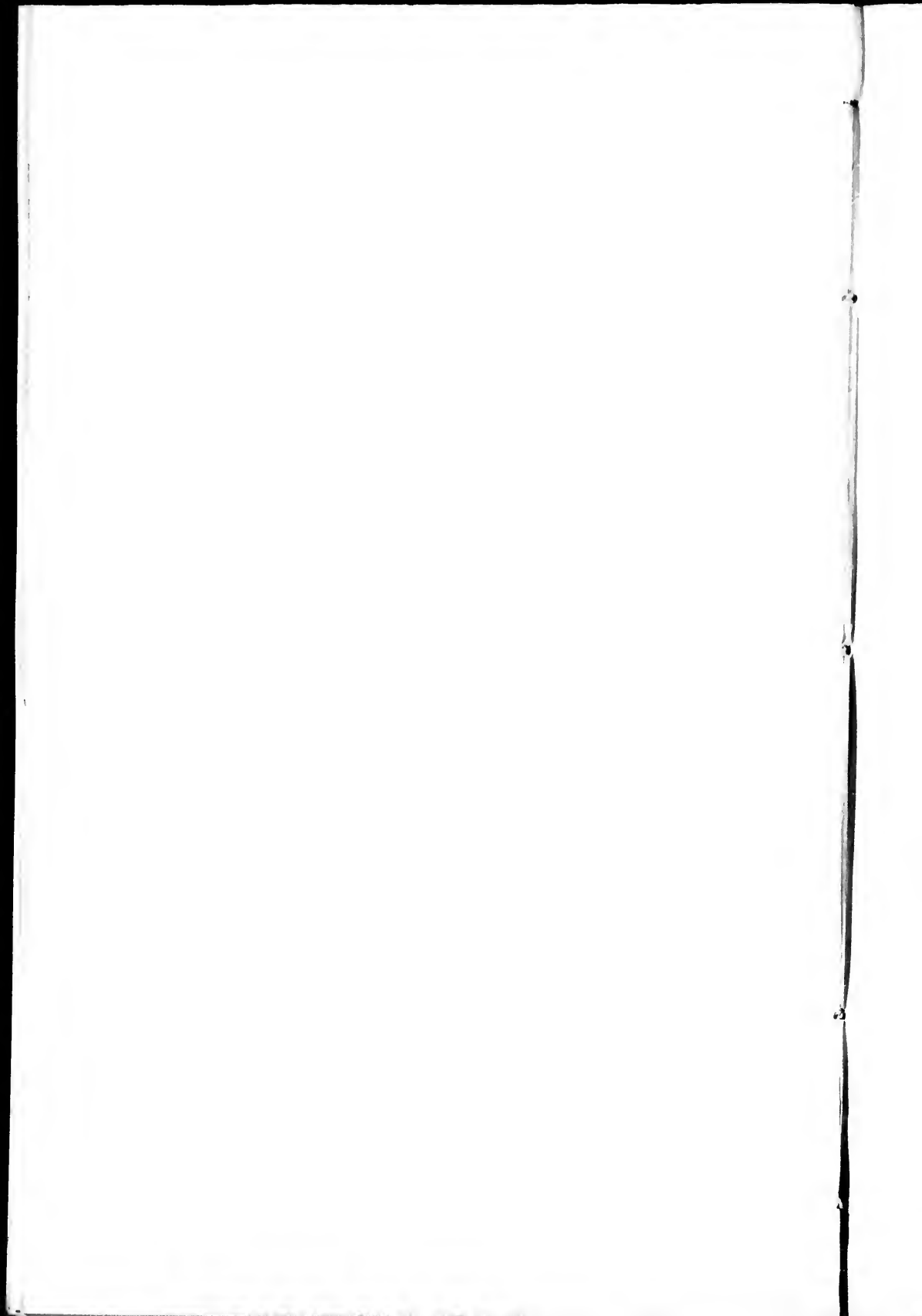
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part of the State. Niagara Falls is not simply the crowning glory of the great resources of the State of this class, but the highest distinction of the nation and of the continent. No other like gift of nature equally holds the interest of the world at large or operates equally as an inducement to the crossing of the ocean. Its eminence is shown by the remarkable circumstance that the word Niagara has become incorporated into many languages as better than any other expressing ideas of which the facts of Niagara are the highest known exemplification.

The private land ownership and individual enterprise, which elsewhere work favorably to the interests of the State by aiding the purpose of travelers, at Niagara stand in its way. The evil is not one that can cure itself. It is sure, if it continues, to increase. The pecuniary loss from it to the people of the State is incalculably greater than the outlay which would be required to carry out the scheme proposed and bring it to an end.

But the question cannot be regarded simply as an economical one. It has been fully recognized by wise men in all times and in all lands to be conducive to civilization, to the instruction of the people and to the conservation of public order, that localities which are associated with the lives, the achievements and the deaths of distinguished men should be set apart, preserved and held as a sacred heritage to be transmitted from one generation to another. In the same way gifts of nature which appeal to the higher sensibilities of mankind by their beauty and by their grandeur, are entitled to reverential protection. Americans go to Europe not only to visit the burial places of the great men of past generations but also to see the valleys of the Rhine and the Danube; the mountains of Switzerland, and the shores of the Mediterranean. The impulses which thus draw the nations together are a powerful influence for the obliteration of race-prejudices, and thus for the preservation of the peace of the world.

There is nowhere a natural object better adapted to serve these great ends than the Falls of Niagara, and the State which holds such a treasure, holds it under sacred obligations to mankind.

The memorial hereto appended exhibits the interest which the proposition excites in the minds of many thoughtful men beyond the limits of the State.

It cannot be doubted that another generation will hold us greatly to account if we so neglect or so badly administer our trust that the Falls of Niagara lose their beauty and their human interest. If we blame the men of a former day for not setting apart when it was the

property of the State and might easily have been done, the Falls of Niagara as the Yo Semite and the Yellowstone have in our day been set apart, then how much more culpable shall we be, who knowing their value and perceiving their certain destruction, still refuse to take the necessary measures for their preservation.

### IX.

In accordance with the suggestion contained in the joint resolution of the Legislature, the Commissioners held a conference with the members of the ministry of the Province of Ontario in September last. This conference disclosed a feeling in Canada which justifies the belief that if New York shall do her part in this work, Canada will do hers.\* To the Canadians it appeared that under the limitations of their governmental system it would be appropriate that the burden of the undertaking should be borne by the Dominion government. It is not necessary to point out the respects which would make it unsuitable for New York to appeal to the Federal government to relieve her from whatever expense the matter may involve. It is sufficient to say that many considerations of State pride as well as of constitutional difficulty, make it clear that if the American part of this work is to be done at all, it must be done by New York alone.

Mr. Gardner and Mr. Olmsted, considering the Legislature to have had in view a reservation upon both sides of the river, examined the Canadian as well as the American shore. Their plans were favorably received by the gentlemen who represented the government of Ontario at the conference referred to. The Commissioners are of opinion that if the recommendations of this report shall be accepted by the Legislature, the plan suggested will be adopted by the Canadian government as well.

### X.

Upon the grounds which have been set forth, the Commissioners advise that the Legislature take such action as may be appropriate to acquire the lands described in the accompanying maps, provided the same can be purchased for a reasonable price, and that a Commission be appointed with power to take the necessary legal measures.

Should the Legislature be so disposed, the act for the purpose may be limited to authorize merely the necessary preliminary measures,

\* Since this report was prepared the legislature of Ontario has taken preliminary action for the purpose.

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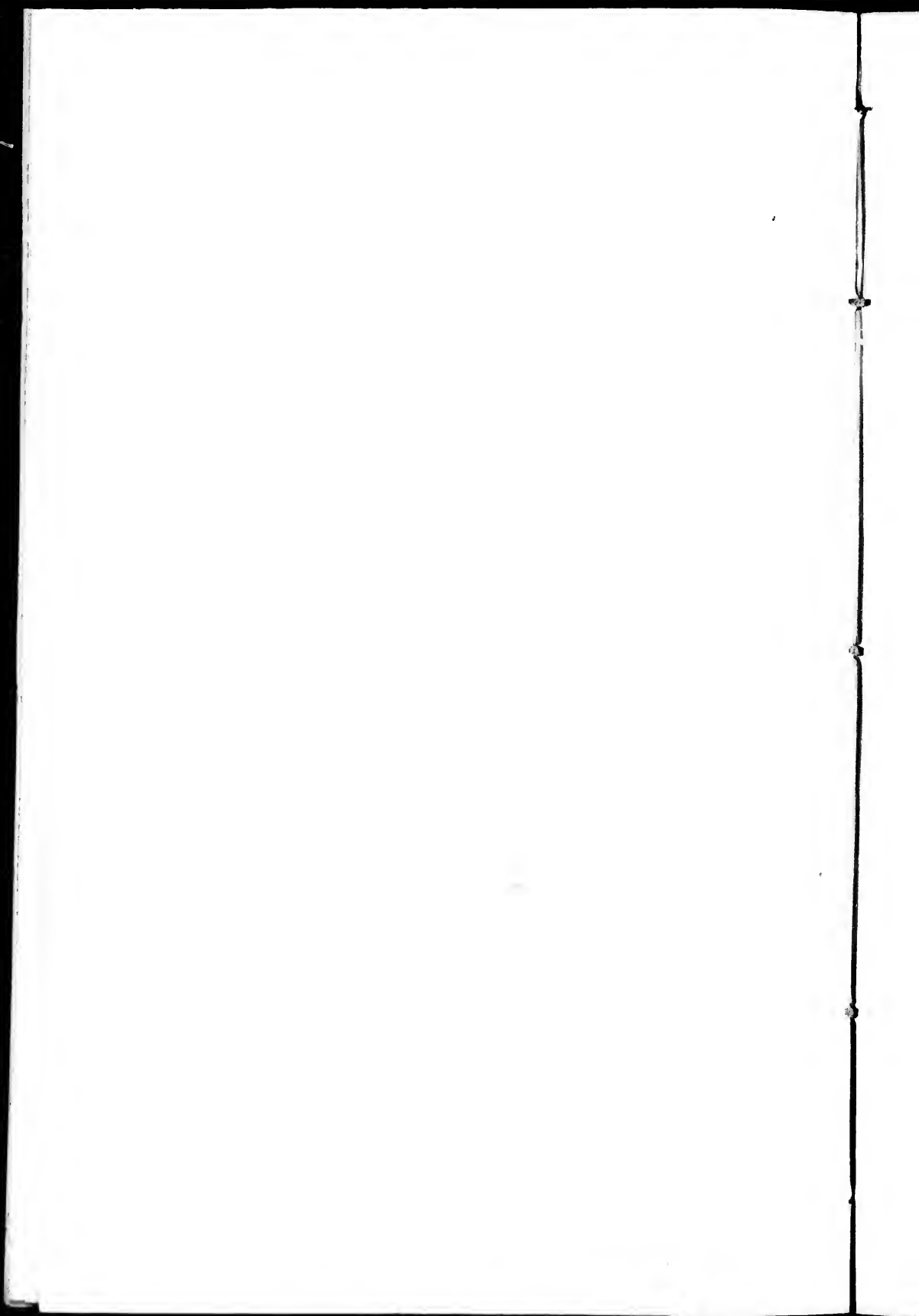
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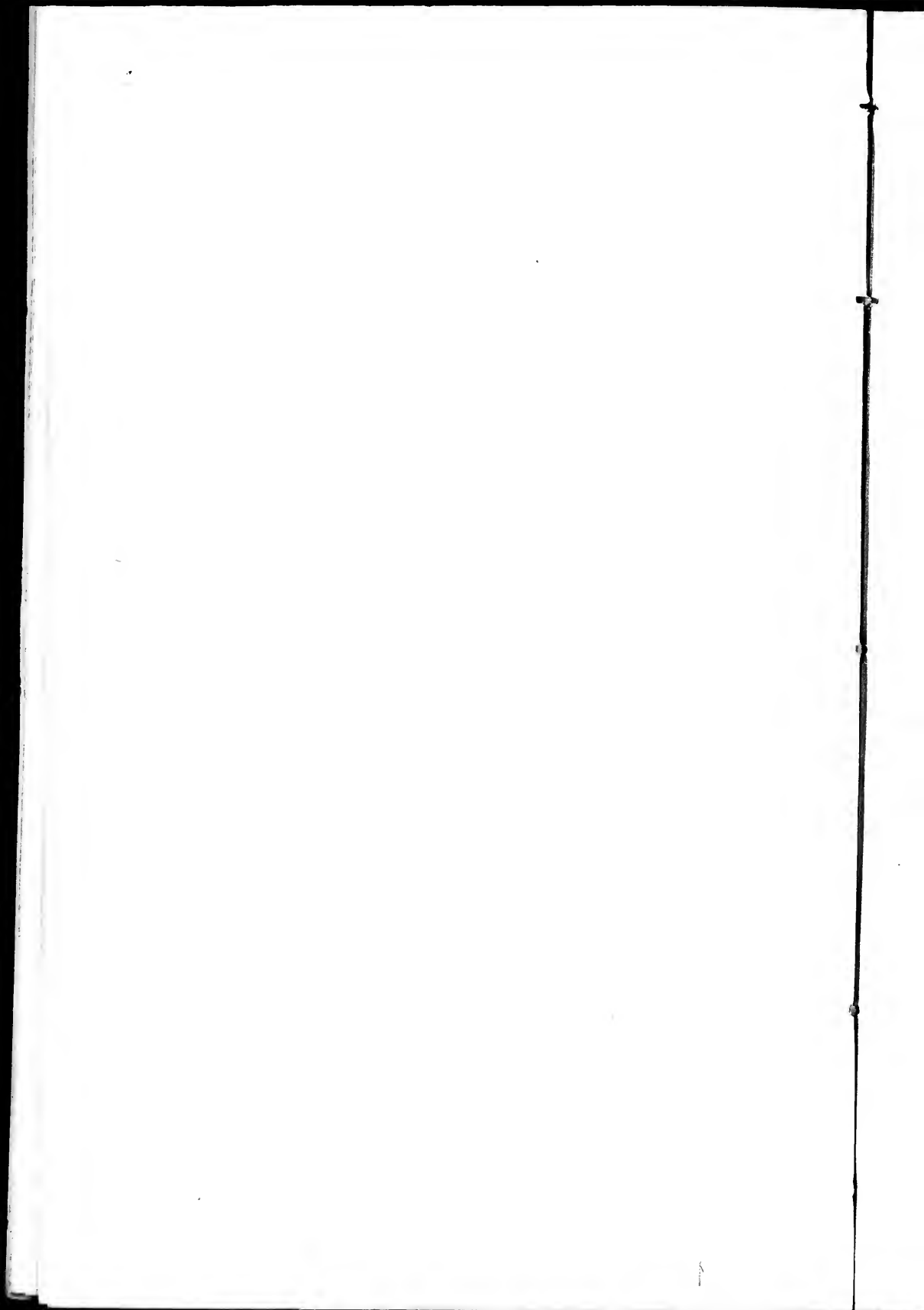
leaving it for the following Legislature to make the appropriation if it shall see fit to do so, after the awards have been made, and it has thus been determined what the actual cost of the lands will be. This would avoid any danger of involving the State in unforeseen expense.

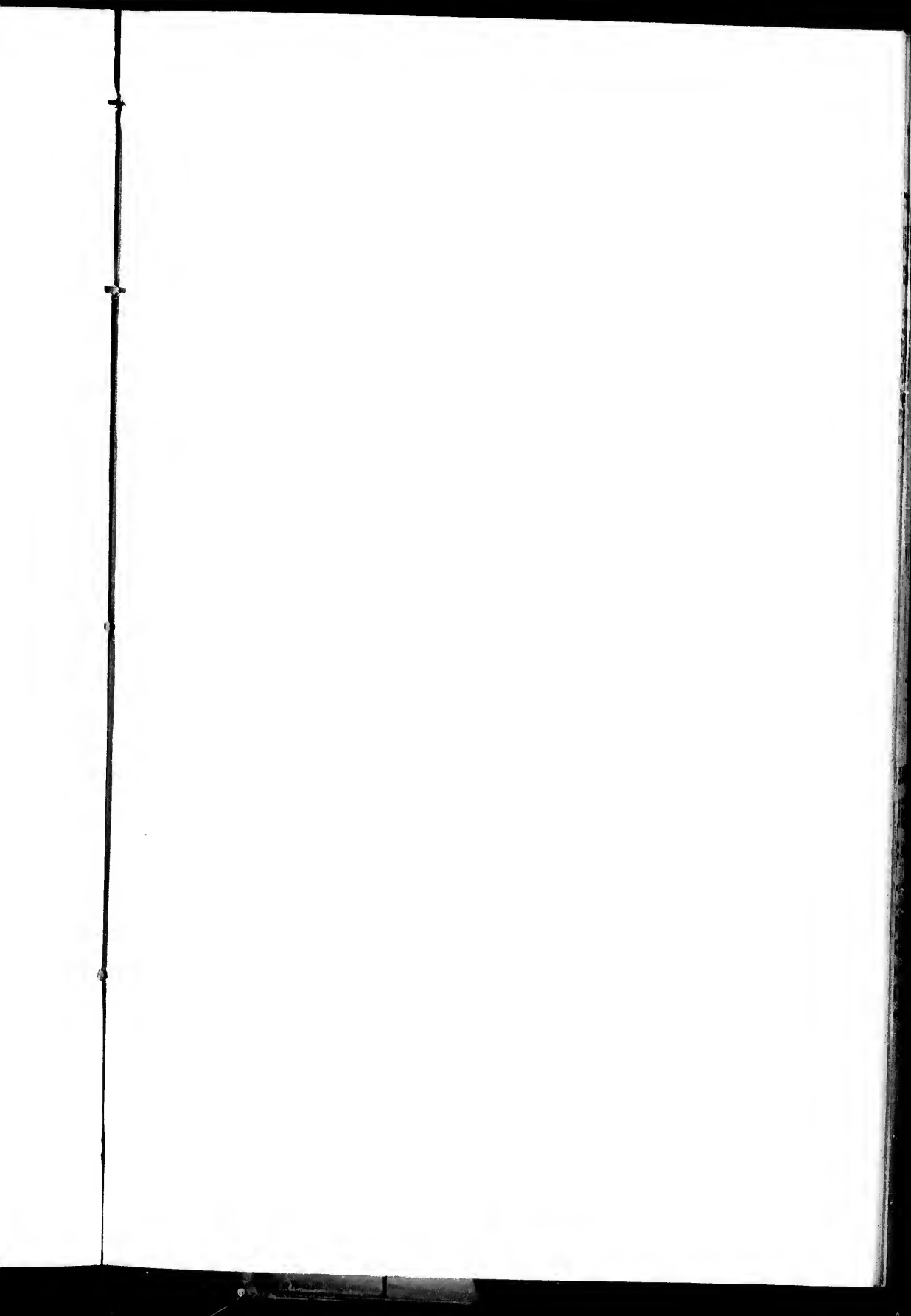
All of which is respectfully submitted,

W. A. WHEELER,  
ROBT. S. HALE,  
WILLIAM DORSHEIMER,  
FRANCIS A. STOUT,  
GEO. GEDDES,  
F. A. P. BARNARD,

*Commissioners.*

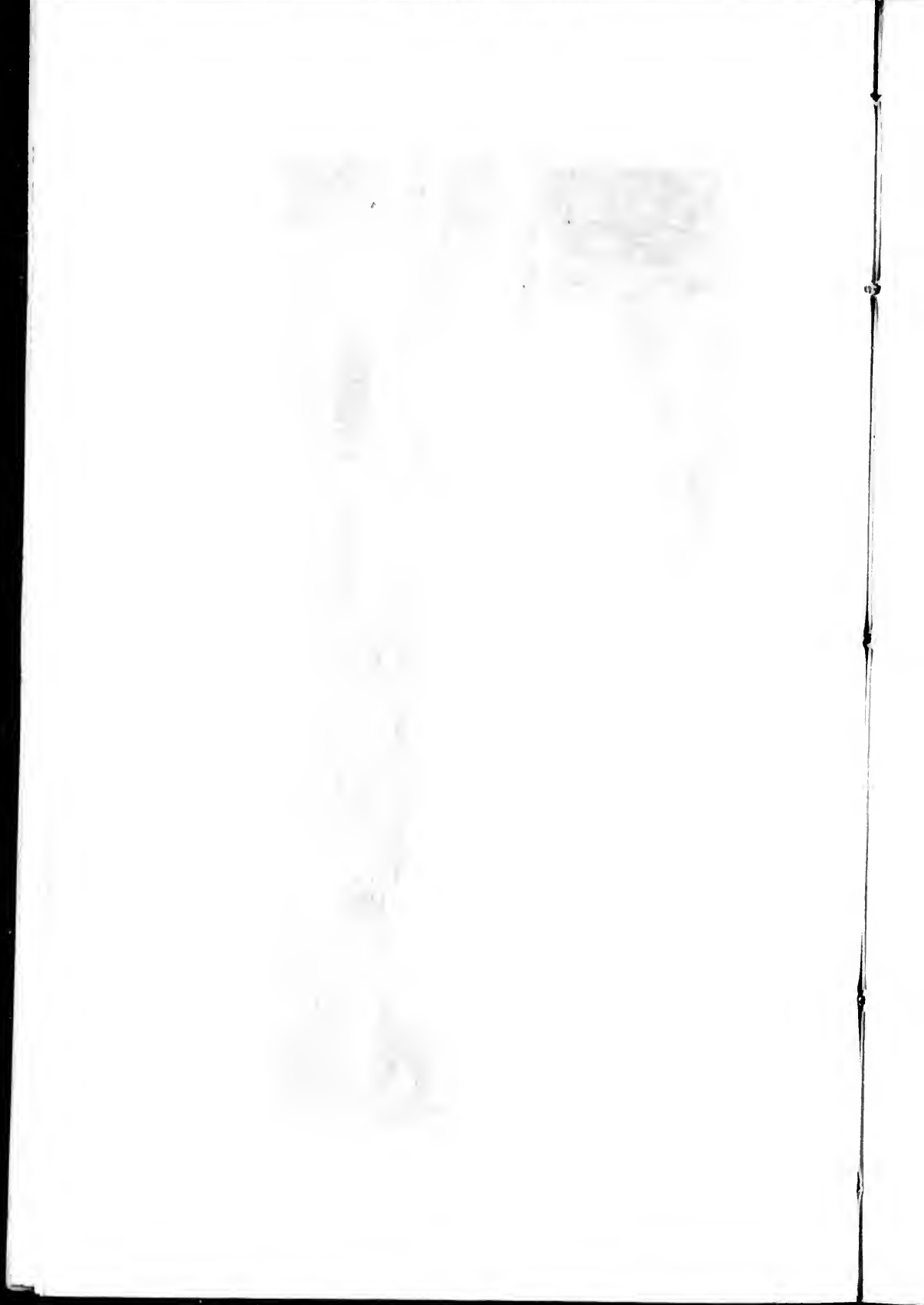








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## REPORT OF THE DIRECTOR.

*To the Board of Commissioners of the State Survey :*

Lord Dufferin's proposal that the land about Niagara Falls should be controlled by the governments of Ontario and New York, for the benefit and protection of the public, was at first looked upon rather as an expression of philanthropic sentiment than an earnest proposal of a practical measure. Unsympathetic critics suggested that his kindly nature had been unduly moved by witnessing the tortures of his fellow-beings under persecutions of hackmen, importunities of perambulating photographers, and all the pocket-draining exactions of endless gate-keepers and guides, who combine to make the visitor's life miserable and his stay short at Niagara Falls. When, however, Governor Robinson put the matter so forcibly in his last message to the Legislature, appealing to the pride of the people to protect this great and beautiful gift of nature from being degraded into a show and made the means of exasperating extortion, while the shores, once forest-clad, became mill-sites and places of amusement, the appeal found a response in the feelings of our citizens ; and the Legislature directed the Board of the State Survey to inquire, consider, and report what measures it may be expedient for the State to adopt, to carry out the suggestions contained in the annual message of the Governor, with respect to Niagara Falls.

In accordance with your directions and accompanied by Mr. Frederick Law Olmsted, Landscape Architect, I first visited Niagara Falls on the twenty-eighth of May.

Although sympathizing in the pride which every citizen of the State feels in our possessions in the great cataract, whose wonders have for two hundred years been better known to Europeans than any other one thing in America ; and feeling that the preservation of its beauties

was a matter of personal interest to every New Yorker; feeling too, that this scene of nature's grandest effort is a precious inheritance to be handed down to our children unmarred by the destructive hand of the money-maker or the decorations of art; yet I was not convinced that to accomplish this, it would be necessary for the State to assume control of the lands about the Falls. Therefore, with an unprejudiced mind, I was prepared to examine the facts that lay before us.

Four principal elements combine to make Niagara what it is: the rapids; the picturesque islands around which they rush; the Falls themselves, and the deep chasm below. A mile above the Falls, the river is spread out broad and calm and placid as a lake. At the upper end of Goat Island, the smooth surface breaks suddenly into furious rapids, whose wild, white-crested waves, hurrying with ceaseless roar to the inevitable brink, are almost as impressive as the Falls themselves. In the midst of this scene of turmoil and irresistible rush of waters stands Goat Island, with fifteen smaller islands and islets about it. Goat Island is more than half a mile long by a quarter of a mile broad. The surrounding islets vary from 400 feet to ten feet in diameter. On all of these, except Bath Island, the hand of man has spared the primeval forest. Picturesque clusters of evergreens, rising out of dashing waters, the rich overhanging foliage of the high banks of Goat Island and deep seclusion of its woods, give to this spot a charm not shared by any other about Niagara. The views of the American and Horseshoe Falls seen from the west end of the island are far more impressive, sink deeper into the mind than any others, because only here the visitor finds himself surrounded by the influences of nature.

Half way between Goat Island and the American side of the river is Bath Island, whose position in the middle of these rapids must have made it a fascinating place in early days. In an evil hour it entered into some man's mind to start a paper mill there—small at first, but extending year by year, till in place of graceful woods, the ground is covered with unsightly sheds and buildings, and the rapids above are disfigured with wing-dams and ice barriers; the whole group forming a shocking contrast to the natural scenery.

This paper mill is, however, only one among the many abominations which mar the beauty of the American Rapids. Their eastern bank was once rich in verdure and overhung with stately trees. In place of the pebbly shore, the graceful ferns and trailing vines of former days, one now sees a blank stone wall with sewer-like openings

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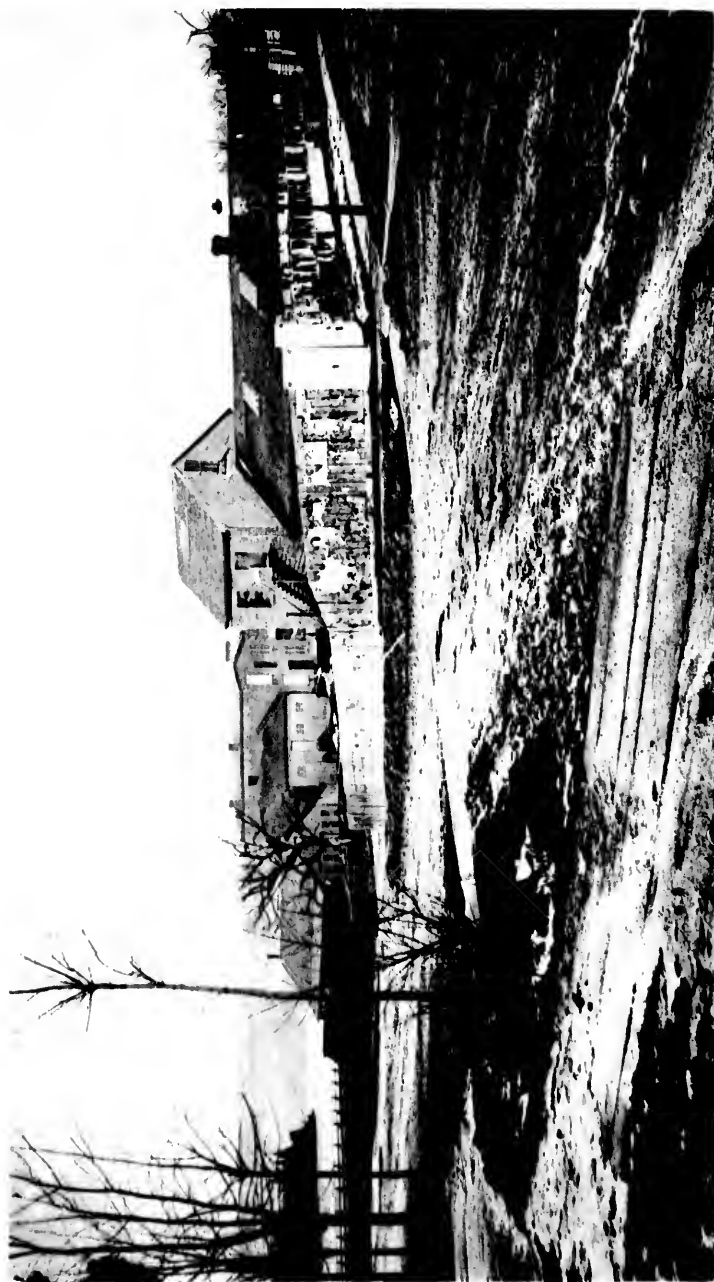


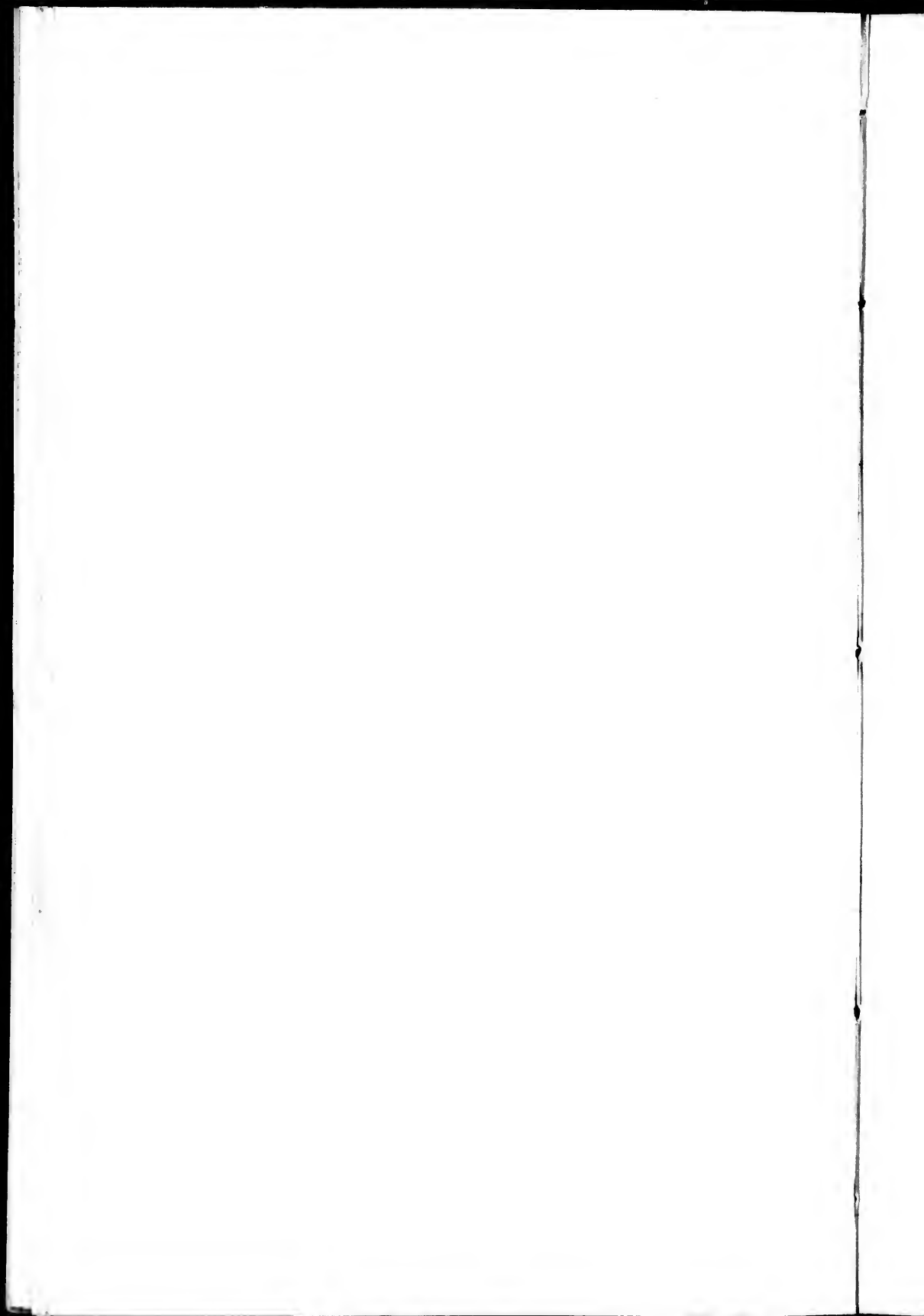
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through which tail races discharge ; some timber crib work bearing in capitals a foot high the inscription, " Parker's Hair Balsam ; " then further up stream, more walls and wing dams. Overlooking this disfigured river brink stands an unsightly rank of buildings in all stages of preservation and decay ; small " hotels," mills, carpenter shops, stables, " bazaars," ice-houses, laundries with clothes hanging out to dry, bath houses, large, glaring white hotels, and an indescribable assortment of miscellaneous rookeries, fences, and patent medicine signs, which add an element of ruin and confusion to the impression of solid ugliness given by the better class of buildings. And all this is the back ground to one of the grandest spectacles in the world, the rapids of a mighty torrent writhing and foaming in the fury of its downward rush. Is it any wonder that visitors do not desire to remain long in the presence of such discords ; but, when the first feeling of curiosity is satisfied, hasten away ? In looking at the Falls from Goat Island or the Canada side, one cannot help seeing these rows of buildings which line the village shore of the river. Only one spot invites the eye to rest on its green trees. This is Prospect Park at the east end of the American Falls. But even here, the hand of the progressive owner has torn away the shrubs and rich masses of woodbine that clustered along the edge of the precipice, and in their place are seen walls and structures supposed to be for the safety and entertainment of travelers.

The Falls themselves man cannot touch : but he is fast destroying their beautiful frame of foliage, and throwing around them an artificial setting of manufactories and bazaars that rouse in the intelligent visitor deep feelings of regret and even of resentment.

The chasm below the Cataract depends for its impressiveness largely upon the wooded character of the debris slopes and the maintaining of a fringe of verdure along the very brink of the precipice. Here, too, those elements which are essential to the perfection of the landscape are rapidly disappearing. Two mills and a brewery, all built within a short time, near the bank about half a mile below the Falls, warn us of what is coming.

From this sketch of the existing state of the surroundings of Niagara, it will be seen that little remains of their original beauty, except on Goat Island, where the primitive forest still stands as it did in the days of Father Hennepin's first visit to the great cataract in 1679. The island has been carefully preserved from " improvement " by the owners (the Porter family), but it will probably soon pass from

their hands, owing to a partition suit now in progress. I made careful inquiry concerning the nature of the proposals for purchase which have been made, to ascertain what will be the probable fate of the Island when it is sold. By some it has been proposed to cut the woods off the Island, and make a race-course of it; others think it a favorable site for a great summer hotel; others wish to make a rifle range upon it, while another and more practical party suggest cutting a canal down the centre of the island and building a row of factories along its front between the American and Canadian falls. All these, and other schemes that I heard of in connection with the sale of the Island, contemplate the destruction of this one remaining piece of native forest.

I became fully convinced that within a short time, unless the State buys Goat Island, it will be sold to some one who, in order to secure from his investment a good return, will make the Island a place of amusement or of manufacturing. No power but that of the State can save this delightful spot from the fate which has overtaken all other pieces of forest around the Falls.

It remains, then, for us to consider what could be done, by State intervention, to restore to all the river shores something of their original character.

It is now a clearly recognized duty of governments to reserve from sale parts of the public domain that contain natural features of such unusual character as to be objects of interest to the whole world, and whose perfection may be seriously marred by private ownership. Free enjoyment of these noblest works of nature is now felt to be one of man's most precious privileges, not to be abridged by private rights or greed for gain. Acting on this principle the general government in 1865 dispossessed settlers in the Yosemite valley, and reserved it for the benefit of the public. A great tract covering the region of the Yellowstone Geysers has also been designated as a National Park, and now the land occupied by the California Big Trees is dedicated to public use. The State of New York also has taken a similar position respecting the beautiful Islands of Lake George.

A hundred years ago the land along Niagara river belonged to the State. Every one realizes that it never should have been sold; but all the islands and a belt at least a quarter of a mile broad and five miles long should have been kept for public use. The error made by the State in parting with this territory will never be fully repaired. Much of the harm done is irretrievable, but much can even yet be accomplished at a reasonable expense to restore the lost attractions.

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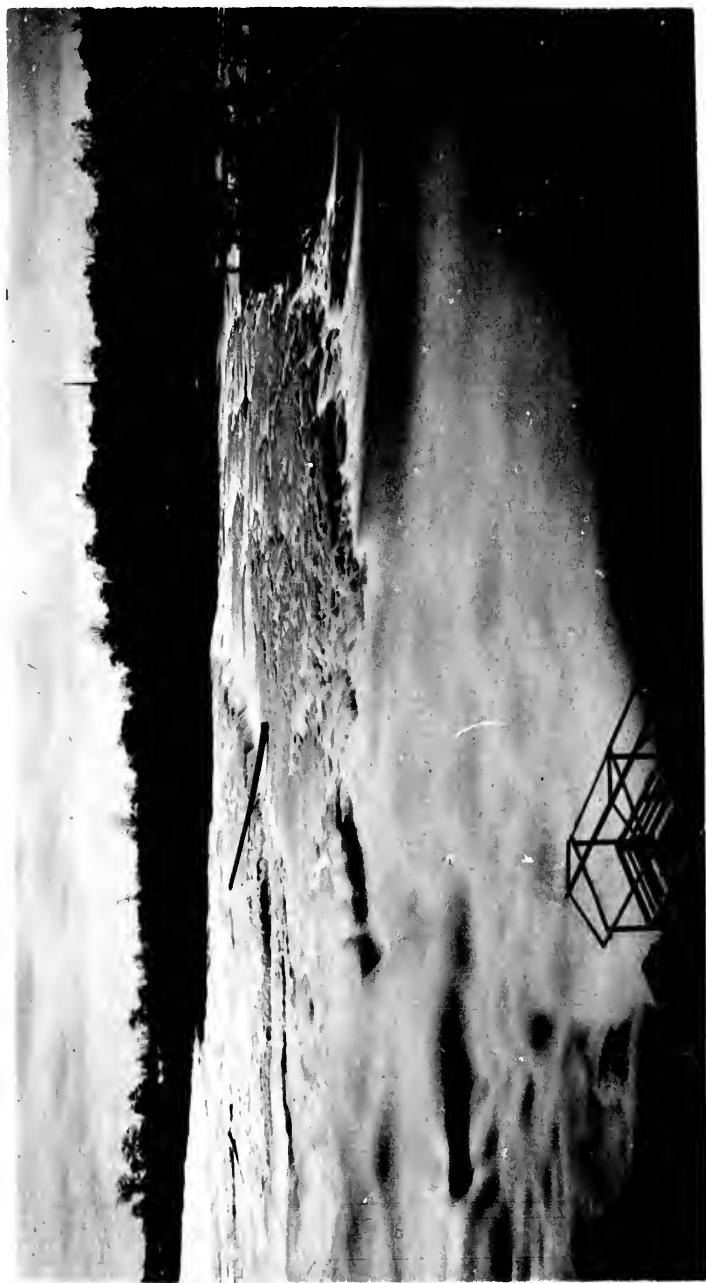
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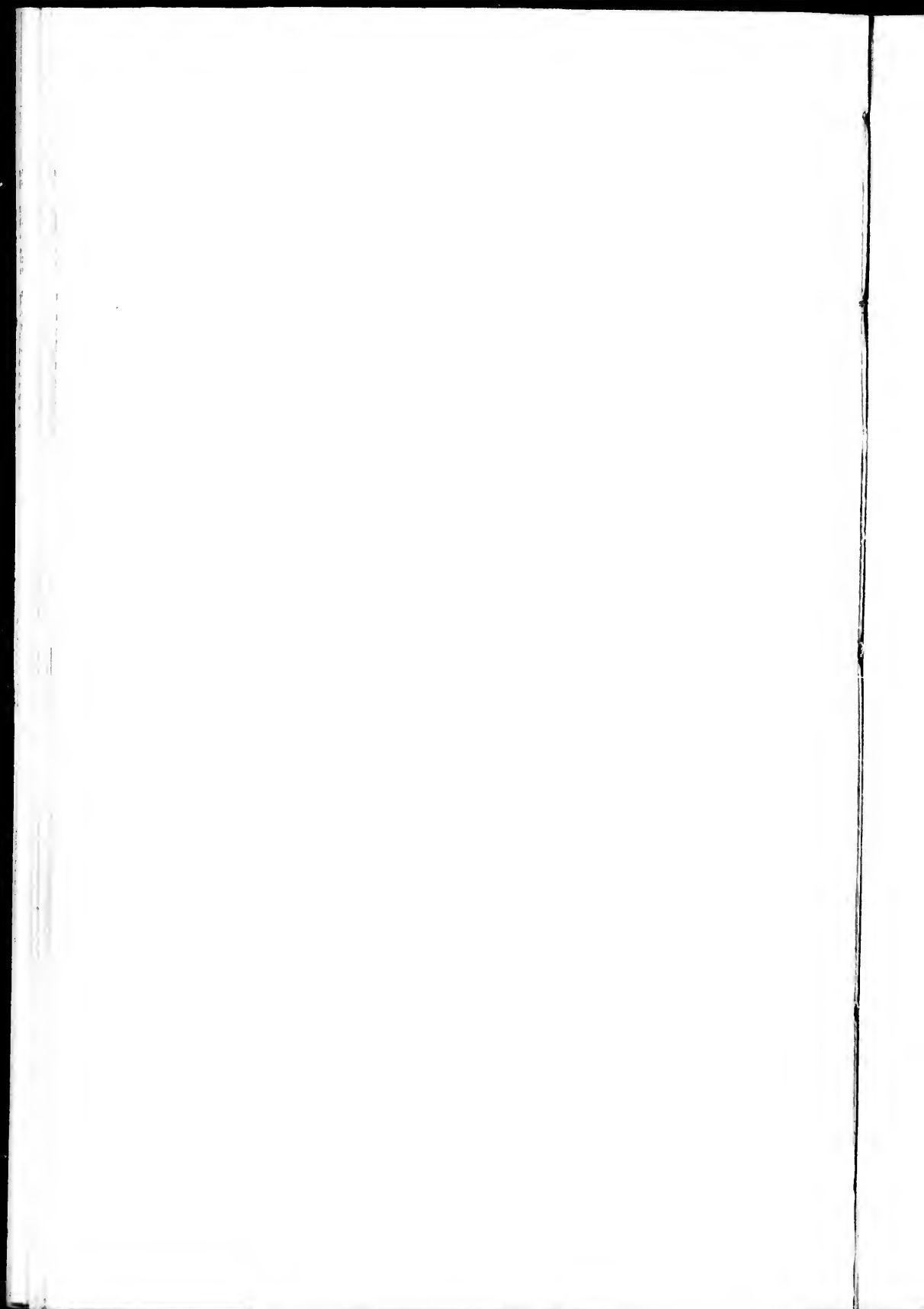
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Goat Island, preserved hitherto by the kindly care of the Porters, may still be rescued from becoming either a mill site or a circus; the structures may be swept from Bath Island and the Rapids, and the spot restored by planting to its former beauty; on the main shore by the removal of seven good buildings and ten of little value, the river front of Niagara Village may be cleared from Port Day to upper suspension bridge, giving a belt of public land a mile long and widening from 100 feet at the head of the rapids to 800 feet broad at the Falls, where most room is needed for visitors.

By planting this strip of land with trees the whole village may be shut out from view—"planted out"—and the unsightly walls, the sewer mouths and wing dams replaced by natural banks like those of Goat Island.

To make an effectual screen of trees between the river and the village it is necessary to plant the top of the terrace which is approximately followed by the line of Canal Street.

After careful study of the ground, Mr. Olmsted and I are of opinion that from the suspension bridge to the head of the Rapids the east side of Canal Street should be the boundary of the State reservation and that any narrower belt along this part of the river will not answer the desired purposes. The number of acres to be purchased would be about 77. Prospect Park and the lots east of it would be included. From the rapids up to Port Day, River Street runs along the water's edge. The street is so broad, (from 60 to 100 feet,) that room is given for both roadway and trees. Control of the street should be assumed by the State, and it should be planted, and protected in connection with the lands opposite the rapids. To realize the total change that the carrying out of this plan would make in the aspects of Niagara, those who are not familiar with the scene may compare the accompanying photographs of the village shore with the picture of the same ground as it will appear when restored, according to our plan.

We recommend also that the State acquire title to the debris-slopes under the cliff from the American falls to the railroad suspension bridge for the purpose of preserving and restoring the woods that border this part of the river. As the land is worthless for building, it can doubtless be obtained for little or nothing.

We also recommend that the right be secured to plant and maintain a narrow belt of trees with a walk at least a mile in length along the edge of the cliff below the suspension bridge. This planted belt need not be over twenty five or thirty feet broad. Its trees will

clothe the barren nakedness of the cliff edge and partially screen out mills and unsightly structures from the river views, and at the same time afford shade to visitors enjoying the profound impressions of this part of the chasm. The State need not buy the land but only secure a right to plant and preserve. The property belongs to the Hydraulic Power and Canal Company and is to be used for Mills. The walls of these mills will be set back from the cliff, their wheel pits only being sunk at the edge of the precipice. There will be few of these pits, and they can be easily bridged for the proposed walk. The President of the Company owning this property has assured us that he will willingly cede the desired right to the State.

By referring to the accompanying Property Map of Niagara Falls Village, it will be seen that a number of streets are included in the proposed reservation. The State has full power to take possession of those where they have been accepted and belong to the Village. One of these public streets, Water Street, has been fenced up and made to appear as part of Prospect Park, but it is clearly the right of the village or the State to reopen it, as in 1853 and 1868, it was in due form accepted by the village (see Proceedings of Village Trustees, Vol. I, pages 260-265; Vol. III, pages, 177, 178, 180 and 181), and after legal trial was, in 1874, specially decided by Judge Daniels to be a public highway.

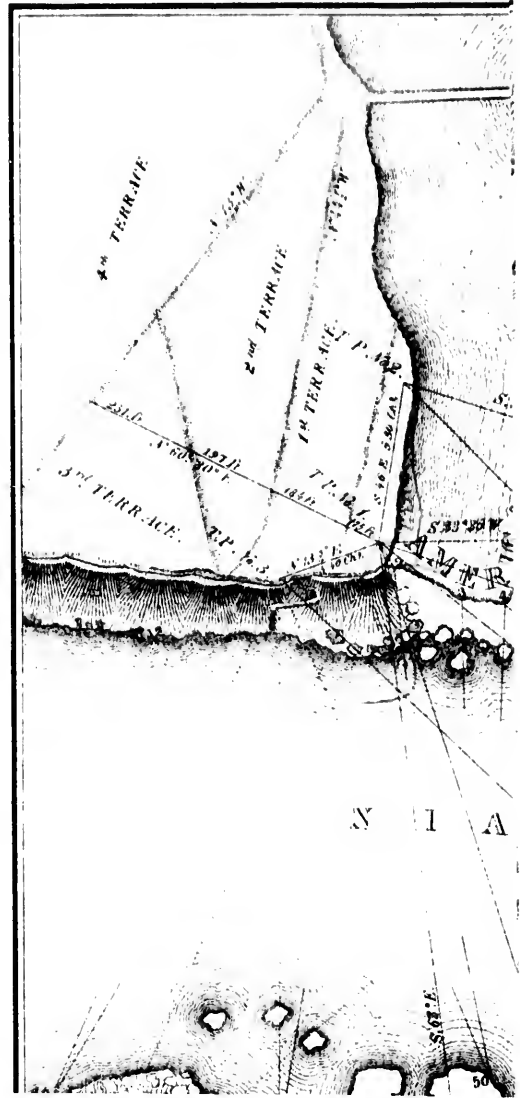
I made a very careful investigation into the value of the property covered by our plan and had the principal buildings which would be removed appraised by a most experienced builder, who went from Albany for that purpose. The results are before your Board, but it is evidently impossible for me to estimate what the property will cost the State when the price to be paid for land condemned under the right of eminent domain must be fixed by a commission.

It is, however, to be hoped that the great value to the locality of the proposed reservation will be so evident to all that reasonable prices will be asked; and that a project which should appeal to the pride of every citizen may not be degraded in public estimation by being made a means of private gain.

In a spirit of patriotism what remains of Niagara's beauty should be preserved; what is lost should be restored. Only the power of the State can accomplish this.

And now more than ever, the great Cataract is the property of the whole people. A visit to the Falls is no longer the luxury of the rich. Excursion rates on the railways have made it possible for the

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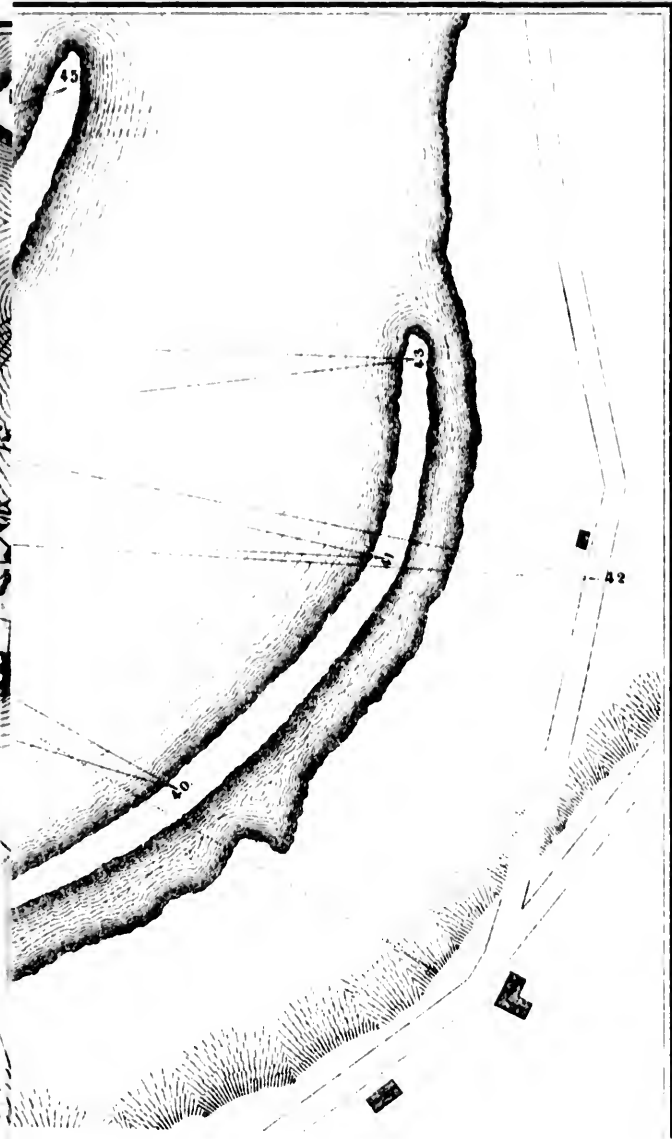
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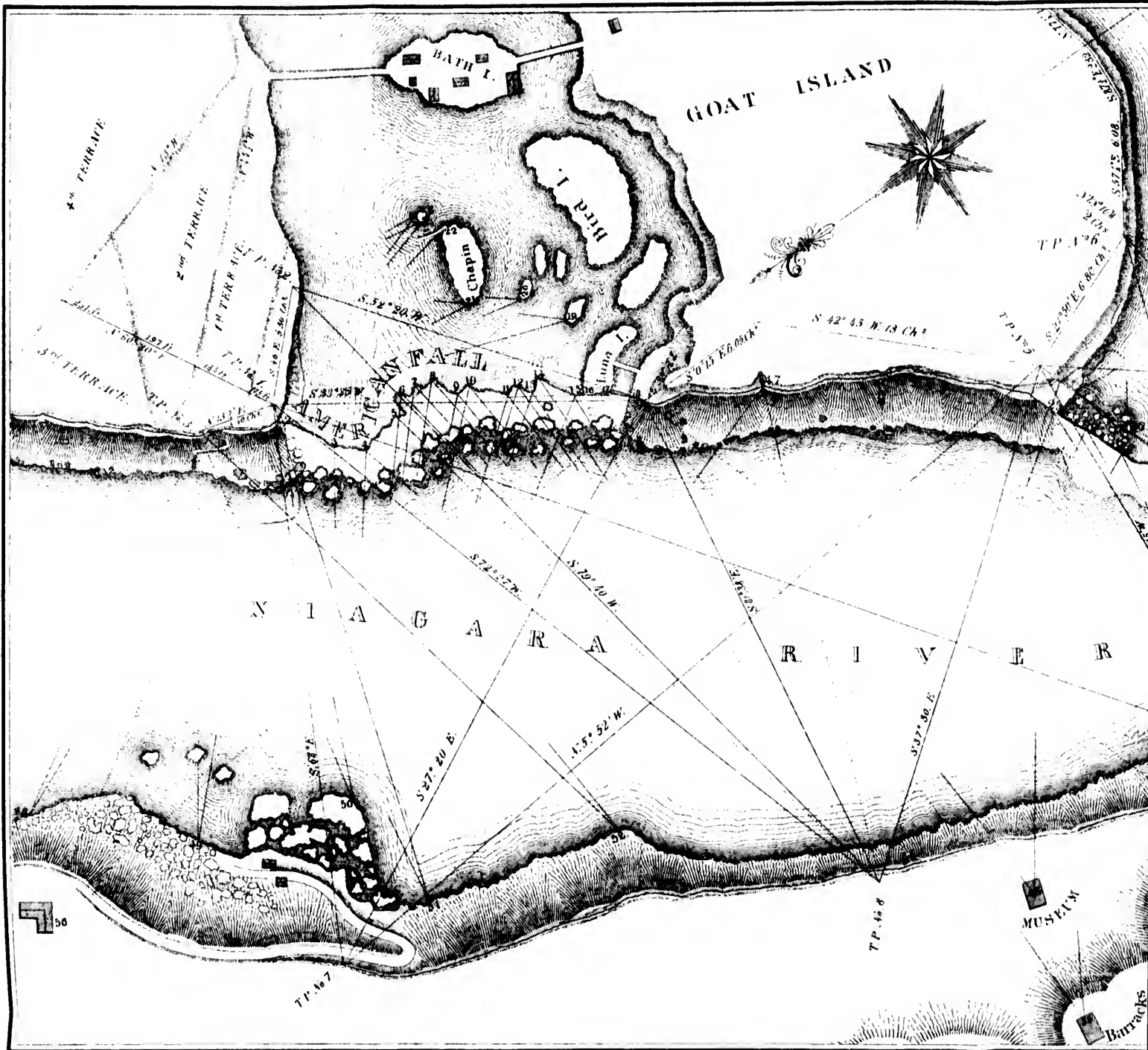
humblest citizen to see Niagara, and more than 100,000 visitors came this season. The heavy local exactions fall most oppressively on the poor, but to the wealthy they are simply annoying. While, therefore, the plan of a State reservation appeals to the taste and aesthetic comfort of the rich, it also promises relief to the pocket of the poorer citizen, wishing to enjoy his rights in our common inheritance.

The maps accompanying this report show the plan of the property which Mr. Olmsted and I recommend to be taken by the State and reserved for public use. The illustrations exhibit the present aspects of the neighborhood of the Falls, and an ideal view of the American Falls and Rapids as they will appear if the restoration is carried out. Although truthful in the general impression conveyed, such a view cannot, of course, be accurate in detail.

I have appended to the report a facsimile of the first printed description of Niagara Falls by an eye witness and the first picture of them; both taken from the first edition of Father Hennepin's narrative. It is interesting to consider that many of the trees standing now on Goat Island looked down on this first recorded visit of a white man to the Falls, and have remained the only living witnesses of those important scenes in the dramas of European conquest in America which were enacted at this all-important portage in the great water route to the heart of the continent. The savage chiefs and conquering generals, the tribes and armies that moved along this well-known track from Ontario and launched their vessels on the river above Goat Island, are gone, but the trees that shadowed the flashing stream still remain to make the past real and bring vividly to memory our wonderful progress.

Is it wise to allow the destruction of these living monuments of history? Will not posterity justly scorn a generation which permits them to be cut down to make way for a race-course or a parade-ground?

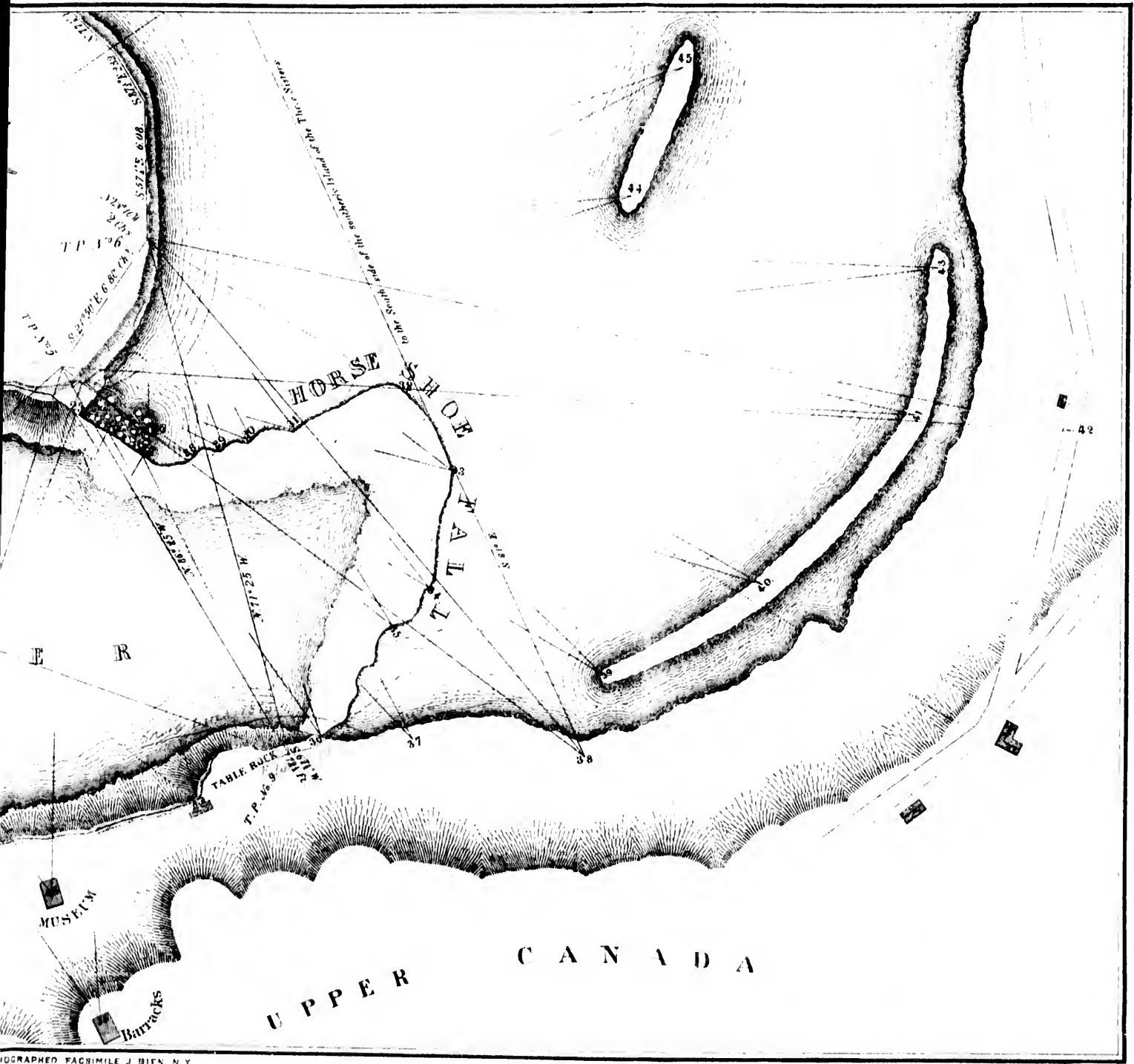
While the great trees of Goat Island have stood fast through the centuries since Hennepin's visit in 1679, the Falls themselves have greatly changed, receding as the rocks are worn away by the water. Exactly where the Falls stood two hundred years ago we do not know. Their position at different periods may to a certain extent be conjectured by what we know of the recession during the thirty-three years from 1842 to 1875. Owing to the foresight of Prof. James Hall, a trigonometrical survey of Niagara was made in 1842, and the resulting map accompanied his report to the State. I have had the



W. S. Hayes Draft

PHOTOLITHOGRAPHED FACSIMILE J. B. H.

TRIGONOMETRICAL SURVEY of the  
*Executive for the Geological Report*  
IN 1842.



PHOTOGRAPHED FACSIMILE, J. BIEN, N. Y.

**SURVEY of the FALLS of NIAGARA**  
*and Report of the Fourth District.*  
IN 1842.

*E. R. Blackwell Civil Engineer*



map reproduced, and drawn on it in red the position of the brink of the Falls in 1875, according to the triangulation of the United States Lake Survey. This map which accompanies my report shows the unexpected fact that the Horse Shoe Falls have receded in places 160 feet during thirty-three years, and that a large island has disappeared which formerly existed in the midst of the Canadian Rapids. These remarkable physical changes are of deep interest, and their progress should be watched and recorded with great care. The conclusions to be attained by accurate geological study of the region open almost limitless views into far-reaching vistas of the continent's physical history.

Whether, then, we consider Niagara in the light of its glorious scenery, swaying the imagination of the world and drawing to its shrine more visitors than any other of nature's works, or whether we regard its associations with American history and the deep lessons that it can teach of earth's changes through working of great natural forces : in either view it is wonderful, it is unparalleled, it is priceless. But we find its treasures in the grasp of money-getters, and its sacred groves assailed by the axe of the mill-man or desecrated by the purveyor of public amusements ; and are convinced that destruction of the scenery will be swift and certain unless the all-powerful State shall appear as the preserver of Niagara.

Very respectfully submitted,

JAMES T. GARDNER,

*Director,*

*New York State Survey.*

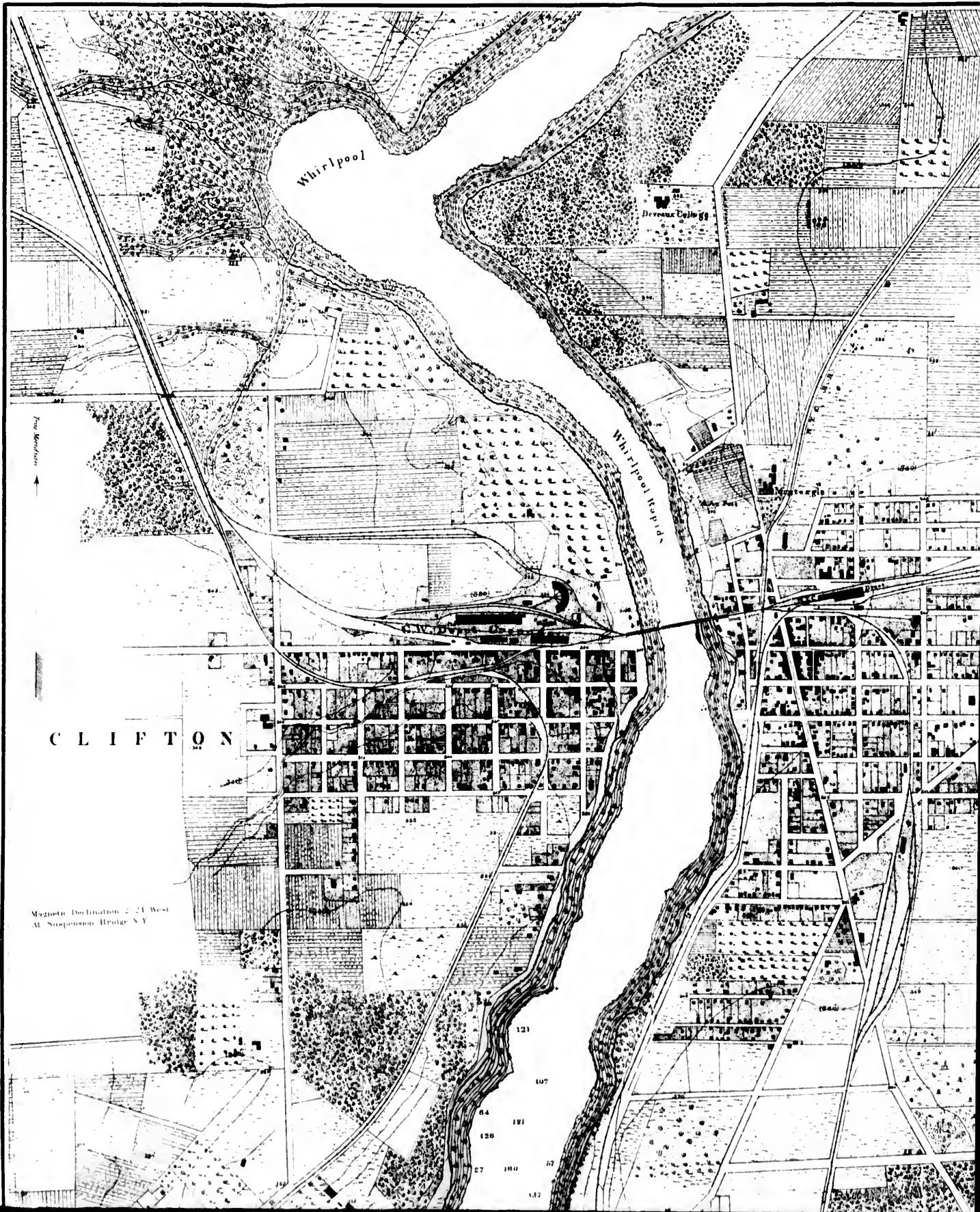
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Whirlpool

Devoaux College

Whirlpool Rapids

CLIFTON

Magnetic Declination 2° 21' West  
At Suspension Bridge N.Y.

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187

# MAP OF NIAGARA FALLS

SHOWING  
PROPOSED RESERVATIONS  
FOR  
PROTECTION OF THE SCENERY.

APPROVED BY  
COMMISSIONERS OF THE  
NEW YORK STATE SURVEY,  
AND THE  
REPRESENTATIVES OF THE  
PROVINCE OF ONTARIO.

JAMES T. GARDNER  
DIRECTOR N. Y. STATE SURVEY

1879.

SCALE OF FEET

SCALE OF METERS

SCALE OF MILES

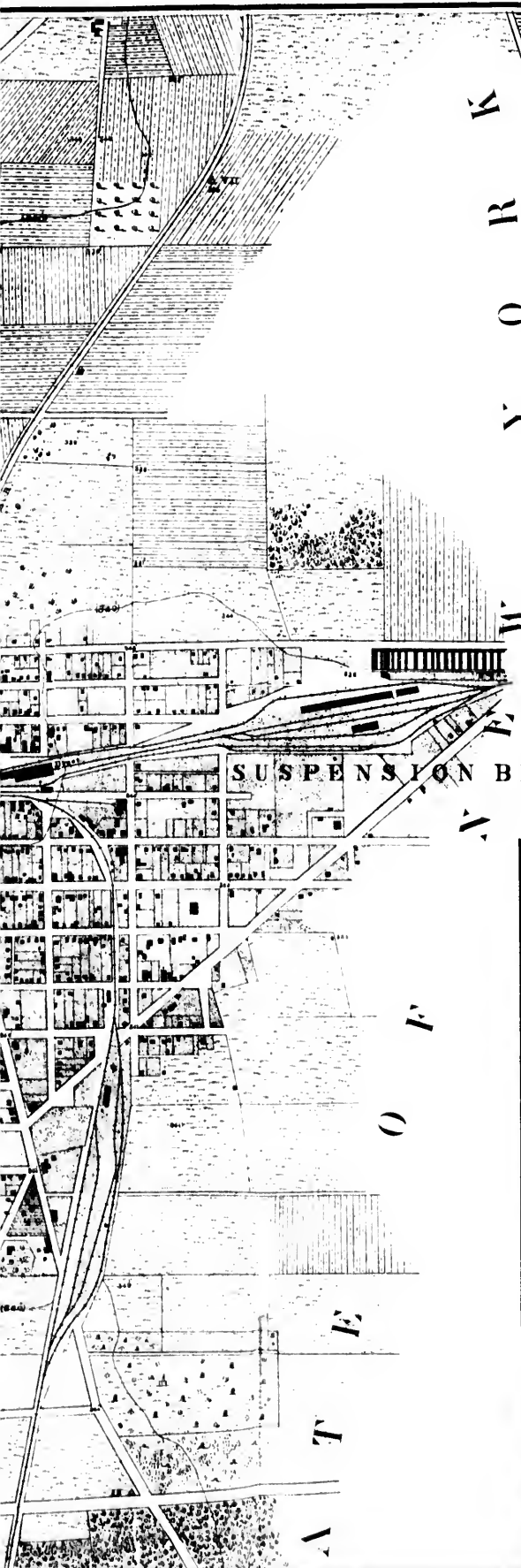
## NOTES

The contour lines represent the elevation of the surface by horizontal planes 20 feet apart, and are reduced to the level of the Niagara at Lewiston, which is a foot 2 feet above the level of Lake Ontario.

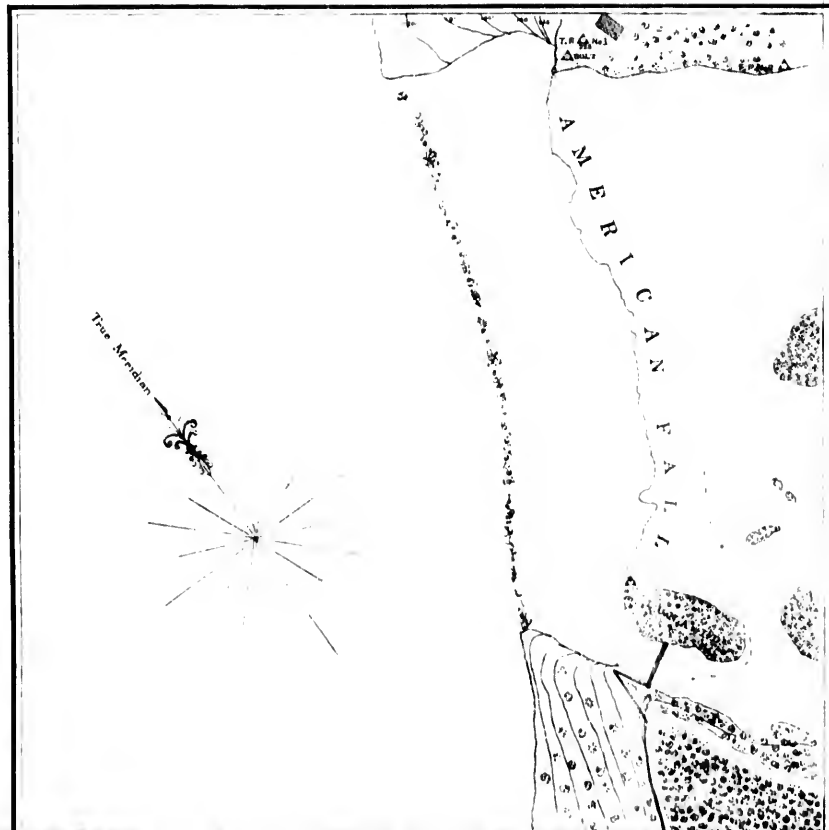
The contour lines were prepared by Assistant Engineer J. M. Lower, July 1st August 1877 under direction of Asst. Engineer C. Donnan.

The map is prepared by permission from the U. S. Lake Survey, Niagara Falls, from surveys executed under the orders of Major W. G. Constock Chief of Engineers, First Regiment, Engineers, U. S. Army in 1875.

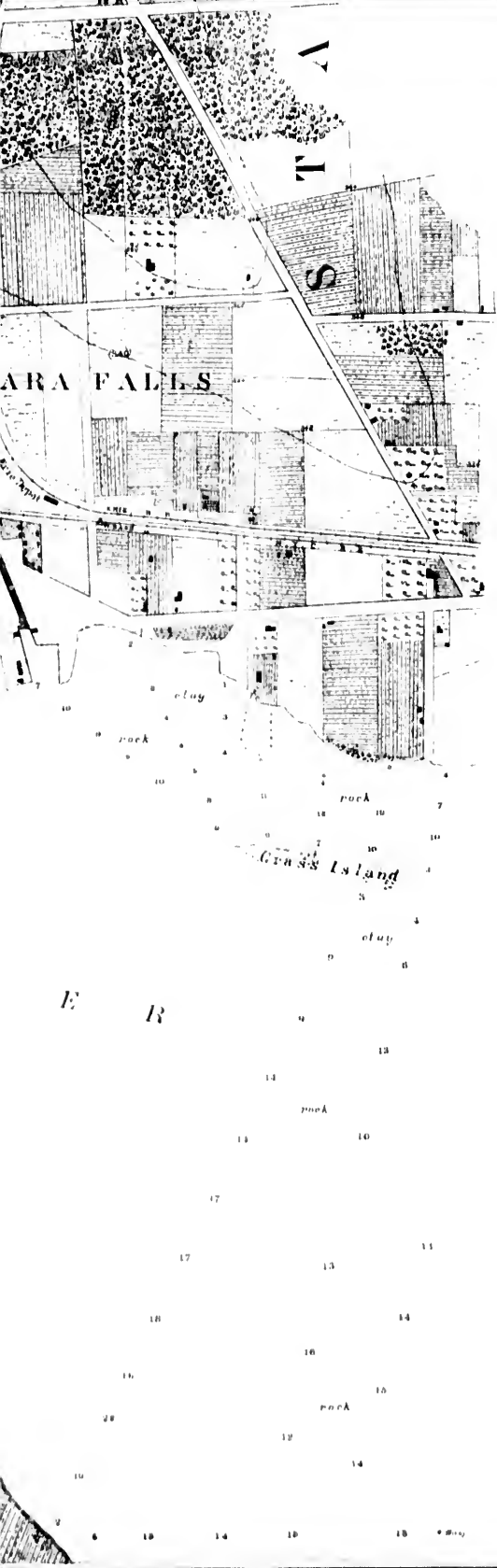
Reservations are printed in green.



SUSPENSION BRIDGE







# MAP OF NIAGARA FALLS

SCALE 2500

## NOTE

Stations marked  $\Delta$  are prominent and of the following description.

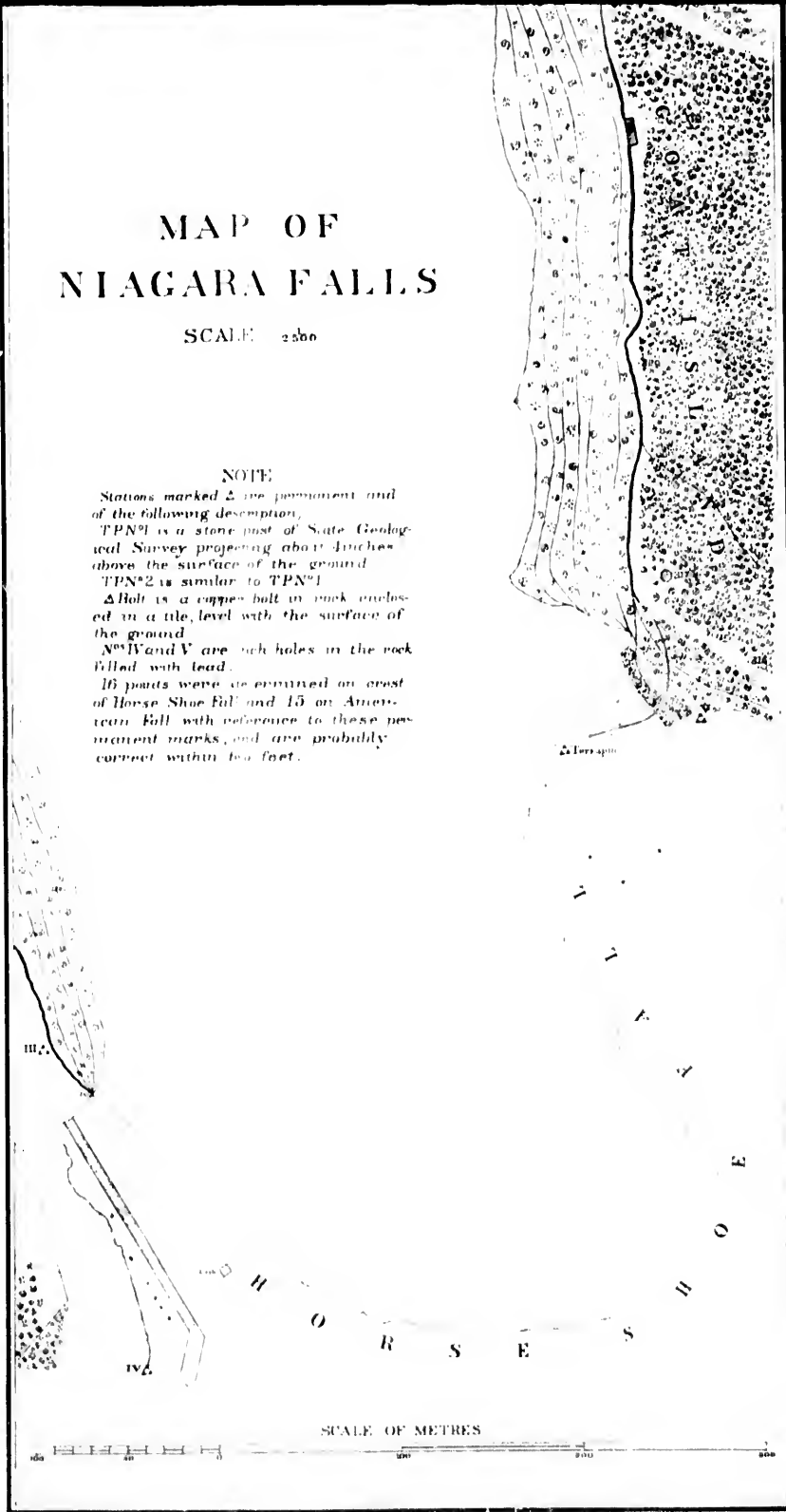
TPN<sup>o</sup>1 is a stone post of State Geological Survey projecting about 4 inches above the surface of the ground.

TPN<sup>o</sup>2 is similar to TPN<sup>o</sup>1.

$\Delta$  Bolt is a copper bolt in rock enclosed in a tile, level with the surface of the ground.

N<sup>o</sup>s W and V are nich holes in the rock filled with lead.

16 points were ascertained on crest of Horse Shoe Fall and 15 on American Fall with reference to these permanent marks, and are probably correct within ten feet.



map reproduced  
the Falls in 187  
Lake Survey.  
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## NOTES BY MR. OLMSTED.

The few notes which I propose to append to Mr. Gardner's report will be directed to a single point.

There are those, and I fear that most of the people of Niagara are among them, to whom it appears that the waterfall have so supreme an interest to the public that what happens to the adjoining scenery is of trifling consequence. Were all the trees cut away, quarries opened in the ledges, the banks packed with hotels and factories, and every chance-open space occupied by a circus tent, the falls would still, these think, draw the world to them. Whatever has been done to the injury of the scenery has been done, say they, with the motive of profit, and the profit realized is the public's verdict of acquittal.

It must be considered, therefore, that the public has not had the case fairly before it.

The great body of visitors to Niagara come as strangers. Their movements are necessarily controlled by the arrangements made for them. They take what is offered, and pay what is required with little exercise of choice. The fact that they accept the arrangements is no evidence of their approval.

*The real question is, how, in the long run, is the general experience of visitors affected by measures and courses which are determined with no regard to the influence of the scenery!*

I have myself been an occasional visitor at Niagara for forty-five years. My attention was first called to the rapidly approaching ruin of its characteristic scenery by Mr. F. E. Church, about ten years ago. Shortly afterwards, several gentlemen, frequenters of the Falls, met at my request, to consider this danger, one of them being a member of the Commission now reporting on the subject. I have thus had both occasion and opportunity for observing the changed courses into which the public has been gradually led and of studying these courses and their results.

When the arrangements by which visitors were conducted were yet simple; when there were few carriages, and these little used; when a visit to the Falls was a series of expeditions, and in each expedition hours were occupied in wandering slowly among the trees, going from place to place, with many intervals of rest, there was not only a much greater degree of enjoyment, there was a different kind of enjoyment from any now generally obtained. People, then, were loth to leave the place; many lingered on from day to day after they had prepared to go, revisiting ground they had gone over before, turning and return-



ing; and when they went away it was with grateful hearts and grateful words.

The change from this to what is described in the second section of the Commissioners' report has been gradual and, while something must be attributed to modern ease of travel, a greater influx of visitors and to habits of quicker movement and greater restlessness; much must also be referred to the fact that visitors are so much more constrained to be guided and instructed, to be led and stopped, to be "put through," and so little left to natural and healthy individual intuitions.

The aim to make money by the showman's methods; the idea that Niagara is a spectacular and sensational exhibition, of which rope-walking, diving, brass bands, fireworks and various "side-shows" are appropriate accompaniments, is so presented to the visitor that he is forced to yield to it, and see and feel little else than that prescribed to him.

But all the time there are some who, because of better information and opportunities, and as the result of previous training, get the better of this dilliculty, and to these the old charm remains. Take, as an illustration, the experience of the writer of the following passage. It is that of a man who has traveled extensively for the express purpose of observing scenery and comparing the value, as determined by the influence on the imagination, of different types of scenery. It is recorded in a little book which treats more especially of the scenery of the Alps and of what are designated "nature's gardens" among them.\* But says the author:

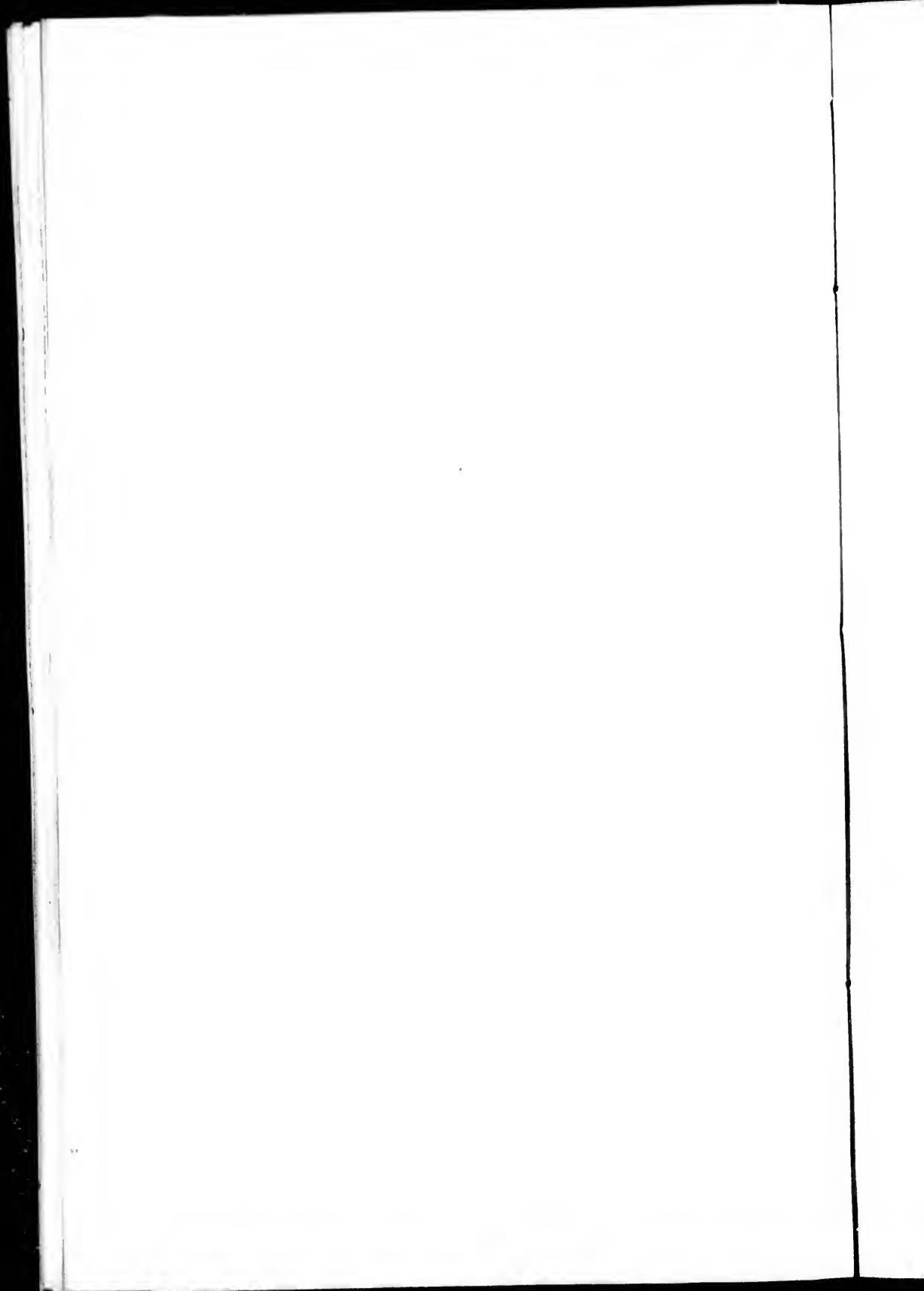
"The noblest of nature's gardens that I have yet seen is that of the surroundings and neighborhood of the Falls of Niagara. Grand as are the colossal falls, the rapids and the course of the river for a considerable distance above and below possess more interest and beauty.

"As the river courses far below the falls, confined between vast walls of rock—the clear water of a peculiar light-greenish hue, and white here and there with circlelets of yet unsmoothed foam—the effect is startlingly beautiful, quite apart from the falls. The high cliffs are crested with woods; the ruins of the great rock walls forming wide, irregular banks between them and the water, are also beautifully clothed with wood to the river's edge, often so far below that you sometimes look from the upper brink down on the top of tall pines that seem diminished in size. The wild vines scramble among the trees; many shrubs and flowers seam the high rocks; in moist spots, here and there a sharp eye may detect many flowered tufts of the beautiful fringed *Gentian*, strange to European eyes; and beyond all, and at the upper end of the wood-embowered deep river bed, a portion of the crowning glory of the scene—the falls—a vast cliff of illuminated foam, with a zone towards its upper edge as of green molten glass. Above the falls the scene is quite different. A wide and peaceful river carrying the surplus waters of an inland sea, till it gradually finds itself in the coils of the rapids, and is soon lashed into such a turmoil as we might expect if a dozen unpolluted Shannons or Seines were running a race together. A river no more, but a sea unreined. By walking about a mile above the falls on the Canadian shore this effect is finely seen, the breadth of the river helping to carry out the illusion. As the great waste of waters descends from its dark grey and smooth bed and falls whitening into foam, it seems as if tide after tide were gale-heaped one on another on a sea strand. The islands just above the falls enable one to stand in the

\* *Alpine Flowers*. by William Robinson, F. L. S. London: John Murray, 1875.



IN THE WOODS OF GOAT ISLAND



midst of these rapids, where they rush by lashed into passionate haste; now boiling over some hidden swellings in the rocky bed, or dashing over greater but yet hidden obstructions with such force that the crest of the uplifted mass is dashed about as freely as a white charger's mane; now darkly falling into a cavity several yards below the level of the surrounding water, and, when unobstructed, surging by in countless eddies to the mist-crested falls below; and so rapidly that the driftwood dashes on swift as swallow on the wing. Undisturbed in their peaceful shadiness, garlanded with wild vine and wild flowers, the islands stand in the midst of all this fierce commotion of waters—below, the vast ever-mining falls; above, a complication of torrents that seem fitted to wear away iron shores; yet there they stand, safe as if the spirit of beauty had in mercy exempted them from decay. Several islets are so small that it is really remarkable how they support vegetation; one, looking no bigger than a washing-tub, not only holds its own in the very thick of the torrents just above the falls, but actually bears a small forest, including one stricken and half cast-down pine. Most fortunate is it that these beautifully verdant islands and islets occur just above the falls, adding immeasurably to the effect of the scene."

I have spoken of the *distinctive* charms of Niagara scenery. If it were possible to have the same conditions detached from the falls (which it is not, as I shall show), Niagara would still be a place of singular fascination; possibly to some, upon whom the falls have a terrifying effect, even more so than it is now.

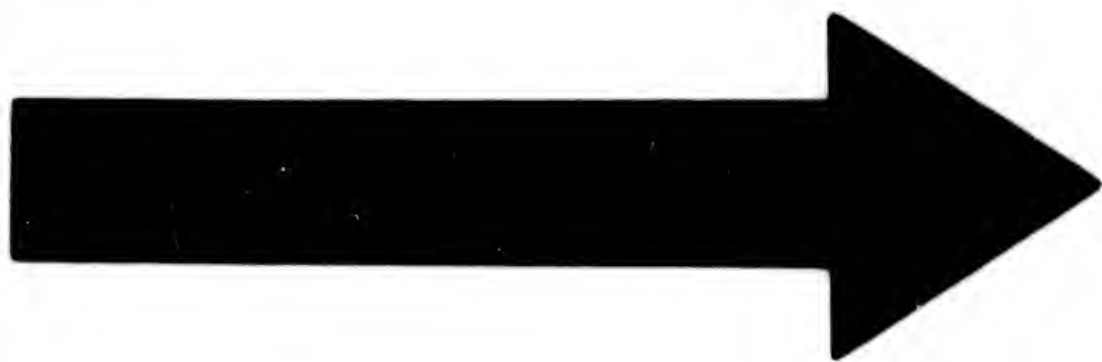
Saying nothing of the infinitely varied beauties of water and spray, and of water-worn rock, I will, for a purpose, mention a few elements which contribute to this distinctive charm.

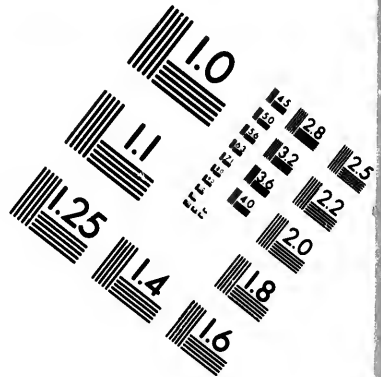
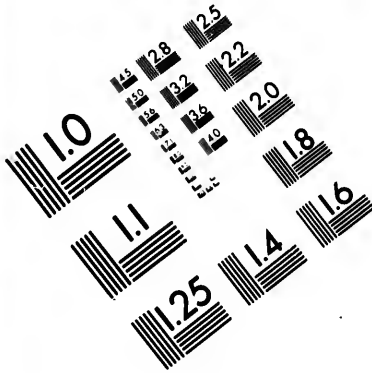
The eminent English botanist, Sir Joseph Hooker, has said that he found upon Goat Island a greater variety of vegetation within a given space than anywhere in Europe, or east of the Sierras, in America; and the first of American botanists, Dr. Asa Gray, has repeated the statement. I have followed the Apalachian chain almost from end to end, and traveled on horseback, "in search of the picturesque," over four thousand miles of the most promising parts of the continent without finding elsewhere the same quality of forest beauty which was once abundant about the falls, and which is still to be observed in those parts of Goat Island where the original growth of trees and shrubs has not been disturbed, and where, from caving banks, trees are not now exposed to excessive dryness at the root.

Nor have I found any where else such tender effects of foliage as were once to be seen in the drapery hanging down the wall of rock on the American shore below the fall, and rolling up the slope below it, or with that still to be seen in a favorable season and under favorable lights, on the Canadian steeps and crags between the falls and the ferry.

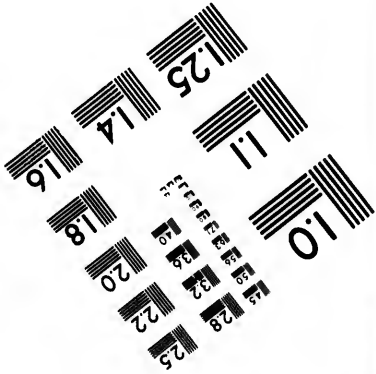
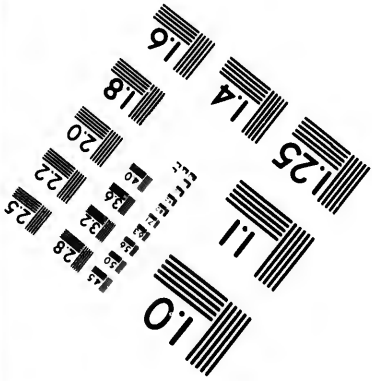
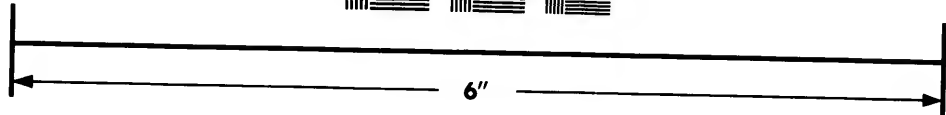
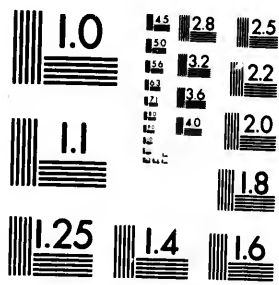
All these distinctive qualities,—the great variety of the indigenous perennials and annuals, the rare beauty of the old woods, and the exceeding loveliness of the rock foliage,—I believe to be a direct effect of the falls, and as much a part of its majesty as the mist-cloud and the rainbow.

They are all, as it appears to me, to be explained by the circumstance that at two periods of the year when the northern American forest else-





**IMAGE EVALUATION  
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where is liable to suffer actual constitutional depressions, that of Niagara is insured against like ills, and thus retains youthful luxuriance to an unusual age.

First, the masses of ice, which, every winter are piled to a great height below the falls, and the great rushing body of ice-cold water coming from the northern lakes in the spring, prevent at Niagara the hardship under which trees elsewhere often suffer through sudden checks to premature growth; and, second, when droughts elsewhere occur, as they do, every few years, of such severity that trees in full foliage droop and dwindle, and even sometimes cast their leaves, the atmosphere at Niagara is more or less moistened by the constantly evaporating spray of the falls, and in certain situations frequently bathed by drifting clouds of mist.

Something of the beauty of the hanging foliage below the falls is also probably due to the fact, that the effect of the frozen spray upon it is equivalent to the horticultural process of "shortening in;" compelling a denser and closer growth than is, under other circumstances, natural.

Reference is made at page 9, of the Commissioners' report, to a marvelous effect in scenery above the Falls. It is that to which the following account by the Duke of Argyle applies:

"The river Niagara, above the falls, runs in a channel very broad, and very little depressed below the general level of the country. But there is a steep declivity in the bed of the stream for a considerable distance above the precipice, and this constitutes what are called the rapids. The consequence is that when we stand at any point near the edge of the Falls, and look up the course of the stream, the foaming waters of the rapids constitute the sky line. No indication of land is visible—nothing to express the fact that we are looking at a river. The crests of the breakers, the leaping and the rushing of the waters, are still seen against the clouds, as they are seen in the ocean, when the ship from which we look is in the trough of the sea. It is impossible to resist the effect on the imagination. It is as if the fountains of the great deep were being broken up, and that a new deluge were coming on the world. The impression is rather increased than diminished, by the perspective of the low wooded banks on either shore, running down to a vanishing point and seeming to be lost in the advancing waters. An apparently shoreless sea tumbling toward one is a very grand and a very awful sight. Forgetting, then, what one knows, and giving oneself to what one only sees, I do not know that there is anything in nature more majestic than the *view of the rapids* above the falls of Niagara."

FREDERICK LAW OLMSTED.



THE  
LIFE OF  
SAMUEL JOHNSON  
BY  
JAMES BOSWELL

THE  
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JAMES BOSWELL

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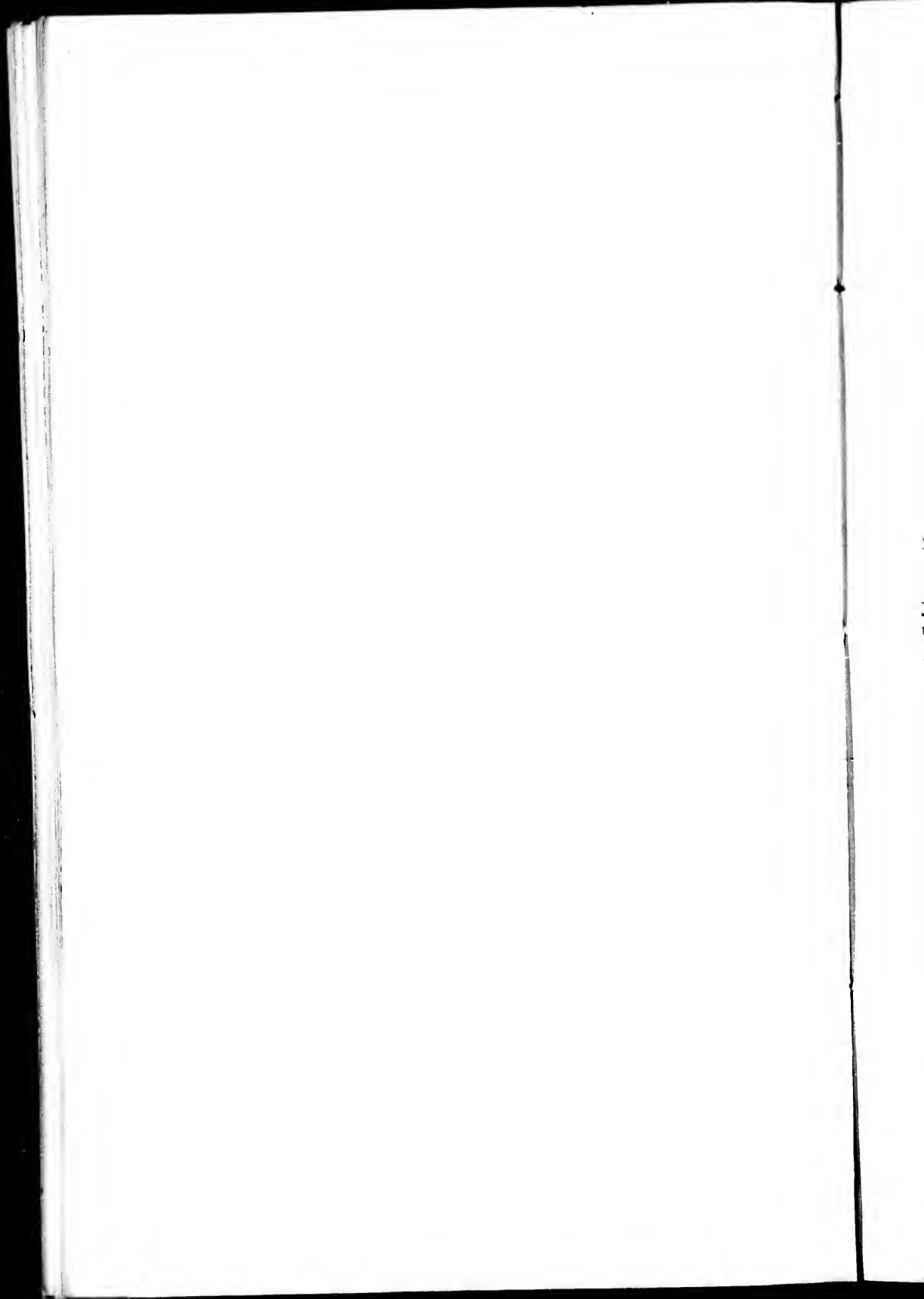
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# MEMORIAL

ADDRESSED TO

THE GOVERNOR OF NEW YORK,

AND

THE GOVERNOR-GENERAL OF CANADA.

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To ALONZO B. CORNELL, *Governor of the State of New York* :

The undersigned, citizens of several states and countries, address you by reason of the suggestion lately made by LORD DUFFERIN, that the State of New York and the Dominion of Canada should secure and hold, for the world's good, the lands adjacent to the Falls of Niagara.

The Falls of Niagara are peculiarly exposed to disastrous injury. The heights of snow, the precipitous crags of great mountains, however they may be disfigured by man, can rarely be applied to uses which would destroy their sublimity. But should the islands and declivities of the Niagara River be stripped of their natural woods, and occupied for manufacturing and business purposes; should even the position, size, and form of the constructions which the accommodation of visitors will call for, continue to be regulated solely by the pecuniary interests of numerous individual land-owners, the loss to the world will be great and irreparable. The danger may be measured by what has already occurred. The river's banks are denuded of the noble forest by which they were originally covered, are degraded by incongruous and unworthy structures, made, for advertising purposes, willfully conspicuous and obtrusive, and the visitor's attention is diverted from scenes to the influence of which he would gladly surrender himself, by demands for tolls and fees, and the offer of services most of which he would prefer to avoid.

Objects of great natural beauty and grandeur are among the most

valuable gifts which Providence has bestowed upon our race. The contemplation of them elevates and informs the human understanding. They are instruments of education. They conduce to the order of society. They address sentiments which are universal. They draw together men of all races, and thus contribute to the union and the peace of nations.

The suggestion, therefore, that an object of this class so unparalleled as the Falls of Niagara should be placed under the joint guardianship of the two governments whose chief magistrates we have the honor to address, is a proper concern of the civilized world, and we respectfully ask that it may, by appropriate methods, be commended to the wise consideration of the Legislature of New York.

A similar memorial has been addressed to the Governor-General of Canada.

W. A. WHEELER, Vice-President of the United States.

ALEX. RAMSEY, Secretary of War of the United States.

M. R. WAITE, Chief Justice U. S. Supreme Court.

NATHAN CLIFFORD, Associate Justice U. S. Supreme Court.

N. H. SWAYNE, Associate Justice U. S. Supreme Court.

STEPHEN J. FIELD, Associate Justice U. S. Supreme Court.

JOSEPH P. BRADLEY, Associate Justice U. S. Supreme Court.

JOHN M. HARLAN, Associate Justice U. S. Supreme Court.

W. STRONG, Associate Justice U. S. Supreme Court.

SAM. F. MILLER, Associate Justice U. S. Supreme Court.

A. A. DORION, Chief Justice Court of Appeals, Canada.

S. C. MONK, Judge Queen's Bench.

A. E. BURNSIDE, U. S. Senate.

J. G. BLAIN, U. S. Senate.

JUSTIN S. MORRILL, U. S. Senate.

H. B. ANTHONY, U. S. Senate.

J. D. CAMERON, U. S. Senate.

W. B. ALLISON, U. S. Senate.

MAT. H. CARPENTER, U. S. Senate.

JOHN JAMES INGALLS, U. S. Senate.

DAVID D. PORTER, Admiral, U. S. Navy.

HOUGHTON.

REAY.

LOUIS MALLET.

JOHN LUBBOCK.

J. F. STEPHEN.

HUGH ALLEN.

FRANCIS HINCKS.

GEORGE C. BRODRICK, M. P.

M. E. GRANT DUFF, M. P.

R. W. HANBURY, M. P.

W. R. GREG, M. P.

THOMAS CARLYLE.

JOHN RUSKIN.

F. MAX MÜLLER, University of Oxford.

B. JOWETT, University of Oxford.

HENRY J. SMITH, University of Oxford.

LESLIE STEPHEN.

FREDERICK HARRISON.

R. WALDO EMERSON.

HENRY W. LONGFELLOW.

JAMES RUSSELL LOWELL.

JOHN G. WHITTIER.

JOHN G. PALFREY.

FRANCIS PARKMAN.

OLIVER WENDELL HOLMES.

ASA GRAY.

ALEX. AGASSIZ.

CLARENCE KING, Director United States Geological Survey.

W. D. HOWELLS.

CHARLES ELIOT NORTON.

F. J. CHILD.

JOHN, CARDINAL McCLOSKEY, Archbishop of New York.

HORATIO SEYMOUR.

E. D. MORGAN.

THURLOW WEED.

JOHN JAY.

GEO. W. SCHUYLER.

S. B. CHITTENDEN, M. C.

S. S. COX, M. C.

W. D. KELLEY, M. C.

D. G. JOHNSON, Judge Superior Court, Canada.

R. MACKAY, Judge Superior Court, Canada.

F. W. TORRANCE, Judge Superior Court, Canada.

WM. B. MONTREAL, Lord Bishop.

S. RIVARD, Mayor of Montreal.

S. S. HUNTINGDON, M. P.  
M. H. GAULT, M. P.  
THOMAS W. RITCHIE, M. P.  
J. W. DAWSON, Principal McGill College, Montreal.  
P. A. PETERSEN, Chief Engineer, Government of Quebec.  
CHARLES W. ELIOT, President Harvard University.  
BENJ. H. PADDOCK, Bishop of Massachusetts.  
CHARLES FRANCIS ADAMS.  
MARTIN BRIMMER.  
PHILLIPS BROOKS.  
THOMAS M. CLARK, Bishop of Rhode Island.  
JAMES MCCOSH, President College of New Jersey.  
CHARLES B. ANDREWS, Governor of Connecticut.  
NOAH PORTER, President Yale College.  
J. WILLIAMS, Bishop of Connecticut.  
NATT. HEAD, Governor of New Hampshire.  
A. B. THOMPSON, Secretary of State of New Hampshire.  
WILLIAM WOODRUFF NILES, Bishop of New Hampshire.  
J. E. SARGENT.  
HENRY A. COIT, D.D., Rector St. Paul's School.  
EDWARD COOPER, Mayor of New York.  
F. A. P. BARNARD, President Columbia College.  
HOWARD CROSBY, President University of New York.  
ALEX. S. WEBB, President College of the City of New York.  
D. HUNTINGTON, President National Academy of Design.  
CYRUS W. FIELD.  
HENRY W. BELLOWS.  
PARKE GODWIN.  
MORGAN DIX.  
CHARLES A. DANA.  
SAMUEL OSGOOD.  
WM. HENRY HURLBUT.  
JAMES M. BROWN.  
HOWARD POTTER.  
JOHN CROSBY BROWN.  
FREDERIC E. CHURCH, N. A.  
WHITELAW REID.  
SANFORD R. GIFFORD, N. A.  
W. WHITRIDGE, N. A.  
JOHN A. CISCO.



J. T. HECKER.  
WM. D. KELLEY.  
HENRY C. POTTER.  
JOHN LA FARGE.  
A. BIERSTADT, N. A.  
HOMER D. MARTIN, N. A.  
J. DURAND, N. A.  
RAPHAEL PUMPELLY.  
HENRY G. MARQUAND.  
NATHAN APPLETON.  
S. P. AVERY.  
JOHN JAY CISCO.  
S. P. DI CESNOLA.  
THOMAS HICKS, N. A.  
C. H. MARSHALL.  
DANL. S. APPLETON.  
W. D. MORGAN.  
ROBT. B. MINTURN.  
W. E. DODGE, JR.  
LLOYD ASPINWALL, JR.  
EDWARD C. PCTTER.  
NEWBOLD LE ROY.  
CHAS. RUSSELL HONE.  
JAMES P. LOWREY.  
GEORGE BELL.  
THEODORE WESTON.  
HENRY D. SEDGWICK.  
F. F. MARBURY.  
G. N. STOUGHTON.  
WILLIAM DORSHEIMER.  
DAVID DUDLEY FIELD.  
ROYAL PHELPS.  
JOHN A. STEWART.  
E. D. MORGAN, JR.  
BENJ. B. THURMAN.  
JOHN T. TERRY.  
N. C. MEIGS, U. S. A.  
ALBERT J. MYER, U. S. A.  
Q. A. GILMORE, U. S. A.  
NELSON A. MILES, U. S. A.

F. W. GOCKELS, President St. John's College, Fordham.  
 LEONARD W. JEROME.  
 PAUL FORBES.  
 JOHN H. GOURLIE.  
 JEO. TRAVERS, JR.  
 EDWIN L. GODKIN.  
 GOUVERNEUR MORRIS, JR.  
 J. J. R. CROES.  
 J. H. PINCKNEY.  
 GEO. E. WARING.  
 G. E. HUNTINGTON.  
 S. H. WALES.  
 SINCLAIR TOUSEY.  
 GEO. HAVEN PUTNAM.  
 WM. E. CURTIS.  
 HENRY R. WINTHROP.  
 A. R. MACDONOUGH.  
 CHARLES C. HAIGHT.  
 J. Q. A. WARD, N. A.  
 PH. SCHUYLER.  
 F. O. C. DARLEY.  
 SMITH E. LANE.  
 HENRY E. HOWLAND.  
 CHARLES GRACIE.  
 DOUGLASS CAMPBELL.  
 W. H. BEARD.  
 WM. H. APPLETON.  
 SAML. D. BABCOCK.  
 HERMAN R. LE ROY.  
 J. H. DRAPER.  
 WM. B. RICE.  
 S. NICHOLSON KANE.  
 F. SHELDON.  
 JOHN L. CADWALADER.  
 JOHN MACMULLEN.  
 FRANCIS MCNEIRNEY, Bishop of Albany.  
 E. O. HAVEN, Chancellor Syracuse University.  
 WM. C. RUSSELL, Atg. President Cornell University.  
 E. DODGE, President Madison University.  
 SAML. G. BROWN, President Hamilton College.

WM. CROSWELL DOANE, Bishop of Albany.  
D. M. OSBORNE, Mayor of Auburn.  
WM. H. SEWARD.  
THEO. M. POMEROY.  
E. T. THROOP MARTIN.  
JOSIAH LETCHWORTH.  
R. B. WELCH.  
CHARLES C. DWIGHT.  
C. D. MACDOUGALL.  
DENNIS R. ALWARD.  
BYRON C. SMITH.  
CHAS. HAWLEY.  
A. CLEVELAND COXE, Bishop of Western New York.  
G. W. CLINTON.  
SHERMAN S. ROGERS.  
E. C. SPRAGUE.  
WM. F. ROGERS.  
S. S. JEWETT.  
PASCAL B. PRATT.  
J. M. RICHMOND.  
E. STORCK.  
ALBERT B. LANING.  
ALFRED R. C. SELWYN, Director Geological Survey of Canada.  
F. W. HENSHAW.  
JOSEPH HICKSON.  
ROBT. ESDAILE.  
C. J. SEARGENT.  
PETER REDPATH.  
WALTER SHANLY.  
WOLFENSTON THOMAS.  
GEORGE HAGUE.  
W. J. PATTERSON.  
J. R. GILLISS.  
THOS. DAVIDSON.  
D. L. MCDUGALL.  
S. J. EWING.  
W. A. MERRY.  
THOS. LYMAN.  
JAMES B. M. CHIPMAN.  
G. H. MASSEY.

N. J. MCGILLEVRAY.  
J. PENFOLD.  
JAMES DAKERS.  
JOHN H. R. MOLSON.  
JAMES F. D. BLACK.  
MAURICE S. BALDWIN.  
JAMES A. MCLEOD.  
JOHN CRAWFORD.  
ANDREW ROBERTSON.  
EDWARD SULLIVAN.  
O. C. EDWARDS.  
JOHN FLETCHER.  
A. C. DE LOTBINIERE HARWOOD.  
R. W. GRAHAM.  
R. N. GRANT.  
CHARLES SMITHERS.  
W. J. BUCHANAN.  
FRED. NASH.  
WM. DARLING.  
HENRY LYMAN.  
JOHN KENNDY.  
RICHARD HOLLAND.  
J. FAIRBAIRN.  
DAVID R. MCCORD.  
H. A. NELSON.  
J. H. MOONEY.  
CH. D. PROCTOR.  
S. ST. ONGE.  
GUIL. LA MOTHE.  
JOS. PIERRE LE BEL.  
A. B. STEWART.  
J. G. DINNING.  
W. W. STUART.  
JAMES FOLEY.  
A. MURRAY.  
PHILIP HOLLAND.  
JAMES MITCHELL.  
W. B. COURT.  
EDW. CHAPIN.  
J. M. BUCKNELL.

R. T. ROUTH.

JNO. F. ROSS.

JOHN TORRANCE.

GEORGE A. DRUMMOND, and 400 other citizens of Canada and  
the United States.

*2d March, 1880.*



Roll.  
198:456:

A  
**New Discovery**  
OF A  
*Vast Country in AMERICA,*  
Extending above Four Thousand Miles,  
BETWEEN  
*New France and New Mexico.*  
WITH A  
Description of the *Great Lakes, Cata-*  
*racts, Rivers, Plants, and Animals:*  
Also, *The Manners, Customs, and Languages,* of the  
several *Native Indians;* And the Advantage of  
Commerce with those different Nations.

WITH A  
**CONTINUATION:**

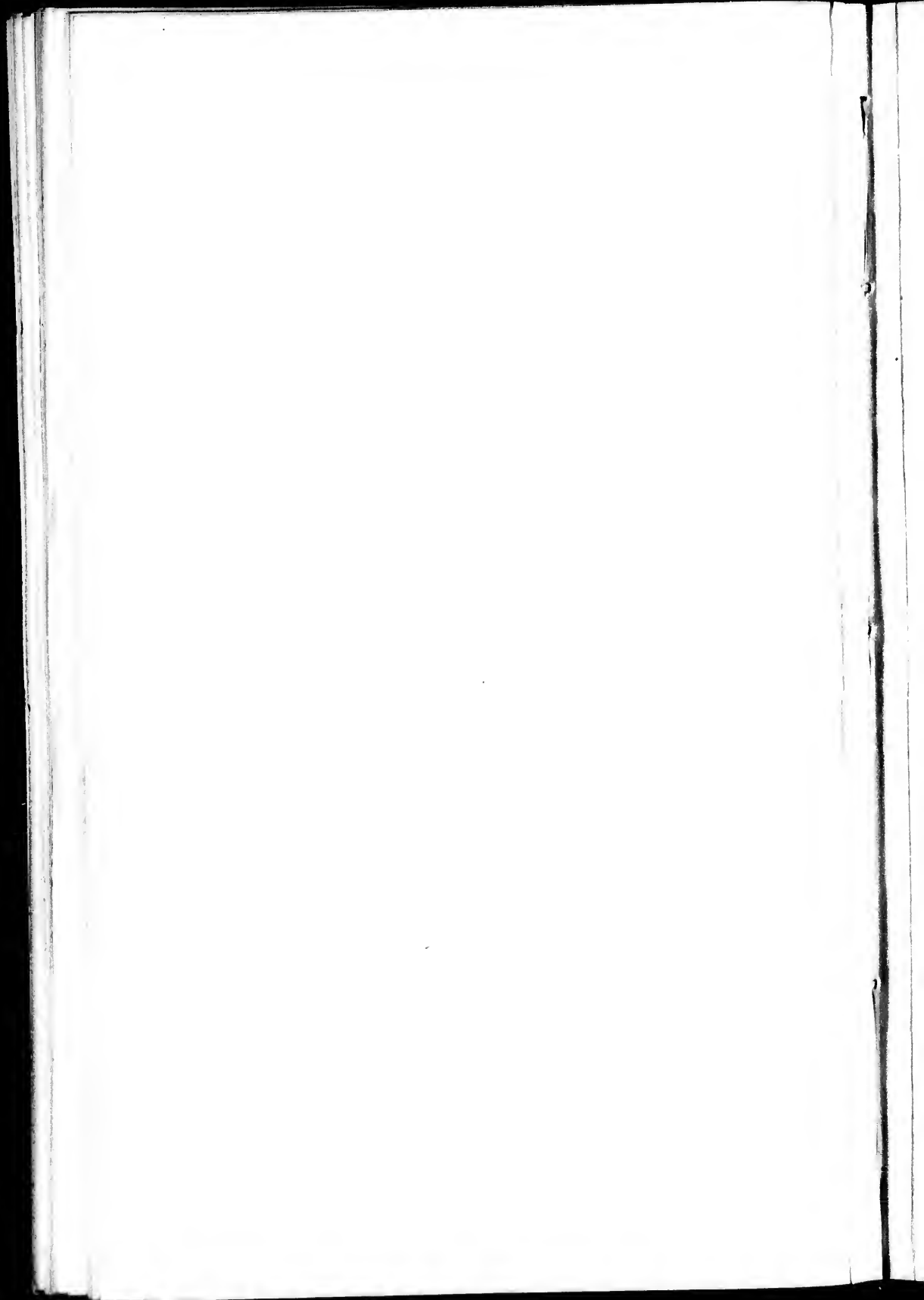
Giving an ACCOUNT of the  
Attempts of the *Sieur De la SALLE* upon the  
Mines of *St. Barbe,* &c. The Taking of  
*Quebec* by the *English;* With the Advantages  
of a Shorter Cut to *China* and *Japan.*

Both Parts Illustrated with *Maps* and *Figures,*  
and Dedicated to His Majesty *K. William.*

By *L. Hennepin,* now Resident in *Holland.*

To which is added, Several *New Discoveries* in *North-*  
*America,* not publish'd in the *French* Edition.

L O N D O N: Printed for *M. Bentley, J. Tonson, H. Bow-*  
*wick, T. Goodwin,* and *S. Manslip.* 1 6 9 8.





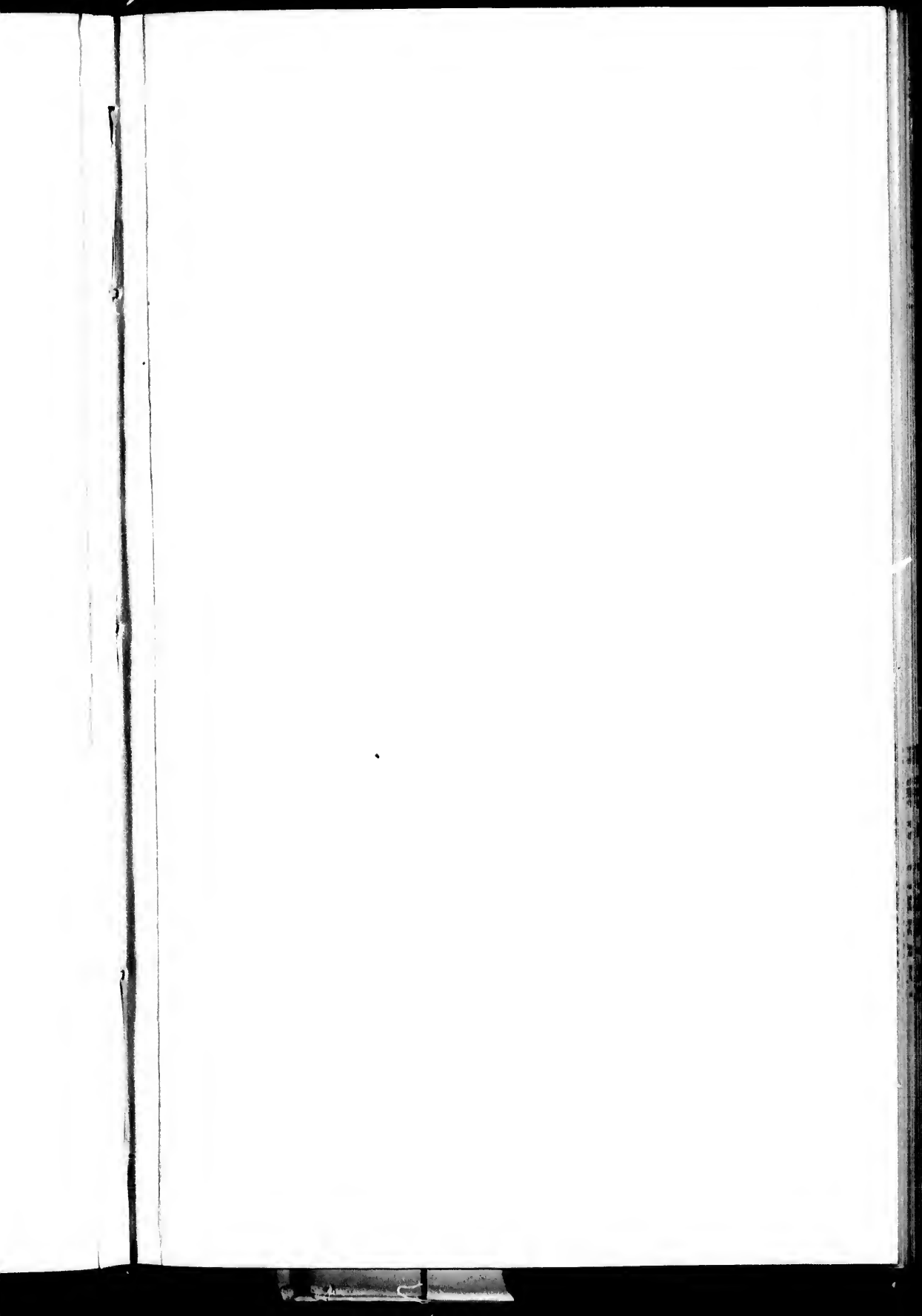




Fig. 29





*a Large Country in America.* 29

in Winter it is more difficult, because of the outrageous Winds which abound there. From this Lake one may go by Barks, or by greater Vessels to the foot of a great Rock that is about two Leagues off the Fall of the River *Niagara*, which I am now to describe.

---

C H A P. VII.

*A Description of the Fall of the River Niagara, which is to be seen betwixt the Lake Ontario and that of Eri.*

**B**etwixt the Lake *Ontario* and *Eri*, there is a vast and prodigious Cadence of Water which falls down after a surprizing and astonishing manner, insomuch that the Universe does not afford its Parallel. 'Tis true, *Italy* and *Suedeland* boast of some such Things; but we may well say they are but sorry Patterns, when compar'd to this of which we now speak. At the foot of this horrible Precipice, we meet with the River *Niagara*, which is not above a quarter of a League broad, but is wonderfully deep in some places. It is so rapid above this Descent, that it violently hurries down the wild Beasts while endeavouring to pass it to feed on the other side, they not being able to withstand the force of its Current, which inevitably casts them headlong above Six hundred foot high.

This wonderful Downfal, is compounded of two great Cross-streams of Water, and two

two Falls, with an Isle sloping along the middle of it. The Waters which fall from this horrible Precipice, do foam and boyl after the most hideous manner imaginable, making an outrageous Noise, more terrible than that of Thunder; for when the Wind blows out of the South, their dismal roaring may be heard more than Fifteen Leagues off.

The River *Niagara* having thrown it self down this incredible Precepice, continues its impetuous course for two Leagues together, to the great Rock above-mention'd, with an inexpressible rapidity: But having past that, its impetuosity relents, gliding along more gently for other two Leagues, till it arrive at the *Lake Ontario* or *Frontenac*.

Any Bark or greater Vessel may pass from the Fort to the foot of this huge Rock above-mention'd. This Rock lies to the Westward, and is cut off from the Land by the River *Niagara*, about two Leagues farther down than the great Fall; for which two Leagues the People are oblig'd to transport their Goods over-land; but the way is very good; and the Trees are but few, chiefly Firrs and Oaks.

From the great Fall unto this Rock which is to the West of the River, the two Brinks of it are so prodigious high, that it would make one tremble to look steadily upon the Water, rolling along with a rapidity not to be imagin'd. Were it not for this vast Cataract, which interrupts Navigation, they might sail with Barks or greater Vessels,  
more

a Large Country in America. 31

more than Four hundred and fifty Leagues, crossing the Lake of *Hurons*, and reaching even to the farther end of the Lake *Illinois*; which two Lakes we may easily say are little Seas of fresh Water.

*Sieur de la Salle* had a design to have built a Fort at the mouth of the River *Niagara*; and might easily have compass'd it, had he known how to keep himself within bounds, and to have confin'd himself there for one Year. His design was to curb and keep under the *Iroquois*, and especially the *Tsonmontouans*, who are the most numerous People, and the most given to War of all that Nation. In fine, such a Fort as this might easily have interrupted the Commerce betwixt these People and the *English* and *Dutch* in *New-York*. Their custom is to carry to *New-York* the Skins of Elks, Beavers, and several sorts of Beasts, which they hunt and seek after some 2 or 300 Leagues from their own home. Now they being oblig'd to pass and repass near to this mouth of the River *Niagara*; we might easily stop them by fair means in time of Peace, or by open force in time of War; and thus oblige them to turn their Commerce upon *Canada*.

But having remark'd that the *Iroquois* were push'd on to stop the execution of this Design, not so much by the *English* and *Dutch*, as by the Inhabitants of *Canada*, who for a great part endeavour'd by all means to traverse this our Discovery; they contented themselves to build a House at the mouth of the River to the Eastward, where the Place was naturally

32. *A New Discovery of*

rally fortifi'd. To one side of this House there is a very good Haven, where Ships may safely ride; nay, by help of a Capstane, they may easily be hall'd upon Land. Besides, at this Place they take an infinite quantity of white Fish, Sturgeons, and all other sorts of Fishes, which are incomparably good and sweet; insomuch that in the proper Season of Fishing, they might furnish the greatest City in *Europe* with plenty of Fish.

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C H A P. VIII.

*A Description of the Lake Erie.*

**T**He *Iroquois* give to this Lake the Name of *Erie Tejocharontiong*, which extends it self from East to West perhaps a hundred and forty Leagues in length. But no *European* has ever been over it all; only I and those who accompany'd me in this Discovery, have view'd the greater part of it, with a Vessel of Sixty Tunburden, which we caus'd to be made on purpose, about two Leagues above the fore-mention'd Fall of *Niagara*, as I shall have occasion to observe more largely hereafter.

This Lake *Erie*, or *Tejocharontiong*, encloses on its Southern Bank a Tract of Land as large as the Kingdom of *France*. It divides it self at a certain place into two Channels, because of a great Island enclos'd betwixt them: Thus continuing its course for fourteen



MESSAGE  
OF  
GOVERNOR LUCIUS ROBINSON.

JANUARY 9, 1879.

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NIAGARA FALLS.

The civil jurisdiction over the Falls of Niagara, as well as the shores and waters of the Niagara river, is divided between this State and the Province of Ontario, in Canada. But, in one sense, the sublime exhibition of natural power there witnessed is the property of the whole world. It is visited by tourists from all quarters of the globe, and it would seem to be incumbent upon both governments to protect such travelers from improper annoyance on either side. It is, however, well known, and a matter of universal complaint, that the most favorable points of observation around the falls are appropriated for purposes of private profit, while the shores swarm with sharpers, hucksters and peddlers, who perpetually harass all visitors. In the course of the last summer, in a casual meeting and conversation with Lord Dufferin, then Governor-General of Canada, he suggested the propriety of some steps on the part of the State of New York and the province of Ontario to remedy these abuses which he had seen and deeply regretted. His proposition was that a sort of international park should be established, enclosing a suitable space on each side of the river from which all the annoyances and vexations referred to should be excluded. Contemplating no attempt at landscape ornamenting in the vain hope of adding anything to the natural attractions of the falls, he thought that each government might obtain control of a sufficient area to be kept sacred to the free use of those who coming there from all parts of the world, desire to view the grand scenery without molestation. He believed that all this could be accomplished at small expense, each government of course retaining jurisdiction of its own portion of such park, but with a mutual understanding as to the general regulations to be enforced on either side. Subsequently the Governor-General called the attention of the government of Ontario to the same matter, and recommended co-operation

with the State of New York in accomplishing the purpose in view. The proper course, if such a plan were deemed advisable would, undoubtedly be the appointment of commissions by both governments, to confer together as to its details. Should such a commission be appointed by the authorities of Ontario, I recommend that you provide for the appointment of a similar one to consider the subject. There can be no doubt that many persons abstain from visiting the falls in consequence of the annoyances referred to, nor can there be any reasonable doubt that the removal of these objections would largely increase the number of visitors annually.

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LOT 42

Goat Island Bridge

Wing Dam

MILL SLIP

CASCADE

STREET

13

15

17

19

21

23

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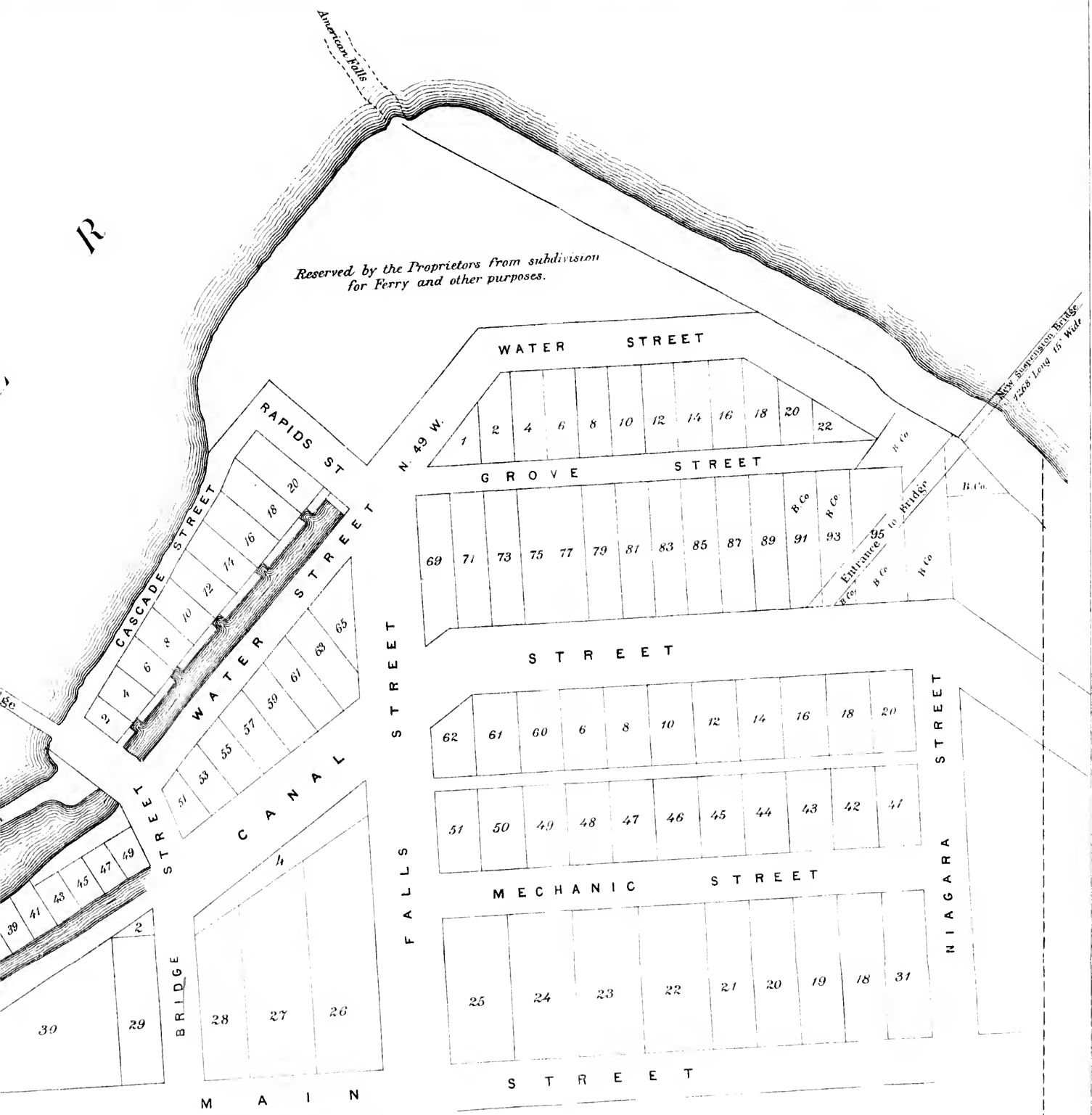
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American Falls

R

Reserved by the Proprietors from subdivision for Ferry and other purposes.

New Suspension Bridge  
1200' Long 65' Wide



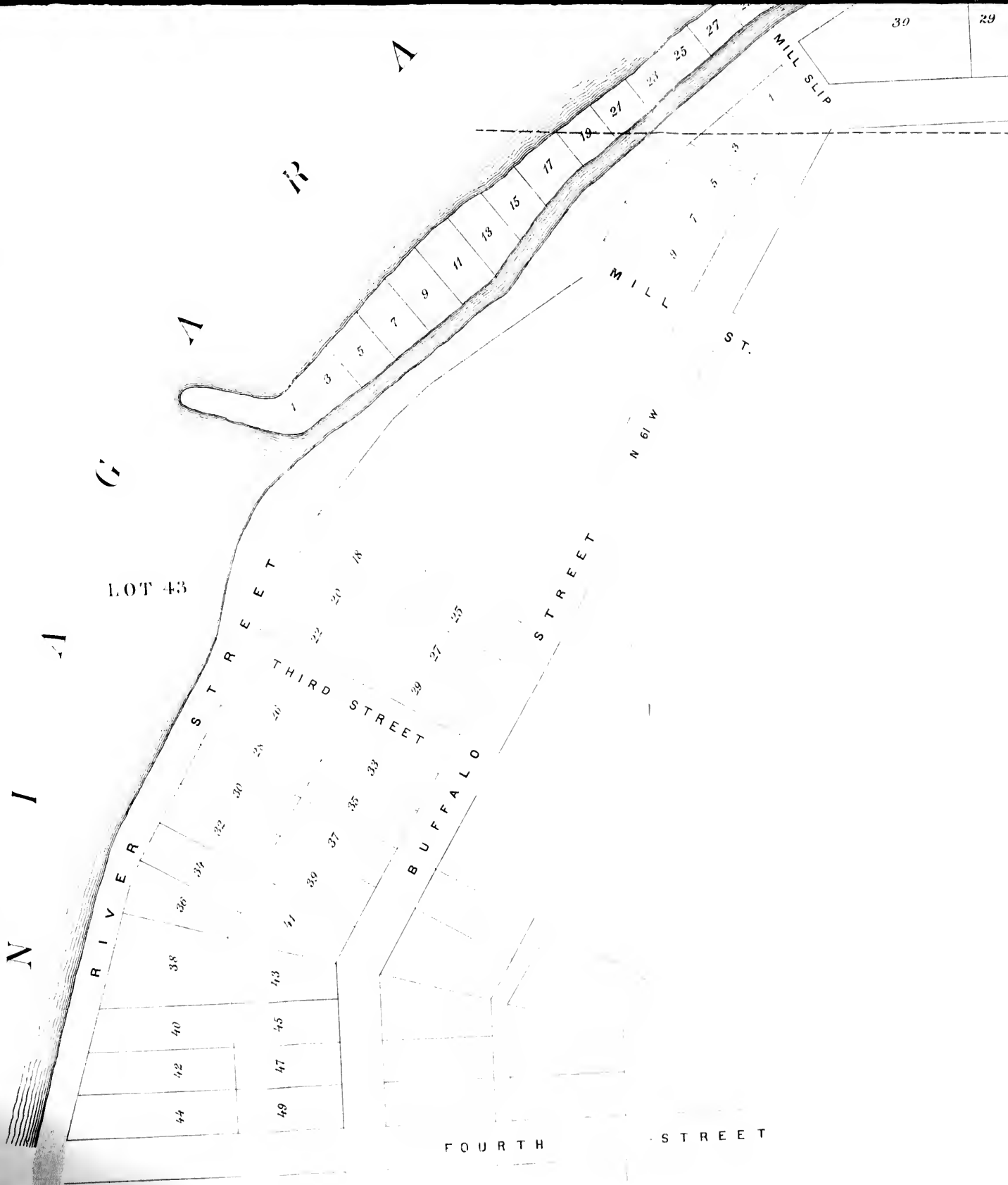
N I A

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30

29

MILL  
ST.

N 61 W

LOT 43

FOURTH STREET

30

29

28

27

26

M A I N

S T R E E T

LOT 41

PART OF THE  
 OFFICIAL PROPERTY MAP  
 OF  
**NIAGARA FALLS VILLAGE**

SHOWING IN SHADE  
 THE LOTS AND STREETS INCLUDED IN  
 THE PLAN FOR THE PROPOSED  
**STATE RESERVATION**

Approved by the  
 COMMISSIONERS OF THE STATE SURVEY

JAMES T. GARDNER, DIRECTOR

**1879.**

Scale: 2 Chains to 1 inch

NOTE

*The original of this Map was filed to be the official Map of the village by the NY  
 Laws of 1866 - Chap. 119 Sec. 1  
 Its original Title is: Map of the Village of Niagara Falls and Lands adjacent, comprising  
 Lots Nos. 11, 12, 13 and the West part of 41 and the South part of 29 of the NY State  
 Reservations Made for the Proprietary by J. P. HAINES Successor 1861  
 Filed December 20 1869 with J. S. WOODS Clerk  
 The property lines and approach to the Bridge to are not in the original Map  
 Inserted to accompany Report of State Survey 1879*

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annoyances  
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PART II.

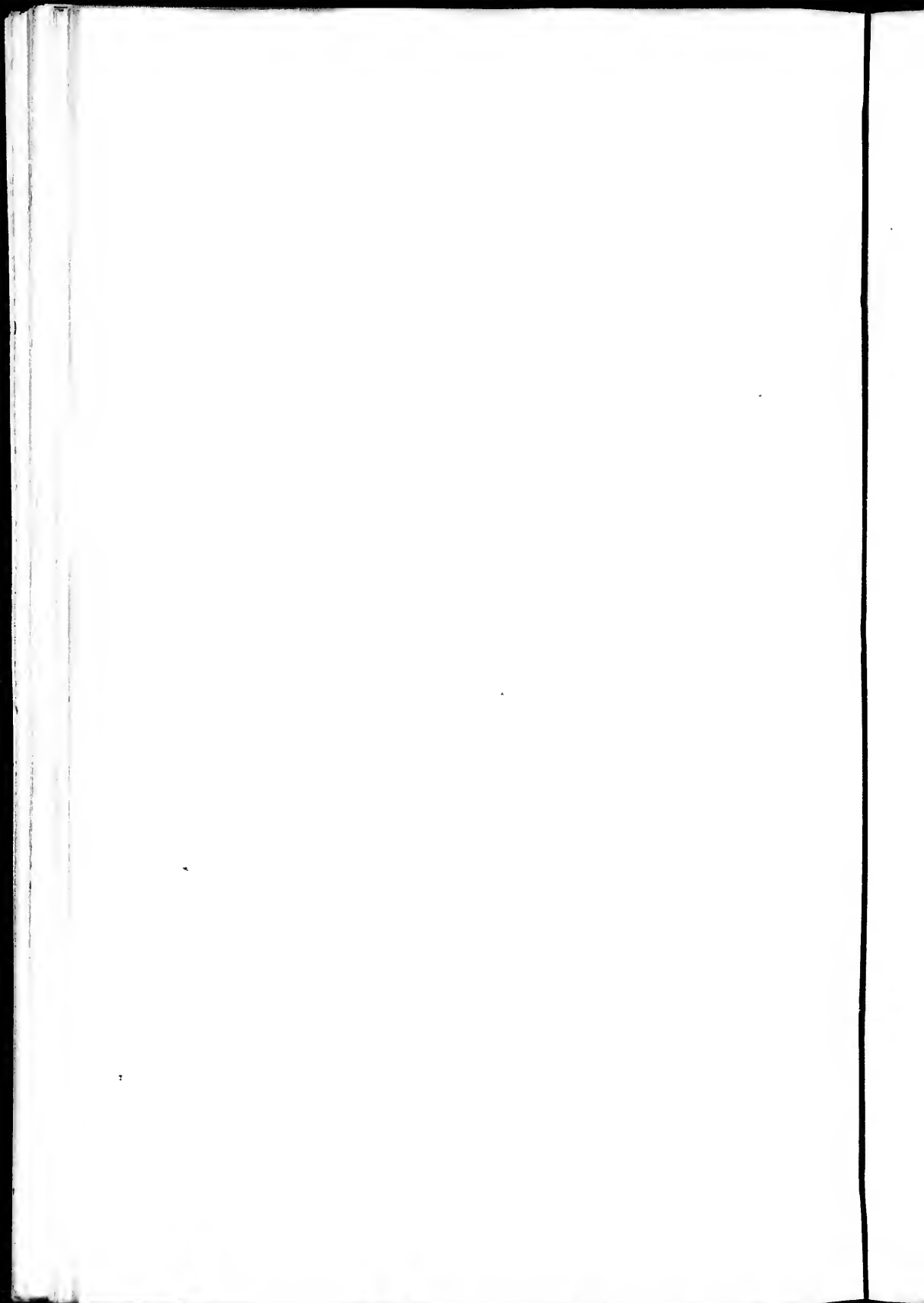
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FOURTH ANNUAL REPORT

OF THE

BOARD OF COMMISSIONERS OF THE STATE SURVEY.

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## REPORT.

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*To the honorable the Legislature of the State of New York :*

The Commissioners of the State Survey, in compliance with the requisitions of the acts creating the commission, respectfully report the regular proceedings of the survey and results reached during the year 1879, by transmitting the annexed report of the director, which they have adopted.

It will be seen that the work of the past season gives the means of making important additions to the State Survey map of parts of Onondaga, Oswego, Madison and Oneida counties ; locating, as it does, the geographical positions of seventeen villages and towns. In co-operation with the United States engineers in charge of the improvement of the Hudson, monuments a mile apart have been placed along both banks of the river, between Albany and New Baltimore, forming a connected series of permanent landmarks, to which will be referred both the bulk-head-lines, established by law, and the boundaries of grants of lands under water. The security of the boundaries thus established will undoubtedly prove the importance of applying elsewhere a similar system of land surveying.

All of which is respectfully submitted.

HORATIO SEYMOUR,  
*President of the Board.*  
WILLIAM A. WHEELER,  
ROB. S. HALE,  
WILLIAM DORSHEIMER,  
FRANCIS A. STOUT,  
GEORGE GEDDES,  
F. A. P. BARNARD.

## APPENDIX A.

### DETAILED STATEMENT OF EXPENDITURES DURING THE YEAR 1879.

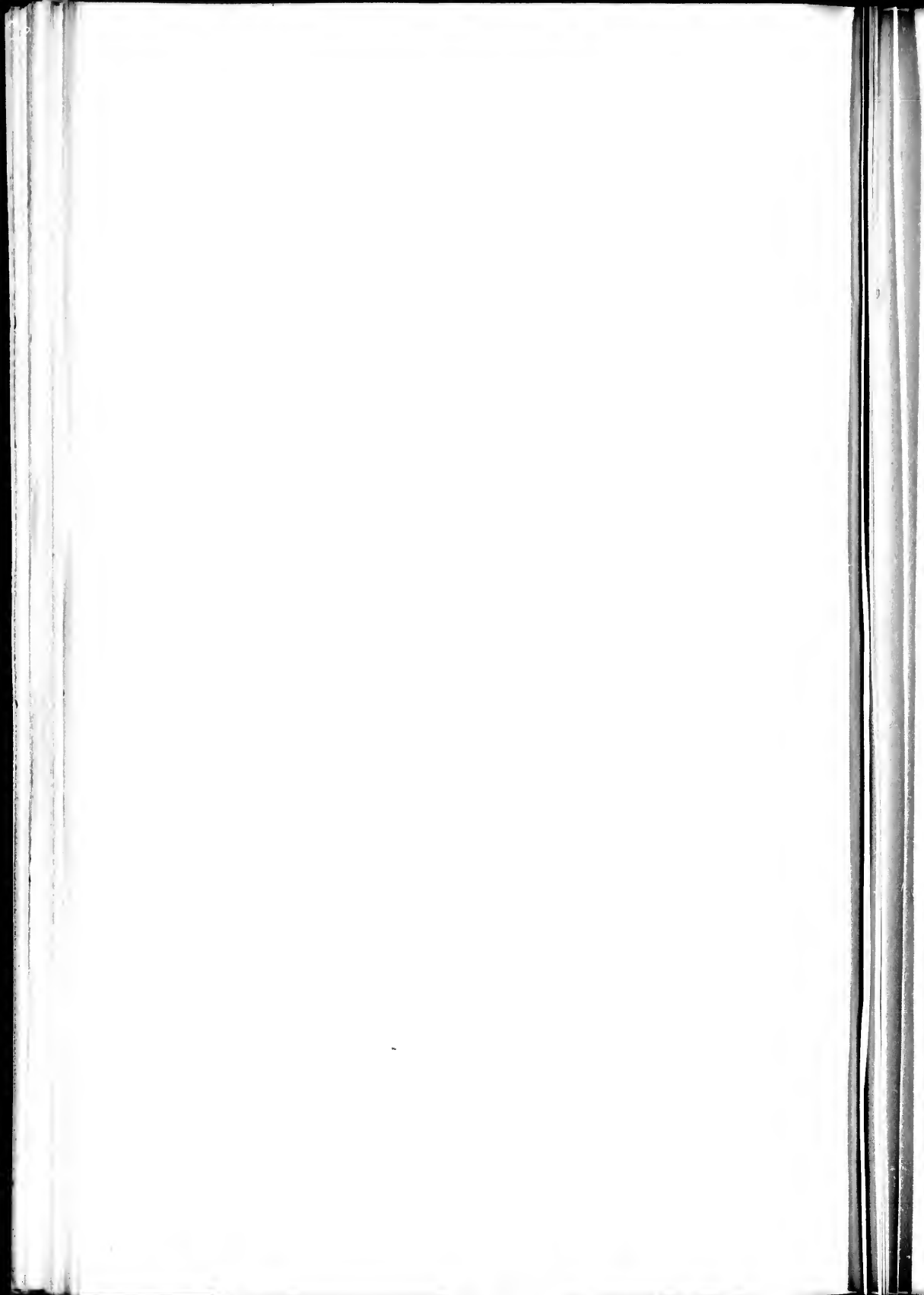
Books .....	\$10 38
Cartage.....	3 68
Commissioners' expenses.....	161 81
Damages and rent of land.....	41 00
Expressage.....	62 65
Freight.....	24 90
Hardware.....	31 86
Harness, etc.....	11 00
Horse keeping.....	363 63
Horse shoeing.....	22 31
Horse hire and livery.....	12 00
Maps.....	35 75
Mathematical instruments.....	135 55
Messengers.....	6 20
Miscellaneous.....	6 60
Muslin, etc.....	15 62
Office of director, outfit, care and rent of.....	74 86
Postage.....	61 53
Portery.....	20 00
Printing.....	980 40
Repairs.....	83 10
Salaries, regular.....	8,903 83
Salaries, special.....	78 25
Signal cones.....	33 65
Stationery.....	27 24
Street cars and tolls.....	7 01
Telegrams.....	23 74
Tents.....	17 79
Timber and lumber.....	58 94
Tools.....	37 66
Transportation, public.....	454 37
Wages of laborers.....	136 21
Wagons and equipments.....	29 25
 Total.....	 <u>\$11,972 77</u>

10 38  
3 68  
31 81  
41 00  
32 65  
24 90  
31 86  
11 00  
33 63  
22 31  
12 00  
35 75  
35 55  
6 20  
6 60  
15 62  
74 86  
31 53  
20 00  
80 40  
83 10  
3 83  
78 25  
33 65  
27 24  
7 01  
23 74  
17 79  
58 94  
37 66  
54 37  
36 21  
29 25  
72 77

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REPORT OF THE DIRECTOR  
OF THE  
NEW YORK STATE SURVEY,  
SHOWING  
THE PROGRESS OF THE SURVEY  
DURING  
THE YEAR 1879.

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## REPORT.

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*To the Board of Commissioners of the State Survey :*

I have the honor to submit my report of the progress of the survey during the year 1879, with accompanying maps of the completed triangulation and its proposed extension during the coming season.

Provision for the survey was made in the regular appropriation bill, from which the funds were not due until October first, while the previous appropriation had been intended only for the year 1878. This so limited the means of the survey, that it was impossible to push forward the primary triangulation over the counties of Cayuga, Seneca, Yates, Tompkins, Schuyler, Tioga and Chemung, the region that it was intended to cover during the season.

The supervisors of Onondaga county had, by special resolution, requested the Survey to furnish them with a map showing accurately the areas of the townships of that county. I regret very much that the request could not be complied with, on account of want of means. Should the present Legislature make the appropriation asked for, the general extension of the triangulation to Tioga and Chemung counties can go forward as well as the important application of the work to the special want of Onondaga county of a reliable official map.

The New York commissioners charged with the duty of re-marking the Pennsylvania boundary line, have requested that points along that line should be connected with the State Survey triangulation as soon as possible. I hope that several stations answering these requirements may be established during the coming summer.

Although this report has been begun with an account of what was left undone for want of means ; yet, a great deal was really accomplished with the small sum at the disposal of the Survey.

### WORK IN CENTRAL NEW YORK.

A chain of secondary triangles was laid out extending from Onondaga Hill to Amsterdam, and twenty-one tripod signals were erected at the selected points between Syracuse and Little Falls. Thirteen of these

stations were occupied, and the angles observed with a twelve-inch circle, reading seconds with micrometers. The object of this chain of triangles, whose sides average about twelve miles in length, is to form a convenient base for local surveys along the valley of the Mohawk. From the stations already fixed, the geographical positions of fifty-two points were determined in the fifteen townships of Constantia, DeWitt, Fenner, Geddes, Kirkland, Lenox, Manlius, Pompey, Rome, Steuben, Stockbridge, Sullivan, Vernon, Verona and Vienna.

The positions of prominent landmarks were fixed in sixteen villages and one city: Canastota, Cleveland, Churchville, Durhamville, Fayetteville, Fish Creek, Geddes, Higginsville, Kirkville, Manlius Station, Oneida, Vernon, Vienna, Verona, Wampsville, and the city of Rome.

The elevations of many important points were determined with precision, in order that they may be used as bases for future leveling. The measurements of vertical angles were made with a twelve-inch circle, reading with micrometers to seconds, and the chain of levels was in several places connected with benches of the canal surveys.

The fixing of these fifty-two reference points will enable us to make many needed corrections to the map of parts of Oswego, Onondaga, Madison and Oneida counties.

Reconnoissance for this triangulation began May 25th. It was conducted by Mr. O. S. Wilson, assisted by Mr. O. H. Bogardus. On the 5th of July, Mr. Bogardus took charge of the signal building party, and on the 10th of July Mr. Wilson began the measurement of angles, Mr. F. M. Rutherford acting as recorder. The building of signals was continued until September 1st, and the measurement of angles until November 20th.

#### WORK ON THE HUDSON RIVER.

In the year 1877, in accordance with a resolution of the Legislature, the Governor of this State requested the President to appoint a board of United States officers, experienced in the management of harbor and river improvements, to establish in co-operation with State authorities, bulkhead-lines along the Hudson River; the necessity for this action having arisen from the tendency of private owners to project piers and made-lands so far into the stream as seriously to interfere with its navigation. The bulkhead-line is to be the limit beyond which the State will grant no rights to the lands under water, nor allow constructions to be placed. It is, therefore, both a public line, and a boundary of private property.

Being a line in the water, its position must be fixed by reference to landmarks on the shore. The board of United States engineers therefore applied to the State Survey to co-operate with them in establishing a series of enduring monuments along both sides of the Hudson from Troy southward. The distinguished engineers saw clearly that the



absolute permanence of these reference points could be secured only by connecting them with an extended system of triangulation; and it was also evident to the Land Commissioners of the State, that grants of lands under water should be referred to the same landmarks on which the bulkhead-line was to depend.

After careful reconnoissance, with these considerations in view, Lieut. J. H. Willard, United States engineer, and myself, decided to place State Survey monuments about a mile apart along both banks of the Hudson, and to fix their positions by a chain of secondary triangles resting on the neighboring hills. The sites for monuments were chosen with special regard to convenience of local surveys, both public and private. The constant hydrographical surveys necessary to map the ever-changing channels of the river; the great value of the lands under water which the State is annually granting, and the prospective value of the shores, make it of immediate importance that all public and private surveys should have a common base, and rest on the same datum points; that their distances should be accurately measured and their courses determined from the true meridian.

The system is therefore planned to be practically a base for all surveys along the river.

The method of marking the stations is intended to make them easy to find, but difficult to destroy. A hole is dug five feet deep, and in the bottom is put an earthen crock lettered N. Y. S. S., its centre being the exact station. Over this is placed a granite post of the regular State Survey pattern, four feet long by six inches square, the upper end projecting six inches above the ground. It is marked N. Y. S. S., and the number of the station. Three feet from the centre of the stone, in directions at right angles to one another, are buried earthen pots, their tops about a foot and a half below the surface of the ground. They are like inverted flower-pots, having on the upturned surface an arrow pointing toward the station, which is exactly three feet from the center hole of the crock. The letters N. Y. S. S. are also stamped upon them.

In case the stone monument designating the station should be moved by intention, accident or frost, it can be adjusted by measurement from these witness crocks. If the stone should be entirely removed, the buried station-mark five feet below the surface could be found by means of the crocks, which are so thinly covered with earth as to be discoverable by digging. Where the soil is too shallow to support a monument, the trigonometrical station is marked by a copper bolt in the rock, and a stone post placed as near as possible, the exact distance and direction between the two being carefully measured.

Where United States Coast and Geodetic Survey stations were re-occupied, State Survey monuments were placed near and accurately connected.

Our experience has clearly shown that the stations of a trigonometrical survey are of very little use to local surveyors, unless they are marked by surface monuments easily found. The practice of the United States Coast Survey of designating their stations by underground marks, and having none on the surface, renders it impossible for ordinary surveyors to make any use of them. Although there are given in the Coast Survey map eighty-six stations in the area which we surveyed between Albany and New Baltimore, yet not one of these could have been found by a local surveyor. We discovered seven of their stations by redetermining them in the triangulation. Without re-surveying the ground, there could not have been found one of the eighty-six points, although the gentleman engaged upon this duty was an old Coast Survey assistant.

I bring forward these facts in order to illustrate the principle to which I have so often called attention, that a trigonometrical survey of a thickly settled country should be made once for all, in such a manner as to be a readily used base for local surveys of every kind. To accomplish this the purposes for which the fixed points will be needed must be foreseen, and both in their positions and method of marking, they must be adapted to these practical requirements.

I have endeavored in the work of the State Survey not only to reach a high grade of scientific accuracy, but after carefully considering the present and future wants of each part of the State, to shape the triangulation in such a way as to be of the greatest practical use; and I believe the benefits of this policy are already being felt. As soon as the triangulation was completed from Albany to New Baltimore, the Commissioners of the State Land Office passed the following resolutions.

*Resolved*, That section 4 of Rules of the land office, relating to water grants, be amended as follows: "The point of beginning of survey of the land applied for shall be defined by its true course and distance from one of the monuments established by the State survey, wherever such monuments are fixed within one mile of the grant applied for. The monument referred to shall be designated by its number, and the courses of the survey shall be given by their bearing from the true meridian established by the State Survey at said monument."

*Resolved*, That the State engineer and surveyor furnish map showing location, designation, number and surroundings of the State Survey monuments, for the use of the applicant.

From this action it will be seen that the days are passing away when boundaries of valuable estates are to be described as beginning at a stake or a pile of stones, and mapped with magnetic needle courses, which are always varying. The resolution of the Land Office is the beginning of a movement which will finally secure for all landed property permanent landmarks, and boundaries so accurately surveyed that they can at any time be retraced.

Field work on the Hudson River was begun May 27th, and ended

September 13th. Both the erection of signals and measurement of angles was done by Mr. Horace Andrews, Jr., assisted by Mr. Neville B. Craig. The State Survey twelve-inch Troughton and Simms theodolite was used in observing secondary angles, and an eight-inch Wurdemann repeating circle, belonging to the corps of United States engineers, was used in the tertiary triangulation.

ELEVATIONS IN ONONDAGA COUNTY.

Pompey Hill was for many years thought to be the highest point in Onondaga county; but several years ago, Mr. H. Wadsworth Clark, of Syracuse, proved that Ripley Hill was some two hundred feet higher, and thus transferred to the township of Spafford the claim of being the most elevated spot in the county. We hesitate to shake popular confidence in the superiority of Ripley Hill; but justice compels the statement, that the township of Fabius contains the loftiest mountain in Onondaga county, and one of the highest in Central New York. Its altitude is 2,020 feet, while that of Ripley Hill is only 1,968 feet.

To those seeking topographical information respecting Central New York, no part of this report will be a greater surprise than the appended table on page 94, which contains heights of some of the highest hills or mountains in the counties of Cayuga, Madison, Onondaga and Oneida, as determined by the leveling operations of the State Survey. From this table, it will be seen, that the well-known Starr Hill, in northern Oneida county, being only about 1,800 feet, is overtopped by Tassel Hill, near Waterville, which is 1,946 feet high.

Among the highest points already measured, the order of precedence in altitude seems to be:

Fabius Hill, Onondaga Co. ....	2,020 feet.
Ripley Hill, " " .....	1,968 "
Tassel Hill, Oneida " .....	1,946 "
Fenner Hill, Madison " .....	1,862 "
Starr Hill, Oneida " .....	1,800 "

When it is remembered that the lower valleys of this region are only 400 feet above the sea, and that the great differences of elevation occur within a few miles, the country may certainly be called mountainous rather than rolling; and it will be better understood why a topographical map is necessary to a proper comprehension of the physical features of the State.

## ABSTRACT OF WORK DONE DURING SEASON OF 1879.

	Central N. Y.	Hudson River.	Total.
Tripod signals erected . . . . .	21	43	64
Stations occupied { secondary . . . . .	13	5	18
{ tertiary . . . . .	....	43	43
No. of points—height determined . . . . .	12	9	21
No. of located points . . . . .	52	85	137
Secondary horizontal angles measured . . . . .	80	30	110
Tertiary       “       “       “       . . . . .	144	331	475
Vertical angles measured . . . . .	79	49	128
No. of horizontal observations . . . . .	4,430	2,713	7,143
“   “   vertical       “       . . . . .	478	49	527
Area included in secondary and tertiary triangulation . . . . .	500 sq. mi.	67	567
Area included in secondary reconnoissance . . . . .	1,300   “	70	1,370

Very respectfully submitted.

JAMES T. GARDNER,

*Director.*

Total,  
64  
18  
43  
21  
137  
119  
475  
128  
7,143  
527

567  
1,370

## APPENDIX.

### EXPLANATION OF THE TABLES.

As the central chain of primary triangles across the State has not yet been completed or adjusted, the geographical positions now given are preliminary and approximate.

The eastern group of points depends upon the initial latitude and longitude used by the United States Coast Survey, which is the most accurate we have, since it is the mean of observations taken at many widely separated places and reduced geodetically to one station. Future corrections to these points will therefore be very small. But the western group depending, as it does, on a few determinations of positions along the shore of Lake Ontario, used for preliminary results by the United States Survey of the Western and Northwestern Lakes, will be liable to a larger correction when the work is all reduced to one base. It is not anticipated that the change in geographical positions will be large enough to show on a map of 1:300000 scale, and the azimuths and distances between points are accurate to within the figures given. In the table the places are classified by counties in alphabetical order.

The first column on the left contains names of the several stations or triangulation points. These are generally either prominent objects of permanence—such as spires, or they are points on commanding hills where signals have been erected for the purposes of the survey, and which are marked on the ground by granite monuments four feet long. The stones project six inches above the surface, and are engraved with the letters N. Y. S. S., and the number of the station. Beneath the centre of the monument, generally five feet below the surface, an earthen crock is placed; the hole in its top indicating the exact spot located.

Sketches have been made showing the configuration of the land around these stations, and their exact relation to the most prominent neighboring objects, including buildings, fences, roads, etc. These will serve hereafter to assist surveyors in finding points that have for any reason become obscure.

In cases where minute descriptions are thus required, they may be had by application addressed to the Director of the New York State Survey, Albany.

Names of primary triangulation stations are in small capitals. All azimuths are reckoned from the south, around to the right through the west, so that the azimuth of points due south, west, north and east, are respectively 00°, 90°, 180°, 270°.

The column headed "Azimuth," gives the true bearing from the

station in the first column to the one in the ninth column. The Back Azimuth shows the true bearing from the stations in column nine to those in column one.

The length of the meter used, is 39.3704 inches, or 3.2809 feet, or 1.0936 yards.

After the table of geographical positions of stations comes a table of points on county lines, which have been carefully determined.

A new table follows containing the location of corners of lots in the old rectangular surveys. These old lot corners are the reference points on which land titles rest. They can only be preserved by accurately fixing their position. Every effort will therefore be made to add to this table.

The next table is also new. It gives a list of the elevations of fifty points, determined by careful trigonometrical leveling between State Survey stations, the chain being connected with the canal leveling of 1876, at Clyde, Salina, Kirksville and Canastota. The results of these checks indicate that the uncertainties of the elevations given are not so great as those from ordinary leveling operations over the same ground. The initial datum plane for heights is considered the mean level of the sea, as determined by the U. S. Coast Survey at Governor's Island, New York. From the Governor's Island tide gauge a line of levels has been run by the Coast Survey up the Hudson to Albany, where the benches have been carefully connected with those of the Erie canal. It is upon this chain that the elevations given in the table depend.

The last table is one showing the approximate variation of the magnetic needle from true north at thirty-four points, distributed through nine counties. They are given with enough precision to meet the requirements of common surveying. The table has more than double the information contained in that of last year.

JAMES T. GARDNER,  
*Director.*

[p. 37.]

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## T A B L E S.

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NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS.  
ALBANY COUNTY.

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE.	
										Me- ters.	Miles.
HELDERBERG .....	U.S.C.S.	New Scotland.....	.....	D. Flamsburgh.....	42 37 38	74 00 39	240 47 50	Rafnesque .....	61 03 53	3996	22 970
Baker .....	162	Bethlehem .....	.....	C. V. Baker.....	42 31 47	73 46 01	30 46 35 159 01 31	Vrooman..... Vanderzee (bolt),	210 46 00 339 01 15	2312 1437	1 455 0 924
Bethlehem.....	3	Bethlehem .....	.....	Ezra Swartwout.....	42 34 44	73 47 53	.....	Helderberg .....	286 56 47 266 09 59	18559 15614	11 345 9 702
Blodget.....	4	Coeymans.....	.....	Wolsey Blodget.....	42 30 55	73 53 46	.....	Helderberg .....	322 43 40	15386	9 684
Cass.....	7	New Scotland.....	.....	Mary A. Cass .....	42 34 11	73 59 16	234 18 38 178 45 44	Rafnesque .....	37 08 11	38048	23 641
Cedar Hill .....	Bolt.	Bethlehem .....	.....	.....	42 32 56	73 45 34	258 46 29 239 51 13	Ferris .....	58 28 09	22512	14 066
Clarksville.....	6	New Scotland.....	.....	Dr. C. J. Crouse.....	42 34 31	73 57 39	153 07 45 74 20 58	Countryman .....	358 45 41	3228	3 248
Corning.....	147	Bethlehem .....	.....	Erastus Corning .....	42 38 53	73 46 16	252 41 50 299 53 30	Van Denb'k(bolt), Campbell's Isld.,	78 47 35 43 31 32	1941 880	1 208 0 333
Countryman .....	8	New Scotland.....	.....	Mr. McNeery .....	42 37 00	73 59 21	177 46 17 217 36 19	Countryman .....	333 06 36 254 19 52	5162 2307	3 907 1 424
Domines Hook.....	Bolt.	Bethlehem .....	.....	.....	42 35 41	73 45 51	165 54 04	Rysedorph (C. S.) Grandview .....	72 43 55 119 55 04	4395 3632	2 731 2 237
Domines Hook.....	165	Bethlehem .....	.....	.....	42 35 41	73 45 52	227 18	Van Aften .....	357 45 29	31906	19 880
Ferris.....	1	Watervliet.....	.....	Mr. Van Rensselaer..	42 40 34	73 45 14	333 11 02	Niskayuna .....	37 42 41	20951	13 067
								Corning .....	345 53 48	3282	1 418
								Teller .....	60 36 02	2746	1 707
								Domines Hook..	47 18	13	0 003
								(bolt).			
								Helderberg .....	555 25 42	21736	13 525
								Rysedorph .....	153 12 25	912	3 841



Parish	Ward	Street	Lot	Acres	Value	Assessment	Owner	Value	Assessment
Ferris	1	Watervliet	42 40 34	73 45 14	75 36 09	333 11 02	Mr. Van Rensselaer	21746	13 525
Freleigh	Pot.	Watervliet	42 46 34	73 47 13	69 32 16	74 01 02	Lansing Pine	4957	3 069
Guilderland	11	Guilderland	42 42 01	73 53 02	.....	.....	Niskayuna	3913	2 432
Hamiltonville	.....	Guilderland	42 42 28	73 55 13	162 34 00	39 40 33	Helderberg	8774	5 514
Knowersville	9	Guilderland	42 42 11	74 02 01	.....	.....	Winn	6908	4 319
Lansing Pine	15	Watervliet	42 45 37	73 50 38	233 46 22	42 48 21	Van Aalten	25062	14 249
Mull	169	Coeymans	42 29 53	73 47 05	252 30 34	16 34 04	Helderberg	11637	7 225
Niskayuna	18	Watervliet	42 45 50	73 49 55	261 51 33	43 23 07	Lansing Pine	67 45 06	10 437
Paarlia Hook	Bolt.	Bethlehem	42 33 17	73 45 26	278 10 56	138 00 18	Titte's Hill	3525	2 190
Parke	Bolt.	Bethlehem	42 35 58	73 46 06	333 20 34	272 31 23	Niskayuna	1128	0 701
Patterson	157	Bethlehem	42 36 12	73 45 30	155 29 20	380 12 08	Helderberg	20153	12 523
Roha Hook	174	Coeymans	42 29 01	73 47 24	228 19 35	284 29 54	Traver (U.S.C.S.)	1237	1 237
Schermerhorn Island	168	Bethlehem	42 31 19	73 46 00	46 53 07	328 58 50	Roha Hook	1574	0 979
Shad Island	171	Coeymans	42 30 52	73 46 23	60 44 00	64 33 33	Rafinesque	17879	11 110
Titte's Hill	10	Guilderland	42 44 05	74 02 10	259 55 06	350 09 55	Helderberg	21261	13 212
Slingerland	5	New Bethlehem	42 37 34	73 51 59	57 56 13	84 12 57	Van Denb'h(bolt)	1748	1 088
Smith	.....	Knox	42 44 37	74 01 48	.....	.....	Muller	1887	1 172
Van Dalfsen	177	Coeymans	42 28 00	73 47 32	5 27 49	284 48 00	Van Denb'h(bolt)	3642	3 642
							Grandv't W.	2922	1 816
							Corning	1398	0 869
							Teller	2407	1 496
							Traver (U.S.C.S.)	3184	1 979
							Ten Eyck (C. S.)	3215	1 376
							Vrooman	1683	1 016
							Clapper	733	0 455
							Traver (U.S.C.S.)	1535	0 966
							Vrooman	1716	0 482
							Rafinesque	34571	21 668
							Helderberg	12120	7 531
							Cass	11772	7 315
							Countryman	10134	6 297
							Titte's Hill	3723	2 313
							Winn	3344	2 578
							Orchard	738	0 458
							Eccl	2162	1 281

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
ALBANY COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE.	
										Me- ters.	Miles.
Vanderzee .....	Bolt.	Bethlehem .....	.....	John G. Vanderzee.	42 32 32	73 46 25	219 35 39 316 34 35	Van Denb(h)(bolt), Traver(U.S.C.S.).	69 37 19 166 35 05	3573 4391	2 084 2 728
Vanderzee .....	115	Bethlehem .....	.....	John G. Vanderzee.	42 32 32	73 46 25	6 56 09	Vanderzee (bolt).	186 56 09	6	0 004
Van Wie .....	146	Bethlehem .....	.....	Dr H. Wendell .....	42 34 53	73 45 23	154 18 11 218 28 56	Parke .....	314 17 43	2221	1 380
Vrooman .....	151	Coeymans .....	.....	Cornelius Vrooman.	42 30 41	73 46 54	219 25 08 257 18 44	Van Denb(h)(bolt), Traver(U.S.C.S.).	39 26 59 117 19 34	5889 1897	3 533 1 179
Winn .....	.....	Gailderland .....	.....	Silas Winn .....	42 43 48	74 02 33	.....	Sittle's Hill .....	15 56 14	732	0 453
Winnies Dock .....	160	Bethlehem .....	.....	Peter Van Wie. ....	42 33 52	73 45 18	311 24 39 369 13 41	Heiderberg .....	167 13 12	11724	7 284
Winnies Point .....	U.S.C.S.	Bethlehem .....	.....	John D. Parsons .....	42 33 17	73 45 26	24 10 30	Van Denb(h)(bolt), Mullet .....	131 25 24 29 15 53	2046 791	1 271 0 492
Westerloe Island .....	170	Bethlehem .....	.....	Mr. Van Heusschaer.	42 37 19	73 45 41	297 25 56 230 37 52	Paarda Hook .....	204 10 30	3	0 002
<i>Albany City.</i>											
Court House .....	.....	.....	.....	.....	42 39 05	73 45 19	.....	Teller .....	127 27 01	2731	1 697
Cathedral spire .....	.....	.....	.....	.....	42 38 50	73 45 36	.....	Moles .....	50 58 18	1122	0 697
Convent of the Sacred Heart.	.....	.....	.....	.....	42 37 39	73 46 22	.....	Ferris .....	2 18 18	2745	1 706
								Rysedorph .....	133 45 49	4013	2 494
								Ferris .....	8 57 11	3275	2 023
								Rysedorph .....	124 57 19	4020	2 498
								Ferris .....	15 55 43	2626	3 491
								Rysedorph .....	91 56 11	4334	2 693



NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
ALBANY COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE.	
										Me- ters.	Miles.
Bergen Island summer-house flag pole.	.....	Coeymans.....	.....	.....	42 28 04	73 47 12	31 31 29 74 56 24	Orehard..... Van Dalsen.....	..... .....	1005 471	0.624 0.293
Briggs' Monument, Coeymans cemetery.	.....	Coeymans.....	.....	.....	42 28 00	73 47 43	283 28 42 308 03 15	Hell..... Whannel.....	103 29 49 128 04 22	2269 2664	1.429 1.411
Clarksville D. R. church sp...	.....	New Scotland.....	.....	.....	42 24 32	73 57 40	.....	Clarksville..... Cass.....	112 13 45 253 47 52	35 280	0.621 1.417
Coeymans Academy.....	.....	Coeymans.....	.....	.....	42 28 22	73 47 56	258 47 40 222 02 36	Yellow Pine (C.S.) Traver (U.S.C.S.)	78 52 42 42 04 08	10415 4626	6.471 2.873
Coeymans dock flag pole.....	.....	Coeymans.....	.....	.....	42 28 23	73 47 24	179 56 57 261 14 56	Roda Hook..... Mull's Island.....	339 56 27 81 15 09	1290 440	0.802 0.273
Cross-over Light house.....	.....	Bethlehem.....	.....	.....	42 36 48	73 45 46	217 28 53 102 47 08	Rysedorph (C.S.) Gorning.....	67 30 37 282 46 48	3812 692	2.369 0.430
D. R. ch. south of Bethlehem, An station.	.....	Bethlehem.....	.....	.....	42 33 42	73 48 20	.....	Cass..... Helderberg.....	273 24 15 293 17 33	1494 1837	9.317 11.103
Deserted Lath. ch. sp. 13 miles west of Guilderland.	.....	Guilderland.....	.....	.....	42 42 32	73 59 56	.....	Winn..... Helderberg.....	303 17 56 186 10 53	4281 9124	2.690 5.676
Dunsville (flag pole).....	.....	Guilderland.....	.....	.....	42 44 33	71 01 03	.....	Helderberg..... Ferris.....	171 31 46 108 14 28	12534 22727	7.790 14.122
Dunsville P. O. church spire.....	.....	Guilderland.....	.....	.....	42 44 34	73 58 55	.....	Sittle's Hill..... An station 74.....	258 21 42 294 10 55	4534 2221	2.817 1.382
East Township Bapt. ch. sp.....	.....	Knox.....	.....	.....	42 42 13	74 05 42	.....	Van Alton..... Sittle's Hill.....	18 21 07 13 24 24	25229 3625	14.621 3.682
Feura Bush D. R. church sp.....	.....	New Scotland.....	.....	.....	42 34 35	73 52 53	.....	Rysedorph..... Ferris.....	67 19 57 43 26 00	11375 12234	8.982 9.466

13 23 24 3 952  
67 19 57 14875 8 982  
43 26 00 15234 9 406

Sittie's Hill .....  
Rosedorph .....  
Ferris .....

42 34 35 73 52 53

New Scotland.....

Fentra Bush D. R. church sp. ....

Guilderland church spire.....	Guilderland.....	42 42 14	73 58 10	265 56 03	6619	4 132
Hamiltonville M. E. ch sp .....	Guilderland.....	42 42 16	73 54 43	201 39 48	9170	5 698
Home Lawn, flag pole.....	Watervliet.....	42 43 41	73 45 36	224 21 12	11817	7 343
Knoxville M. E. church spire.....	Knox.....	42 40 21	74 06 18	257 34 45	788	0 450
Lisha's Kill P. O., D. R. ch.....	Watervliet.....	42 45 20	73 52 36	241 16 19	93421	14 553
Lutheran ch. sp., 2 miles east of Knoxville.....	Knox.....	42 40 38	74 04 45	571 43 08	22015	14 632
New Scotland Presb. ch. twr.....	New Scotland.....	42 37 52	73 54 25	17 46 22	26 493	16 775
N. Y. C. R. R. shops, W. Ab., tall chimney.....	Watervliet.....	42 40 38	73 46 30	249 45 21	14137	8 753
Paarda Hook Light-house.....	Bethlehem.....	42 33 16	73 45 56	79 04 56	2734	1 699
Patterson's House, so. chimney of.....	Bethlehem.....	42 37 08	73 46 27	203 46 14	22577	14 029
Roha Hook Light-house.....	Coeymans.....	42 28 49	73 47 20	134 51 27	7 84	4 869
School-ho. cupola, near Mall's.....	Coeymans.....	42 30 24	73 47 17	13 35 47	25991	16 153
Slingerland church spire.....	Bethlehem.....	42 37 49	73 51 39	224 10 50	4525	5 919
Sloan's Hotel, flag po. in ft. of.....	Bethlehem.....	42 42 11	73 54 37	59 45 03	3477	2 689
Unionville D. R. church sp.....	New Scotland.....	42 35 02	73 53 28	93 55 09	1718	1 066
Van Wie's stone Light-house.....	Bethlehem.....	42 35 04	73 45 30	141 13 11	7253	4 494
				264 10	3	0 002
				58 50 28	5221	5 245
				96 55 13	3443	2 140
				41 16 26	3492	2 152
				91 57 03	2050	1 273
				98 38 14	2228	1 385
				146 47 38	3593	2 252
				237 08 06	12405	7 708
				268 18 12	12311	7 650
				324 17 40	11808	7 337
				301 17 13	974	0 685
				78 28 33	14334	8 907
				286 39 57	16267	6 380
				154 37 24	396	0 227
				66 05 45	345	0 345

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
CAYUGA COUNTY.

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE.	
										Me- ters.	Miles.
NILES.....	107	Niles.....	25	Thomas Fitzpatrick.	42 47 57	76 26 10	128 47 31	Clyde.....	508 29 58	448.3	27 891
VICTORY.....	U.S.L.S.	Victory.....	30	John Jewell.....	43 13 07	76 36 29	163 19 39	Victory.....	343 12 37	486.8	30 236
Mitchell.....	115	Sennett.....	1043	John Mitchell.....	42 56 35	76 31 53	113 56 33	Clyde.....	263 42 53	297.90	18 512
Tanner.....	116	Brutus.....	87	S. B. Tanner.....	43 01 15	76 33 37	334 01 55	Niles.....	154 05 45	177.5	11 651
Auburn city, dome of Court House.		Auburn city.....			43 01 15	76 33 37	97 53 16	Clyde.....	277 40 36	251.22	15 610
					42 55 48	76 34 16	169 57 51	Victory.....	349 55 54	223.14	13 865
							119 25 35	Clyde.....	269 19 22	275.46	17 117
							322 16 56	Niles.....	142 52 26	182.45	11 337
COLUMBIA COUNTY.											
Bell.....	183	Stuyvesant.....		R. W. Bell.....	42 27 43	73 46 05	84 16 39	Orchard.....	264 15 29	267.1	1 989
							335 41 21	Whannel.....	175 41 23	126.6	0 804
Bluff.....	184	Stuyvesant.....		Roadside.....	42 26 51	73 46 19	166 59 31	Parsons.....	286 58 42	173.9	1 681
							60 07 34	Vanderpoel.....	240 06 55	152.9	0 950
Hotating Island.....	179	Stuyvesant.....		On Hotating Island..	42 26 54	73 46 56	117 26 38	Parsons.....	297 26 14	91.3	0 568
							59 07 49	Vanderpoel.....	269 07 35	97.2	0 694
Lower Schoelack Island.....	180	Stuyvesant.....		On S. end of Island..	42 27 41	73 46 34	52 41 00	Parsons.....	232 40 21	167.8	1 030
							347 06 19	Bluff.....	167 09 29	153.2	0 964
Whannel.....	185	Stuyvesant.....		John Whannel.....	42 27 01	73 46 01	153 25 52	Reola Hook.....	333 24 56	426.2	2 640
Barren Island pine (county corner).				Knickerbocker Ice Co.	42 27 51	73 47 09	116 38 27	Orchard.....	296 37 23	241.1	1 592
Fire Hook Island Light-house		Stuyvesant.....					6 44	Barren Island.....	186 44	42	0 026
					42 27 47	73 46 56	276 36 15	Bell.....	96 36 49	116.7	0 725
							34 21 05	Parsons.....	214 20 40	146.4	0 969

Barren Island (county corner) ..... 186 44  
Five Hook Island Light house ..... 96 36 49  
Stuyvesant ..... 214 30 40  
Parsons ..... 164

Knickerbocker Ice Co. 42 27 51 73 47 09 6 44  
Stuyvesant ..... 42 27 47 73 46 36  
Parsons ..... 276 36 15  
Stuyvesant ..... 34 21 05

Stuyvesant ..... 42 27 47 73 46 36  
Parsons ..... 276 36 15  
Stuyvesant ..... 34 21 05

Stuyvesant ..... 42 27 47 73 46 36  
Parsons ..... 276 36 15  
Stuyvesant ..... 34 21 05

Stuyvesant ..... 42 27 47 73 46 36  
Parsons ..... 276 36 15  
Stuyvesant ..... 34 21 05

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

Barren Island ..... 186 44  
Bell ..... 96 36 49  
Parsons ..... 214 30 40

DELAWARE COUNTY.

FULTON COUNTY.

GREENE COUNTY.

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
 GREENE COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE.	
										Feet.	Miles.
Dutch Reformed church.....	.....	New Baltimore	.....	.....	42 26 43	73 47 21	319 16 58	Vanderpool.....	1 9 15 30	511	0.318
Methodist Episcopal church.....	.....	New Baltimore	.....	.....	42 26 52	73 47 18	258 35 55	Holding Island.....	28 56 19	66	0.414
Riverside House sun. house flag pole.....	.....	New Baltimore	.....	.....	42 26 42	73 47 14	358 13 40	Vanderpool.....	178 13 40	788	0.489
Ship yard, chimney of.....	.....	New Baltimore	.....	.....	42 26 38	73 47 13	292 35 59	Holding Island.....	82 51 04	501	0.312
.....	.....	New Baltimore	.....	.....	42 26 42	73 47 14	40 09 31	Bel.....	40 09 31	2435	1.514
.....	.....	New Baltimore	.....	.....	42 26 38	73 47 13	251 07 14	Whannel.....	71 08 02	1762	1.094
.....	.....	New Baltimore	.....	.....	42 26 38	73 47 13	346 43 29	Vanderpool.....	194 08 38	350	0.217
.....	.....	New Baltimore	.....	.....	42 26 38	73 47 13	.....	Whannel.....	66 44 18	1806	1.122
<b>HERKIMER COUNTY.</b>											
BARTO HILL.....	28	Fairfield	.....	Alveta Wilson	43 07 48	74 53 25	3 8 32 16	East Hill.....	158 39 53	41028	25.575
.....	.....	Fairfield	.....	.....	43 07 48	74 53 25	59 14 17	Royal Hill.....	19 29 30	30629	19.064
<b>MADISON COUNTY.</b>											
FENNER.....	130	Fenner	.....	Orville E. Wormuth	42 57 54	75 44 42	96 04 01	Howlett Hill.....	275 41 37	41857	27.892
.....	.....	Fenner	.....	.....	42 57 54	75 44 42	131 21 29	Gulberts-brook.....	311 40 45	59888	37.213
Allis.....	124	Lenox	.....	Joel Allis	43 05 18	75 48 13	53 17 18	Eagle.....	233 12 24	11880	7.444
.....	.....	Lenox	.....	.....	43 05 18	75 48 13	89 46 10	Kickville.....	200 49 31	11121	6.973
Bulger.....	112	Lenox	.....	Edward Bulger	43 03 56	75 40 06	103 01 38	Allis.....	282 56 16	11303	7.023
.....	.....	Lenox	.....	.....	43 03 56	75 40 06	57 08 36	Cranston.....	127 01 29	9706	6.068
Canastota.....	143	Lenox	.....	James C. New	43 04 21	75 44 27	109 09 17	Allis.....	289 06 42	5416	3.365
.....	.....	Lenox	.....	.....	43 04 21	75 44 27	20 46 24	Cranston.....	200 47 15	6489	4.032
Cranston.....	122	Lenox	.....	Asa Cranston	43 01 04	75 46 09	93 09 24	Eagle.....	273 03 10	12153	7.732
.....	.....	Lenox	.....	.....	43 01 04	75 46 09	160 11 29	Allis.....	340 13 04	8331	5.178
Eaton.....	129	Stockbridge	.....	Ozias A. Eaton	43 01 44	75 33 26	157 22 21	Vicenna.....	337 17 14	5673	36.376
.....	.....	Stockbridge	.....	.....	43 01 44	75 33 26	62 25 50	Fenner.....	242 18 08	17259	10.749



Canastota	143	Lenox	1 James C. New	43 04 21	75 44 27	109 06 17	Allis	200 47 13	64 50	3 432
Cranshaw	122	Lenox	Asa Cranshaw	43 01 04	75 46 09	91 09 24	Engle	273 03 10	121 3	7 732
Eaton	129	Stockbridge	Ozias A. Eaton	43 01 44	75 33 26	157 22 21	Allis	340 13 01	8 31	5 178

Bridgeport M. E. church	Sullivan	43 09 23	75 58 19	314 23 54	161 25 78	15288	9 500
Canastota Baptist church	Lenox	43 04 29	75 45 15	312 55 22	153 04 41	2354	14 632
Canastota Free church	Lenox	43 01 42	75 45 18	190 55 19	102 50 30	1169	6 829
Canastota M. E. church	Lenox	43 04 52	75 45 26	584 49 57	102 50 30	1169	6 829
Free Methodist church, near Chittenango Station	Sullivan	43 05 16	75 52 30	9 43 53	119 31 42	1320	8 200
Fowler Wesleyan Meth. ch.	Sullivan	43 05 41	75 54 57	259 31 15	187 43 44	7057	4 468
Oneida Baptist church	Lenox	43 05 38	75 39 13	305 33 25	155 34 06	1653	1 027
Oneida Opera House dome	Lenox	43 05 45	75 39 17	208 12 01	208 12 01	8035	4 913
Oneida Presbyterian church	Lenox	43 05 39	75 39 13	211 56 39	132 00 59	11594	7 504
Perryville P. E. church	Fenner	43 09 25	75 48 04	3 25 34	183 25 20	7879	4 866
Quality Hill Presb. church	Lenox	43 01 04	75 46 40	37 53 32	217 52 33	3175	1 573
Ridgeville Presb. church	Lenox	43 07 58	75 47 35	21 09 02	201 08 21	3355	2 085
Wampsville Presb. church	Lenox	43 01 39	75 42 27	71 37 16	251 33 41	7490	4 654

MONTGOMERY COUNTY.

Black	Pot.	Amsterdam	Robert Black	42 58 43	74 10 05	232 02 12	16115	10 052
Brook	Pot.	Amsterdam	Philip Bronk	42 56 52	74 05 36	148 13 12	150 9	9 363
Douglas	Pot.	Florida	James Douglas	42 53 08	74 07 22	168 55 58	9377	5 970

Waterstreet	138 13 12	150 9	9 363
Waterstreet	168 55 58	9377	5 970
Douglas	199 12 37	7341	4 5 3
Van Alton	77 36 14	9901	6 152
Waterstreet	120 03 20	4211	3 058

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
MONTGOMERY COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude	Longitude.	Azimuth	To station.	Back Azimuth.	DISTANCE.	
										Me.	Miles.
Glen	30	Glen		L. Cement	42 53 21	74 19 27	229 00 27 143 56 28	Galway Royal Hill	49 11 56 323 48 29	39291 26976	18 823 16 762
Oak Ridge	23	Charleston		Thomas Newman	42 47 27	74 19 21	305 21 13 216 25 01	Hellersberg Galway	125 33 51 36 36 29	31331 35886	19 471 23 751
Romeyn	Pot	Amsterdam		Thomas Romeyn	42 54 01	74 05 12		Waterstreet Dougall	166 12 17 253 41 56	5467 4118	3 416 2 559
Amsterdam Academy		Amsterdam			42 56 33	71 11 29		Waterstreet Glen	131 50 42 241 13 13	12920 12445	8 221 7 671
Amsterdam R. C. church sp.		Amsterdam			42 56 05	74 11 18		Waterstreet Glen	129 39 28 243 21 50	12163 12159	7 741 7 574
Charleston Four Cor. ch. tower		Charleston			42 48 50	74 24 46		Babcock East Hill	149 18 50 261 20 51	23729 24121	14 755 14 688
Glen Dutch Ref. church sp.		Glen			42 53 40	74 20 32		Royal Hill Glen	325 42 42 111 49 15	25233 1691	15 928 0 905
Scotch U. Presb. church sp.		Florida			42 52 17	74 08 10		Waterstreet Van Auchen	99 45 21 71 00 10	5417 11360	3 395 7 059
<b>ONEIDA COUNTY.</b>											
FLORENCE	132	Florence	195	John Miller	43 23 15	75 39 43	50 03 43 27 40 22	Howlett Hill Eagle	2 9 37 49 5 07 29 42	67069 43565	41 675 28 312
STARBUCK HILL	127	Steuben	190	James E. Davis	43 20 43	75 15 06	47 37 39 72 49 52	Bulger Vienna	227 20 32 252 31 10	43000 36562	28 252 22 712
TASSEL HILL	29	Marshall		Lamanzo Leonard	42 56 27	75 19 02	289 17 06 253 53 06	East Hill Royal Hill	69 42 07 76 25 46	53125 67061	33 010 41 583
Prospect	117	Kirkland		John Neal	43 02 16	75 26 47	99 48 08 140 35 35	Bulger Vienna	279 39 02 320 25 59	18354 30134	11 405 18 725

127	Stauben	100	James E. Davis	43 20 43	75 15 06	75 19 02	2-9 17 06 47 37 39	East Hill Royal Hill	69 42 07 76 23 46	53125 67001	33 010 41 683	22 712
29	Tassel Hill		Lamanzo Leonard	42 56 27	75 19 02	2-9 17 06 553 31 06	39 48 08	Bulger	579 39 02	18324	11 405	
117	Prospect		John Neal	43 02 16	75 26 47	140 35 33		Vienna	320 28 50	30134	18 725	
142	Rome	2	John Newhouse	43 14 03	75 28 05	36 17 53 34 48 45		Fenner Vienna	216 06 31 274 39 58	28 704 17117	23 739 10 822	
135	Vienna	57	Milo Ingraham	43 14 50	75 40 51	38 16 24		Fagle Fenner	218 66 31 189 04 31	31537 20 503	19 609	
	Churchville Ger. Luth. ch.			43 11 27	75 34 28	125 41 24 28 47 27		Vienna Bulger	305 37 00 508 13 35	10717 19853	6 660 9 871	
	Durhamville Baptist church.			43 07 06	75 40 17	45 03 19 357 42 34		Canastota Bulger	228 00 28 177 42 40	7614 3 611	4 731	
	Durhamville Ger. Cath. ch.			43 07 10	75 40 14	47 37 31 353 13 11		Canastota Bulger	217 34 43 178 13 20	7731 5680	4 804 3 716	
	Fish Creek Union church			43 13 15	75 42 03	307 28 07 351 15 30		Vienna Bulger	27 28 55 171 16 50	3376 16579	2 097 10 739	
	Higginsville Presb. church			43 10 35	75 38 47	100 00 32 8 16 50		Vienna Bulger	339 59 05 188 15 41	8 770 1437	5 201 7 728	
	Rome Baptist church			43 12 59	75 27 40	100 53 07 43 16 24		Vienna Bulger	280 41 03 225 07 53	18245 3374	11 337 14 772	
	Rome First M. E. church			43 12 59	75 27 37	100 49 17 43 20 56		Vienna Bulger	280 40 11 225 12 24	18397 23 50	11 370 14 801	
	Rome German Catholic ch.			43 12 49	75 27 40	101 53 22 45 45 14		Vienna Bulger	281 41 19 225 39 41	18293 2535	11 367 14 624	
	Rome Pres-byterian church			43 12 50	75 27 30	101 37 39 46 08 36		Vienna Bulger	281 28 28 225 59 58	18519 2433	11 507 14 747	
	Vernon Baptist church			43 04 47	75 32 28	148 58 17 81 12 02		Vienna Bulger	328 52 37 261 06 36	27111 16 65	13 491 6 379	
	Vernon Pres-byterian church.			43 04 40	75 32 12	149 28 00 52 22 50		Vienna Bulger	329 22 21 262 17 55	21 61 10149	13 784 6 306	
	Vernon Unitarian church.			43 04 45	75 32 35	118 54 35 81 31 26		Vienna Bulger	328 48 54 261 26 18	21783 10 115	13 536 6 169	
	Verona M. E. church			43 08 12	75 34 22	144 18 36 41 39 03		Vienna Bulger	324 14 28 221 35 18	15142 11069	9 409 6 878	
	Verona Presbyterian church,			43 08 16	75 34 20	143 47 53 44 19 43		Vienna Bulger	323 43 21 224 15 48	13057 11218	9 356 6 971	
	Vienna M. E. church			43 14 22	75 42 17	214 57 29 51 15 47		Vienna Bulger	61 58 36 171 20 16	2057 193 6	1 273 12 133	

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
 ONONDAGA COUNTY.

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude	Longitude.	Azimuth.	To station.	Back Azimuth	DISTANCE.	
										Me- ters.	Miles.
HOWLETT HILL .....	109	Marcellus .....	17	C. P. Cornish.....	42 59 53	76 17 31	97 25 49 134 45 18	Clyde .....	377 02 21	17079	21 254
REILEY HILL.....	106	Spartford.....	32	Abram Craig.....	42 47 25	76 14 31	169 58 39 93 37 19	Howlett Hill .....	349 76 33	23404	11 587
FABIUS .....	125	Fabius .....	34	Erasmus Fellows.....	42 48 42	76 01 32	131 18 57 199 15 47	Howlett Hill.....	314 07 54	20559	18 797
Clapp .....	131	Pompey .....	5	Edmund O. Clapp...	42 58 12	76 02 26	18 42 53 131 06 35	Howlett Hill.....	278 31 74	26595	19 921
Chestnut Ridge.....	111	Salina .....	110	H. L. Holly.....	43 05 49	76 11 21	37 39 38 290 18 16	Howlett Hill.....	217 26 21	1831	8 594
Cossitt.....	119	Onondaga.....	118	D. Cossitt.....	43 00 02	76 11 42	87 53 66 181 27 41	Howlett Hill .....	567 55 07	79 65	4 659
Carpenter.....	105	Onondaga.....	96	Charles Carpenter...	43 00 31	76 17 12	39 17 45 277 25 49	Chestnut Ridge .....	2 27 58	16501	6 659
Collamer .....	144	DeWitt .....	12	John I. Furbeck.....	43 06 05	76 03 55	53 49 33 267 20 22	Howlett Hill.....	200 17 31	1352	0 810
Davison .....	128	Van Buren.....	42	E. Davison.....	43 06 08	76 17 11	59 43 18 51 14 18	Clapp.....	171 50 21	14681	9 182
Draper .....	100	Geddes.....	150	Dr. Draper.....	43 03 03	76 12 17	143 18 32 84 42 51	Howlett Hill.....	182 39 54	11563	7 187
Eagle .....	123	Manlius.....	79	Hezekiah Cass.....	43 01 26	75 55 17	171 45 22	Chestnut Ridge.....	249 39 42	9211	5 742
Fairmount .....	103	Camillus.....	36	James Geddes.....	43 02 37	76 15 29	169 33 55	Howlett Hill.....	171 45 22	5958	3 437
								Gilbertsville.....	316 03 01	14627	17 546
								Howlett Hill.....	264 27 31	26685	18 881
								Chestnut Ridge .....	41 28 10	8136	5 068
								Davison.....	340 32 46	6 94	4 281

Eagle	133	Munius	79	Rezeviah Cass	43 01 26	75 55 17	84 18 22	143 18 22	316 03 01	1837	27 546
Fairmount	103	Camillus	36	James Geldes	43 02 37	76 15 29	123 25 21	160 33 55	261 27 31	3685	18 881
Green	124	De Witt	65	Ira Green	42 59 19	76 01 56	92 53 55	133 16 42	372 47 18	212 9	13 210
Giles	114	Skaneateles	66	W. F. Giles	42 53 03	76 26 20	223 15 35	348 55 08	43 21 31	17406	10 822
Hoxsie	134	Skaneateles	45	R. R. Hoxsie	42 55 46	76 22 35	21 53 41	18 30 44	178 28 15	9431	5 860
Kingsley	126	Van Buren	22	C. H. Kingsley	43 07 13	76 18 07	396 45 58	285 47 35	41 57 16	9233	6 363
Kirkville	120	Manlius	38	George Brown	43 04 20	75 55 23	35 53 45	41 33 24	198 57 17	6587	9 449
Mann Davis	140	Lysander	81	L. F. Cuddelback	43 09 48	76 18 51	305 53 35	311 31 54	176 47 21	13597	8 149
Northrup	133	Marcellus	6	J. G. Northrup & Son	43 00 04	76 21 32	32 29 19	1 8 01 03	165 32 12	3639	5 921
Olympus	101	Syracuse	187	Lacy Raynot	43 02 05	76 08 02	146 57 41	3 52 15	215 52 37	1408	8 704
Seeley	137	Skaneateles	22	M. Seeley	42 58 34	76 22 18	15 00 57	191 28 20	164 31 10	5660	3 455
Sherwood	104	Camillus	48	Matthew Sherwood	43 02 14	76 17 21	229 58 01	182 21 06	135 58 47	1551	7 799
Sorrell Hill	119	Van Buren	20	J. Seafs	43 05 52	76 21 30	3 7 23 25	3 7 57 29	161 33 62	7155	4 416
Amboy Presb. ch. spire		Camillus			43 04 16	76 16 21	47 06 57	192 57 32	8 43 30	31861	21 682
Beverton ch. West spire		Circero			43 14 17	76 08 33	122 53 55	311 22 40	32 27 15	1744	10 832
Brayton's barn cup. W. W. G.		De Witt	30	W. C. Brayton	43 04 15	76 04 51	49 33 43	32 18 25	3 6 55 25	8213	5 134
Collamer M. E. ch.		De Witt			43 06 15	76 04 60	51 49 28	42 16 00	322 49 28	1327	9 400
Fayetteville Cath. ch.		Manlius			43 01 47	76 00 25	25 25 01	22 44 22	161 56 51	36895	19 195
Fayetteville P. E. ch.		Manlius			43 01 46	76 00 32	54 54 04	21 21 12	229 31 05	13076	7 504
									163 20 06	1656	7 253
									222 10 45	1540	9 616
									92 28 32	6243	4 315
									262 42 55	7505	4 477
									94 57 42	7145	4 439
									291 19 54	7586	4 463

NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
 ONONDAGA COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE. Me- ters.	Miles.	
Fayetteville Presb. ch.	.....	Manlius	.....	.....	43 01 46	76 00 31	274 48 10 21 03 31	Engle..... Clapp.....	..... .....	7186 7664	4.465 4.389	
Goulds M. E. ch.	.....	Geddes	.....	.....	43 03 07	76 11 31	2 31 42 396 23 39	Cossitt..... Clapp.....	..... .....	5711 15340	3.530 9.532	
Kirkville M. E. ch.	.....	Manlius	.....	.....	43 04 31	75 57 11	3 35 11 01 287 49 31	Engle..... Kirkville.....	..... .....	6 69 1155	3.865 7.189	
Liverpool M. E. ch. spire	.....	Salina	.....	.....	43 06 14	76 12 32	351 23 16 293 09 11	Cossitt..... Chestnut Ridge.....	..... .....	174 33 41 116 00 59	11520 1763	7.158 1.696
Manlius Station M. E. ch.	.....	Manlius	.....	.....	43 01 42	76 00 02	313 09 13 15 06 29	Engle..... Clapp.....	..... .....	133 12 27 135 01 42	8842 12467	5.494 7.717
North Manlius P. O. Bapt. ch.	.....	Manlius	.....	.....	43 05 58	76 58 29	20 28 45 91 48 08	Clapp..... Collamer.....	..... .....	200 36 03 271 41 39	13349 6838	9.538 4.511
North Manlius P. O. M. E. ch.	.....	Manlius	.....	.....	43 00 02	75 58 27	20 27 16 30 37 15	Clapp..... Collamer.....	..... .....	200 24 33 270 55 45	13456 6994	9.694 4.359
Onondaga Hill Presb. ch.	.....	Onondaga	.....	.....	43 00 13	76 11 08	67 22 26 178 16 49	Cossitt..... Chestnut Ridge.....	..... .....	217 32 31 358 16 46	8236 16377	6.519 6.418
Pompey Hill Cath. ch.	.....	Pompey	.....	.....	42 51 04	76 00 53	209 13 26 294 11 29	Engle..... Fennel.....	..... .....	15644 74 25 22	9.721 22298	11.227
Pompey Hill Presb. ch.	.....	Pompey	.....	.....	42 53 59	76 01 01	269 37 48 294 02 29	Engle..... Fennel.....	..... .....	20 41 45 74 13 38	15 69 23165	9.890 14.376
Silver Street or St. Mary's ch.	.....	Manlius	.....	.....	43 05 16	76 00 15	316 21 51 282 07 15	Engle..... Kirkville.....	..... .....	136 28 14 168 69 53	9579 3325	6.971 3.433
First Presb. church spire.	.....	Syracuse	.....	.....	43 02 55	76 09 15	31 29 40 151 36 37	Cossitt..... Chestnut.....	..... .....	211 58 00 331 55 10	6577 6 83	3.900 3.789

Silver Street or St. Mary's ch. ....	Manlius .....	43 05 16	76 00 15	306 21 51	288 07 15	211 58 00	6877	3 900
<i>Syracuse.</i>								
First Presb. church spire.....	Syracuse .....	43 02 55	76 09 15	31 29 40	151 56 37	531 55 10	0 683	3 780
St. John's R. C. ch. spire.....	Syracuse .....	43 04 07	76 09 56	20 45 38	169 55 22	290 44 12	8070	5 014
St. La'y's R. C. ch. spire.....	Syracuse .....	43 02 37	76 09 52	27 35 31	161 12 09	289 50 11	10 531	6 805

OSWEGO COUNTY.

AMBOY .....	141	Amboy .....	94	D. Black.....	43 23 15	75 55 14	74 50 03	0 03 53	254 34 28	31 944	19 762
GILBERTSVILLE .....	108	Schroepfel.....	27	Elias Thomas.....	43 18 43	76 17 56	67 40 58	59 08 56	247 28 15	27111	16 845
Cleveland P. E. ch. ....		Constantia .....			43 14 02	75 53 01	7 31 32	38 41 23	179 08 42	31855	21 658
Constantia Presb. ch. ....		Constantia .....			43 11 57	76 00 16	314 02 07	5 24 44	164 55 31	25541	14 330
Central Square ch. spire.....		Hastings.....			43 17 14	76 08 53	327 43 31	6 32 07	185 23 15	31135	19 316
Falley Academy, Fulton.....		Volney.....			43 19 19	76 24 48	276 53 59	533 27 45	147 52 49	31560	21 475
EAST HILL.....	26	Cherry Valley.....			42 46 53	74 42 16	239 15 41	286 33 43	186 36 11	32656	19 319
Redfield Springs Obs'y.....		Richfield .....			42 50 31	74 57 00	332 18 15	288 28 12	96 38 42	4353	5 812

OTSEGO COUNTY.

RAVENSOLE .....	U. S. S.	Brunswick .....		J. H. Hayner.....	42 47 20	73 56 59	61 03 53		210 47 50	36906	22 970
YELLOW PINE.....	U. S. S.	Schoelack.....			42 29 27	73 40 28	182 07 41		2 07 54	11561	7 433
YELLOW PINE.....	150	Schoelack.....			42 29 29	73 00 27	26 21 29		Yellow Pine (U.S.)	206 21 28	50 0 031

RENSELAER COUNTY.

Belvedere .....		East Greenbush.....			42 35 53	73 41 19	57 46 37	561 52 34	177 46 43	5087	3 161
Campbell's Island.....	163	Schoelack .....		On Campbell's Island	42 33 16	73 45 06	180 48 18	181 49 31	100 48 55	1291	0 802
									3 49 37	1865	1 122

NEW YORK STATE SURVEY—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
 RENSSELAER COUNTY—(Continued).

NAME OF STATION.	No. of monument	Township	No. of lot.	Owner's name.	Latitude	Longitude.	Azimuth	To station.	Back Azimuth	Distance.
										Mts. Mols.
Casleton.....	157	Schoholack.....	.....	Roadside.....	42 32 10	73 45 15	113 09 16	Vanderzee (balt.)	293 08 39	1719 1 068
							55 48 43	Baker.....	337 48 12	1268 0 788
Clapper.....	161	Schoholack.....	.....	B. Clapper.....	42 30 28	73 45 44	72 06 11	Vrooman.....	251 29 24	1639 1 049
							161 35 23	Vanderzee (balt.)	311 54 56	2628 1 881
Cooper.....	164	East Greenbush.....	.....	S. end of Papsaucee I.....	42 35 59	73 45 14	112 19 13	Parker.....	322 18 38	1940 1 186
							32 36 39	Van Wie.....	292 56 54	331 0 339
Denison.....	166	East Greenbush.....	.....	Barton H. Denison.....	42 36 49	73 45 22	253 02 39	Taylor.....	113 03 30	1827 1 169
							134 42 22	Wesley's Island.....	234 42 09	1021 0 634
Grandview.....	149	East Greenbush.....	.....	Roadside.....	42 35 51	73 43 37	269 17 50	Hallenbeck (C. S.)	89 50 39	5210 3 228
							3 16 03	Van Deubush.....	183 15 54	5118 3 189
Hallenbeck.....	C. S. S.	East Greenbush.....	.....	Daniel Hallenbeck.....	42 35 51	73 40 09	2 07 54	Yellow Pine (C. S.)	182 07 41	41964 7 433
Hallenbeck.....	151	East Greenbush.....	.....	Daniel Hallenbeck.....	42 35 55	73 40 09	398 08	Hallenbeck (C. S.)	128 08	1 0 001
Moles.....	156	East Greenbush.....	.....	Marcus Moles.....	42 37 42	73 45 03	47 32 36	Corning.....	227 31 47	1387 1 387
							331 15 02	Teller.....	151 15 41	1705 1 651
Muller.....	159	Schoholack.....	.....	P. L. Muller.....	42 34 15	73 45 01	205 07 32	Grandview.....	25 08 15	3387 2 104
							339 41 18	Van Deubush (C. S.)	150 41 52	2343 1 426
Mull's Island.....	175	Schoholack.....	.....	On Mull's Island.....	42 28 25	73 47 05	169 21 49	Roha Hook.....	340 21 35	1208 0 807
							34 38 55	Oreland.....	201 38 21	1826 1 029
Mull's Point.....	173	Schoholack.....	.....	On Mull's Point.....	42 29 16	73 47 01	173 17 10	Mull.....	355 17 07	1112 0 710
							35 13 25	Roha Hook.....	235 13 09	649 0 403
Papsaucee Island.....	158	East Greenbush.....	.....	On Papsaucee Island.....	42 35 33	73 45 39	343 02 25	Teller.....	63 03 21	2112 1 331
							183 35 01	Denison.....	5 35 09	1717 1 067





NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
 RENSSELAER COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	Back Azimuth.	DISTANCE. Me. Miles.
O cof's house, cupola of.....	.....	East Greenbush.....	.....	.....	42 37 51	73 43 11	351 11 05 310 33 04	Ryselorph (C. S.) Hallenbeck (C. S.)	147 11 47 130 35 11	507 0 315 5543 3 444
Roman Catholic ch. spire.....	.....	Troy.....	.....	.....	42 42 03	73 41 49	.....	Ferris..... Ryselorph.....	259 24 33 122 45 02	5410 3 562 8079 5 268
Schoelck chan'l Light house.....	.....	Schoelck.....	.....	.....	42 29 50	73 46 42	243 38 24 328 59 38	Traver (U. S. S.) Ten Eyck (C. S.)	63 39 05 149 00 13	1583 0 984 2297 1 428
Schoelck Landing, flag pole on Kneckerbocker ice house.....	.....	Schoelck.....	.....	.....	42 28 23	73 46 27	47 17 01 131 00 55	Orehard..... Rolla Hook.....	227 16 15 311 00 16	2102 1 331 1835 1 140
Schoelck Landing D. R. ch.....	.....	Schoelck.....	.....	.....	42 28 48	73 46 14	193 10 44 274 13 26	Traver (U. S. S.) Ten Eyck (C. S.)	16 11 06 14 13 41	2741 1 704 530 0 330
Troy University (S. W. sp.).....	.....	Troy.....	.....	.....	42 43 43	73 11 00	.....	Ryselorph..... Ferris.....	194 45 21 224 42 52	11734 7 391 8266 3 059

SARATOGA COUNTY.

Galway.....	17	Galway.....	.....	Sarah Ingerson.....	43 01 04	74 02 36	356 23 02 311 26 39	Heberberg..... Kahnisque.....	176 54 22 131 47 26	49021 30 161 46652 25 979
Ambler.....	16	Greenfield.....	.....	Charles E. Ambler.....	43 05 25	73 51 09	79 47 29 50 39 48	Galway..... Van Aatten.....	286 39 10 219 33 35	15750 9 810 24227 13 116
Bailey.....	19	Saratoga.....	.....	James Bailey.....	43 01 08	73 39 18	.....	Galway..... Heberberg.....	269 37 06 210 31 47	19 623 37667 35 432
Ballston.....	20	Ballston.....	.....	Village lot.....	43 00 48	73 51 03	324 25 50 46 06 24	Kahnisque..... Van Aatten.....	142 35 25 226 00 07	19 540 17114 10 820
Knox.....	Pol.	Galway.....	.....	Wm. Knox.....	42 59 07	74 05 48	.....	Water-street..... Dougall.....	171 07 37 190 52 26	13796 8 535 11310 7 027
Saratoga.....	21	Saratoga Springs.....	.....	Village lot.....	43 04 06	73 47 23	43 58 57 89 54 29	Van Aatten..... Galway.....	223 50 11 269 44 06	25242 15 685 26618 12 850



NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
SCHENECTADY COUNTY—(Continued).

NAME OF STATION.	No. of monument.	Township.	No. of lot.	Owner's name.	Latitude.	Longitude.	Azimuth.	To station.	DISTANCE	
									Back Azimuth.	Me. Miles.
Waterstreet.....	32	Rotterdam		John D. Waterstreet	42 54 48	74 04 15	98 01 10 185 36 18	Glen. Galway.....	277 50 50 5 37 25	28.90 2.826
Braam's Corners Un. ch. sp. ....		Duanes-burgh			42 47 44	74 15 13		Conover. Glen.....	241 45 19 321 02 25	3.71 11.859
Braam's Corners Bap. ch. sp. ....		Duanes-burgh			42 47 49	74 15 05		Conover..... Glen.....	343 36 49 329 32 09	39.06 11.44
Duanesburgh church tower.....		Duanes-burgh			42 46 10	74 09 25		Halsbeck. Helderberg.....	269 57 68 142 35 53	17.969 19.847
Scotia Baptist church spire . ....		Glenville.			42 49 33	73 57 49		Van Alten..... Sittie's Hill.....	339 07 35 219 17 59	9.68 117.8
Scotia D. R. church tower.....		Glenville.			42 49 39	73 57 38		Van Alten. Sittie's Hill.....	337 13 23 219 37 17	59.1 1.025
Princeton Presb. church sp. ....		Princeton			42 48 25	74 04 47		Helderberg..... Sittie's Hill.....	161 15 10 156 03 28	26.07 25.05
Poeniteskill D. R. church.....		Rotterdam			42 48 29	73 59 47		Van Alten. Sittie's Hill.....	326 29 17 261 41 38	10.735 8.775
D. R. ch. west of Duanesville . . . . .		Rotterdam			42 45 07	74 02 44		Sittie's Hill..... Smith.....	158 10 47 291 43 38	26.85 25.67
Rotterdam M. E. church.....		Rotterdam			42 46 46	73 57 30		Van Alten. Sittie's Hill.....	314 50 42 331 33 09	14.005 8.074
<i>Schenectady.</i>										
Armory flag pole.....		Schenectady			42 48 35	73 56 20		Sittie's Hill. Van Alten.....	222 36 09 332 57 07	11.547 11.822



NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
SCHOENBROE COUNTY—(Continued).

NAME OF STATION.	No. of monument	Township	No. of lots	Owner's name.	Latitude	Longitude.	Azimuth	To station.	DISTANCE.		
									Back Azimuth.	Me- ters.	M. fms.
Summit .....	25	Summit .....		John B. Wharton...	42 35 41	74 35 00	221 23 01 194 27 19	Oak Ridge .....	44 31 15	20499	18 951
Thompson .....		Richmondville .....		N. C. Thompson ..	42 39 22	74 32 12	.....	Summit .....	209 20 35	5708	4 805
Thompson .....		Richmondville .....		N. C. Thompson ..	42 39 22	74 32 12	.....	Richmond .....	150 46 09	3587	2 363
Tilpaugh .....		Carlisle .....		Jacob Tilpaugh.....	42 46 18	74 27 32	93 00 28	East Hill .....	272 59 28	20108	12 094
Turk .....	41	Cobleskill .....		Felix Turk .....	42 39 56	74 28 09	19 58 07 123 49 19	Summit .....	259 38 28	12224	7 565
Carlisle Presbyterian church .....		Carlisle .....		.....	42 45 22	74 26 46	.....	East Hill .....	303 39 45	23158	14 530
Cobleskill Hotel-Angustan .....		Cobleskill .....		.....	42 40 40	74 29 07	.....	Sears .....	100 41 00	16 85	10 568
Esperance Presb. church .....		Esperance .....		.....	42 45 43	74 15 41	.....	Oak Ridge .....	69 15 08	16817	6 722
Esperance M. E. church .....		Esperance .....		.....	42 45 38	74 15 30	.....	Summit .....	221 01 19	12224	7 566
Stoenysville Bap. ch. tower .....		Esperance .....		.....	42 45 25	74 19 52	.....	Turk .....	135 35 48	1887	1 108
Middleburgh M. E. church-sp .....		Middleburgh .....		.....	42 35 47	74 20 00	.....	Chapman .....	47 35 19	4350	2 703
Middleburgh D. R. church-sp .....		Middleburgh .....		.....	42 36 17	74 20 17	.....	Sears .....	153 32 32	3706	2 363
Richmondville hotel flag pole .....		Richmondville .....		.....	42 38 02	74 33 53	.....	Sears .....	154 38 38	15146	9 339
								Mann .....	7 07 58	9828	6 107
								Kelcey .....	320 21 40	4114	2 515
								Mann .....	16 22 41	8987	5 584
								Kelcey .....	315 36 37	3109	1 188
								Turk .....	65 44 51	8572	5 339
								Summit .....	199 19 20	4594	2 884



NEW YORK STATE SURVEY.—PRELIMINARY GEOGRAPHICAL POSITIONS—(Continued).  
ALBANY AND SCHENECTADY COUNTIES—(Continued).

NAME OF STATION.	No. of Monument	Township.	No. of lot.	Owner's name.	Latitude	Longitude.	Azimuth	To station.	DISTANCE.			
									Back Azimuth	Meters.		
An Station, No. 44	41	(Knox (Duaneburgh)	.....	Cornelia Ketchum John D. Westfall	42 43 54	74 16 15	58 19 30 59 40 17	Sible's Hill Smith	88 16 00 79 44 29	11929 7561	6 854 4 688	
County line Monument	41	(Knox (Duaneburgh)	.....	Cornelia Ketchum John D. Westfall	42 43 54	74 16 15	570	An Station, No. 44	90		2	0 001
SCHENECTADY AND SCHENECTADY COUNTIES.												
An Station, No. 52	.....	(Scholarie (Wright (Duaneburgh)	.....	John W. Barton	42 42 59	74 14 30	.....	Seeps Chapman	316 22 04 11 24 02	1326 862	0 867 5 672	
County line Monument	52	(Scholarie (Wright (Duaneburgh)	.....	John W. Barton	42 42 59	74 14 30	.....					
SCHENECTADY AND MONTGOMERY COUNTIES.												
An Station, No. 53	.....	(Duaneburgh (Florida	.....	Samuel McMillan Wm. J. Merry	42 49 48	74 13 16	.....	Oak Ridge Conover	542 18 42 257 53 24	9 65 7 66	5 819 4 257	
County line Monument	52	(Duaneburgh (Florida	.....	Samuel McMillan Wm. J. Merry	42 49 48	74 13 16	.....					



NEW YORK STATE SURVEY.—GEOGRAPHICAL POSITIONS—HUDSON RIVER—ALBANY TO NEW BALTIMORE.

NAME OF STATION.	Latitude.		Longitude.		Azimuth.	To station.	Back Azimuth.	DISTANCE.	
	°	' "	°	' "				Meters.	Miles.
YELLOW PISE (U. S. C. S.).....	42	29 27.12	73	40 28.40	182 07 41	Hallenbeck (U. S. C. S.)..	2 07 54	11904.3	7.433
Hallenbeck (U. S. C. S.) .....	42	35 54.63	73	40 08.91					
YELLOW PISE (S. S. Mon. 150) .....	42	29 28.56	73	40 27.14	26 21 26	YELLOW PISE (U. S. C. S.)..	206 21 28	49.63	0.031
Hallenbeck (S. S. Mon. 151) .....	42	35 54.65	73	40 08.95	308 08 48	Hallenbeck (U. S. C. S.)..	128 08 48	1.052	0.001
Van Denburgh (suppl'd) .....	42	33 08.50	73	44 10.28	323 25 32	YELLOW PISE (U. S. C. S.)..	113 28 02	8502.6	5.283
					227 00 51	Hallenbeck (U. S. C. S.)..	47 03 34	7521.2	4.673
Van Denburgh (S. S. Mon. 153) .....	42	33 07.33	73	44 13.44	185 48 22	Van Denburgh (suppl'd) ..	5 48 22	36.09	0.022
Traver (U. S. C. S.) .....	42	30 13.40	73	45 40.12	2 14 28	YELLOW PISE (U. S. C. S.)..	101 17 58	7256.9	4.509
					200 44 21	Van Denburgh (suppl'd) ..	20 45 22	5787.1	3.595
Traver (S. S. Mon. 152) .....	42	30 13.09	73	45 40.08	91 24	Traver (U. S. C. S.) .....	271 24	1.000	0.001
Rysedorph (U. S. C. S.) .....	42	37 35.12	73	43 11.46	306 40 45	Hallenbeck (U. S. C. S.)..	126 42 48	5188.4	3.224
					9 15 52	Van Denburgh (suppl'd) ..	189 45 12	8335.0	5.170
Rysedorph (S. S. Mon. 2) .....	42	37 35.17	73	43 11.51	321 41	Rysedorph (U. S. C. S.)..	141 41	1.822	0.001

NEW YORK STATE SURVEY.—GEOGRAPHICAL POSITIONS.—HUDSON RIVER—ALBANY TO NEW BALTIMORE.

NAME OF STATION.	Latitude.		Longitude.		Azimuth.		To station.		Back Azimuth.		DISTANCE.	
	°	' "	°	' "	°	' "			°	' "	Meters.	Miles.
Grandview (S. S. Mon. 149) .....	42	35 54.10	73	43 57.50	269	47 54	Hallenbeck (U. S. C. S.) ..	84	50 29	5210.5	3.238	
					3	16 03	Van Denburgh (bolt).....	183	15 54	5117.9	3.180	
Teller (S. S. Mon. 148) .....	42	36 24.77	73	44 06.29	209	55 24	Rysodorph (U. S. C. S.) ..	29	56 01	2504.5	1.556	
					274	43 49	Hallenbeck (U. S. C. S.) ..	99	46 30	5290.0	3.411	
Corning (S. S. Mon. 147) .....	42	36 52.79	73	46 15.64	252	41 50	Rysodorph (U. S. C. S.) ..	72	43 55	4395.4	2.731	
					209	53 30	Grandview.....	119	55 04	3632.1	2.257	
Parke (copper bolt) .....	42	35 58.29	73	46 05.56	353	20 34	Van Denburgh (bolt).....	153	21 52	5861.4	3.642	
					272	31 25	Grandview.....	92	32 52	2922.1	1.816	
Belvedere.....	42	35 53.24	73	44 18.93	357	46 37	Van Denburgh (bolt).....	177	46 43	5086.7	3.161	
					266	52 34	Grandview.....	86	52 48	489.4	0.304	
Van Wie (S. S. Mon. 146) .....	42	34 53.42	73	45 23.31	154	18 11	Parke.....	334	17 43	2221.5	1.380	
					218	28 56	Belvedere.....	38	29 40	2358.1	1.465	
Vanderzee (copper bolt) .....	42	32 31.53	73	46 24.77	249	35 39	Van Denburgh (bolt).....	69	37 10	3273.3	2.034	
					346	34 35	Traver (U. S. C. S.) .....	166	35 05	4391.1	2.728	
Vanderzee (S. S. Mon. 145) .....	42	32 31.71	73	46 24.74	6	56 09	Vanderzee (copper bolt)...	186	56 09	5.70	0.004	
Vreeman (S. S. Mon. 154) .....	42	30 41.51	73	46 53.95	219	25 08	Van Denburgh (bolt).....	39	26 59	5872.7	3.653	
					297	18 44	Traver (U. S. C. S.) .....	117	19 34	1897.0	1.179	
Shad Island (S. S. Mon. 171) .....	42	30 52.12	73	46 53.24	320	44 00	Traver (U. S. C. S.) .....	140	44 29	1555.3	0.966	
					64	33 33	Vreeman.....	244	33 12	776.4	0.482	

Vrooman (S. S. Mon. 154)..... 42 30 41.31 73 46 53.95  
 219 25 08 Vao Deburgh (cont)..... 117 19 34 1.179  
 297 15 44 Traver (U. S. C. S.)..... 140 44 29 0.965  
 320 44 60 Traver (U. S. C. S.)..... 244 33 12 0.482  
 64 33 33 Vrooman.....

	o	'	"	o	'	"	o	'	"	o	'	"	o	'	"
Mull (S. S. Mon. 149).....	42	29	53.39	73	47	04.06	252	30	35	Traver (U. S. C. S.).....	72	31	32	2023.5	1.257
							207	33	06	Shad Island.....	27	33	34	2043.9	1.270
Mull (S. S. Mon. 169).....	42	29	53.39	73	47	04.05	252	30	34	Traver (U. S. C. S.).....	72	31	31	2023.4	1.257
							16	34	04	Roha Hook.....	196	33	51	1574.4	0.978
Ten Eyck (U. S. C. S.).....	42	28	46.49	73	45	50.42	185	01	43	Traver (U. S. C. S.).....	5	01	50	2682.1	1.667
Ten Eyck (S. S. Mon. 182).....	42	28	46.50	73	45	50.38	75	06		Ten Eyck (U. S. C. S.).....	255	06		0.914	0.001
Roha Hook (S. S. Mon. 174).....	42	29	04.18	73	47	24.31	228	19	35	Traver (U. S. C. S.).....	48	20	45	3184.5	1.979
							284	26	54	Ten Eyck (U. S. C. S.).....	104	30	57	2214.9	1.376
Orchard (S. S. Mon. 178).....	42	27	36.05	73	47	35.43	227	48	45	Ten Eyck (U. S. C. S.).....	47	49	55	3236.8	2.011
							185	19	01	Roha Hook.....	5	19	08	2739.9	1.703
Whannel (S. S. Mon. 185).....	42	27	00.92	73	46	00.83	153	25	52	Roha Hook.....	333	24	56	4292.3	2.649
							116	38	27	Orchard.....	296	37	23	2417.8	1.502
Ball (S. S. Mon. 183).....	42	27	42.77	73	46	05.09	84	16	30	Orchard.....	264	15	29	2074.2	1.289
							355	41	21	Whannel.....	175	41	23	1294.7	0.804
Parsons (S. S. Mon. 155).....	42	27	07.95	73	47	31.98	275	55	07	Whannel.....	55	57	09	2093.8	1.301
							241	34	15	Ball.....	61	35	14	2257.0	1.403
Vanderpoel (S. S. Mon. 181).....	42	26	26.78	73	47	17.21	238	52	57	Whannel.....	58	53	48	2038.5	1.266
							165	07	25	Parsons.....	345	07	15	1314.1	0.817
Miles (S. S. Mon. 156).....	42	37	41.64	73	45	03.37	47	32	36	Cornings.....	227	31	47	2232.1	1.387
							331	15	02	Palmer.....	151	15	41	2704.7	1.681
Dominie's Hook (copper lcht).....	42	35	41.07	73	45	51.25	165	54	04	Cornings.....	345	53	48	2281.7	1.418
							240	34	51	Teller.....	60	36	02	2746.2	1.707
Dominie's Hook (S. S. Mon. 165).....	42	35	40.79	73	45	51.67	227	18		Dominie's Hook (both).....	47	18		12.83	0.008

NEW YORK STATE SURVEY.—GEOGRAPHICAL POSITIONS.—HUDSON RIVER—ALBANY TO NEW BALTIMORE.

NAME OF STATION.	Latitude.		Longitude.		Azimuth.	To station.	Back Azimuth.	DISTANCE.	
	°	' "	°	' "				Meters.	Miles.
Westerloe Island (S. S. Mon. 170).....	42	37 18.58	73	45 41.43	207 27 56	Teller.....	127 27 01	2730.6	1.697
					230 37 52	Moles.....	50 38 18	1121.6	0.697
Denison (S. S. Mon. 166).....	42	36 48.66	73	45 22.28	293 02 39	Teller.....	113 03 30	1882.2	1.170
					134 42 22	Westerloe Island.....	334 42 09	1021.0	0.634
Papscence Island (S. S. Mon. 158).....	42	35 53.31	73	45 20.05	243 02 25	Teller.....	63 03 22	2141.7	1.331
					185 55 04	Denison.....	5 55 09	1716.8	1.067
Patterson (S. S. Mon. 157).....	42	36 11.51	73	45 50.35	155 39 20	Coming.....	337 39 03	1398.0	0.869
					260 12 08	Teller.....	80 13 19	2406.7	1.495
Cooper (S. S. Mon. 164).....	42	35 09.31	73	45 14.35	142 19 13	Parker.....	322 18 38	1909.8	1.186
					22 36 30	Van Wier.....	202 36 24	531.1	0.330
Muller (S. S. Mon. 159).....	42	34 14.73	73	45 00.58	205 07 32	Grandview.....	25 08 15	3386.6	2.104
					330 41 18	Van Denburgh (bolt).....	150 41 52	2343.5	1.456
Winnie's dock (S. S. Mon. 160).....	42	33 52.36	73	45 17.54	311 24 39	Van Denburgh (bolt).....	131 25 24	2015.6	1.271
					209 15 41	Muller.....	29 15 53	791.3	0.492
Winnie's Point (U. S. C. S.).....	42	33 16.64	73	45 26.11	24 10 30	Paarala Hook.....	204 10 30	2.527	0.002
Paarala Hook (copper bolt).....	42	33 16.57	73	45 26.15	278 10 56	Van Denburgh (bolt).....	98 11 47	1748.5	1.086
					198 00 18	Muller.....	18 00 35	1893.9	1.172
Campbell's Island (S. S. Mon. 162).....	42	33 16.34	73	45 05.86	280 48 18	Van Denburgh (bolt).....	100 48 55	1290.7	0.802
					183 49 34	Muller.....	3 49 37	1805.5	1.122

[SENATE,

Parson Hook (copper belt)..... 198 00 18 Muller..... 18 07 30  
 100 58 55 1290.7 0.8 2  
 183 49 34 Muller..... 1805.5 1.122

Campbell's Island (S. S. Mon. 163).... 42 33 16.34 73 45 05.86  
 280 48 18 Van Donburgh (bolt)..... 100 58 55 1290.7 0.8 2  
 183 49 34 Muller..... 1805.5 1.122

Cedar Hill (copper belt)..... 42 32 56.24 73 45 33.87  
 258 46 39 Van Donburgh (bolt)..... 100 58 55 1290.7 0.8 2  
 225 51 13 Campbell's Island..... 1805.5 1.122

Baker (S. S. Mon. 162)..... 42 31 46.53 73 46 01.45  
 159 40 35 Vreocman..... 210 45 00 2342.2 1.455  
 339 01 15 Vauterzee (bolt)..... 1486.7 0.924

Castleton (S. S. Mon. 167)..... 42 32 09.02 73 45 15.49  
 113 09 16 Vauterzee (bolt)..... 293 08 29 1719.1 1.068  
 55 48 43 Baker..... 1267.7 0.788

Clapper (S. S. Mon. 161)..... 42 30 58.22 73 45 43.59  
 72 00 11 Vreocman..... 251 59 24 1688.7 1.049  
 161 35 23 Vauterzee (bolt)..... 341 54 56 3025.2 1.881

S. Hermerhorn Island (S. S. Mon. 168) 42 31 18.59 73 46 00.14  
 46 53 07 Vreocman..... 226 52 30 1682.6 1.046  
 328 58 50 Clapper..... 732.0 0.459

Schoelack Island (S. S. Mon. 172) .... 42 30 25.46 73 46 21.80  
 44 40 53 Mull..... 224 40 24 1391 4 0.867  
 291 50 41 Traver (U. S. C. S.)..... 111 51 10 1025.2 0.637

Mull's Point (S. S. Mon. 173) ..... 42 29 16.47 73 47 00.98  
 175 47 10 M. ll..... 355 47 07 1142.1 0.710  
 55 15 25 Raha Hook..... 648.8 0.403

Mull's Island (S. S. Mon. 175)..... 42 28 24.83 73 47 05.21  
 160 21 49 Raha Hook..... 340 21 36 1298.5 0.897  
 24 38 45 Orchard..... 204 38 24 1655.9 1.029

Van Dalfsen (S. S. Mon. 177)..... 42 27 59.85 73 47 32.36  
 5 27 49 Orchard..... 185 47 47 737.6 0.458  
 284 48 00 Bell..... 104 48 59 2062.0 1.281

Hotaling Island (S. S. Mon. 179).... 42 26 54.31 73 46 56.50  
 117 26 38 Parsons..... 297 26 14 913.3 0.568  
 29 07 49 Vanderpool..... 209 07 35 972.1 0.604

Bluff (S. S. Mon. 184)..... 42 26 51.48 73 46 19.17  
 106 59 31 Parsons..... 286 58 42 1739.3 1.081  
 60 07 34 Vanderpool..... 240 06 55 1529.5 0.950

Lower Schedack Is. (S. S. Mon. 180).... 42 27 40.53 73 46 34.27  
 52 41 00 Parsons..... 232 40 21 1657.7 1.030  
 347 09 19 Bluff..... 167 09 29 1552.0 0.904

Barren Island (S. S. Mon. 176)..... 42 27 50.14 73 47 09.62  
 53 36 08 Orchard..... 233 36 50 732.7 0.455  
 278 45 15 Bell..... 1491.5 0.927

NEW YORK STATE SURVEY.—GEOGRAPHICAL POSITIONS.—HUDSON RIVER—ALBANY TO NEW BALTIMORE.

NAME OF STATION.	Latitude.		Longitude.		Azimuth.	To station.	Back Azimuth.		DISTANCE.	
	°	' "	°	' "			°	' "	Meters.	Miles.
Cupola of Olcott's house .....	42	37 51.48	73	43 13.09	354 14 45	Rysodorph (U. S. C. S.)...	174	14 47	567.3	0.315
					310 33 06	Hallenbeck (U. S. C. S.)...	130	35 11	5543.4	3.444
Academy of Sacred Heart .....	42	37 38.63	73	46 21.68	271 24 49	Rysodorph (U. S. C. S.)...	91	26 58	4365.4	2.694
					334 26 31	Corning.....	174	26 35	1421.0	0.883
Greenbush Presbyterian church.....	42	38 09.16	73	44 57.37	37 07 40	Corning.....	217	06 47	2955.1	1.896
					340 07 41	Teller.....	160	08 16	3424.6	2.129
Cross-over light.....	42	36 47.83	73	45 46.02	247 28 53	Rysodorph (U. S. C. S.)...	67	30 37	3812.2	2.368
					102 47 08	Corning.....	282	46 48	692.1	0.430
South chimney of Patterson's house..	42	36 07.52	73	46 27.47	238 48 16	Rysodorph (U. S. C. S.)...	58	50 28	5220.9	3.245
					276 33 32	Grandview.....	96	55 13	3443.5	2.140
Van Wie's stone light.....	42	35 04.13	73	45 30.19	334 37 19	Van Wie.....	154	37 24	300.0	0.227
					246 08 34	Cooper.....	66	08 45	391.7	0.245
Paanda Hook light.....	42	33 16.01	73	45 25.89	190 53	Paanda Hook.....	340	53	18.17	0.011
Cow Island light .....	42	32 14.59	73	45 21.36	169 51 58	Vanderzee (holt).....	289	51 15	1538.3	0.956
					36 17 43	Vrooman.....	216	16 40	3570.4	2.218
Casleton Dutch Reformed church....	42	31 56.40	73	45 21.98	127 06 42	Vanderzee (holt).....	307	06 00	1790.4	1.116
					42 10 57	Vrooman.....	222	09 55	3126.2	1.913
Nine-mile tree light .....	42	31 03.61	73	45 54.22	63 13 25	Vrooman.....	343	12 44	1527.2	0.949
					163 42 11	Schermerhorn Island.....	343	42 07	481.3	0.299

[SENATE,

Castleton Dutch Reformed church, ... 42 31 56.40 73 49 21.98  
 Nine-mile tree light, ... 42 31 03.61 73 45 54.22

	°	'	"	°	'	"		°	'	"		°	'	"
School house cupola (near Mull's)....	42	20	23.92	73	47	16.62	Traver (U. S. C. S.).....	98	38	14	2228.1	1.385		
Schoedack channel light.....	42	29	50.32	73	46	42.24	Ten Eyck (U. S. C. S.)....	146	47	28	3593.1	2.232		
Roha Hook light.....	42	28	48.75	73	47	20.12	Traver (U. S. C. S.).....	63	39	05	1582.7	0.983		
D. R. ch. tower, Schoedack Landing..	42	28	47.76	73	46	13.58	Ten Eyck (U. S. C. S.)....	149	00	13	2297.4	1.428		
Coeyman's dyke light.....	42	28	29.31	73	47	04.75	Traver (U. S. C. S.).....	41	16	26	3402.0	2.152		
Flag pole on Knickerbocker ice house, Schoedack Landing	42	28	23.16	73	46	26.53	Ten Eyck (U. S. C. S.)....	91	57	03	2949.8	1.273		
Flag pole on Coeyman's dock.....	42	28	22.06	73	47	24.26	Traver (U. S. C. S.).....	94	13	41	530.4	0.330		
Cupola of Academy in Coeymans ....	42	28	21.76	73	47	55.82	Ochard.....	203	05	44	1786.3	1.110		
Flag pole, Barron Island.....	42	28	03.82	73	47	12.43	Bell.....	126	29	55	1973.7	1.230		
Briggs' monument, Coeymans covey..	42	28	00.15	73	47	42.98	Reha Hook.....	227	16	15	2142.3	1.331		
Barron Island pine (county corner) ..	42	27	51.49	73	47	09.40	Mull's Island.....	359	56	27	1290.0	0.802		
Five Hook Island light.....	42	27	47.12	73	46	55.83	Van Dailson.....	81	15	09	440.3	0.273		
Cupola of Knickerbocker's house....	42	27	38.92	73	46	12.56	Yarrow Park (U. S. C. S.)..	78	32	42	10414.8	6.471		
							Traver (U. S. C. S.).....	42	04	08	4626.0	2.873		
							Ochard.....	211	31	14	1005.0	0.624		
							Bell.....	254	36	11	471.4	0.293		
							Whannel.....	103	29	49	2299.5	1.429		
							Barron Island.....	128	04	22	2964.0	1.841		
								186	44	05	41.85	0.026		
								96	36	49	1166.8	0.725		
								214	20	40	1463.8	0.909		
								55	11	05	298.0	0.129		
								167	07	15	1202.6	0.747		

NEW YORK STATE SURVEY.—GEOGRAPHICAL POSITIONS—HUDSON RIVER—ALBANY TO NEW BALTIMORE.

NAME OF STATION.	Latitude.		Longitude.		Azimuth.	To station.	Back Azimuth.	DISTANCE.	
	° ' "	° ' "	° ' "	° ' "				Meters.	Miles.
New Baltimore dyke light .....	42 27 08.37	73 46 56.38	281 04 01	20 05 11	Whannel .....	101 04 38	1292.3	0.803	
					Vanderpool .....	200 04 57	1385.9	0.861	
M. E. church spire, New Baltimore..	42 26 52.30	73 47 18.27	358 13 40	262 53 50	Vanderpool .....	178 13 40	787.6	0.489	
					Hotaling Island .....	82 54 04	501.4	0.312	
Bapt. church spire, New Baltimore..	42 26 44.84	73 47 25.13	341 59 50	245 57 05	Vanderpool .....	161 59 55	580.0	0.364	
					Hotaling Island .....	65 57 24	716.4	0.445	
D. R. church spire, New Baltimore..	42 26 43.06	73 47 21.37	349 16 28	238 35 53	Vanderpool .....	169 16 30	511.2	0.318	
					Hotaling Island .....	58 36 09	655.8	0.414	
Flag pole on summer house of River- side House, New Baltimore	42 26 42.44	73 47 13.81	220 08 44	251 07 14	Ball .....	40 09 31	2434.9	1.514	
					Whannel .....	71 08 03	1762.3	1.084	
Chimney of shipyard, New Baltimore	42 26 37.79	73 47 13.46	14 08 40	246 43 20	Vanderpool .....	194 08 18	350.2	0.217	
					Whannel .....	66 44 18	1806.5	1.122	
M. E. church spire, East Greenbush	42 35 14.61	73 41 57.90	158 51 54	114 05 25	Russdorph (U. S. C. S.)...	338 51 04	4648.1	2.888	
					Grandview .....	254 04 04	2686.2	1.655	
D. R. church tower, East Greenbush	42 35 16.86	73 42 01.24	159 26 24	113 27 06	Russdorph (U. S. C. S.)...	339 25 47	4556.3	2.831	
					Grandview .....	263 25 47	2788.6	1.735	
D. R. church spire, one mile north of Becker's Corners	42 33 41.71	73 48 20.41	280 09 28	330 22 36	Van Denburgh (bolt) .....	100 12 17	5796.6	3.602	
					Treaver (U. S. C. S.) .....	150 24 25	7403.1	4.600	



7403.1 4.600

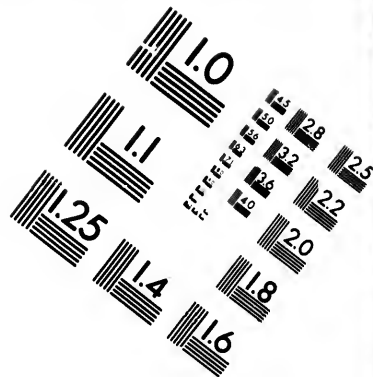
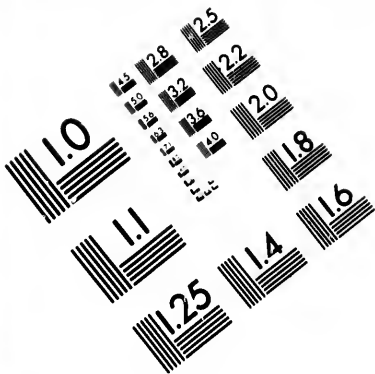
150 24 25

.....

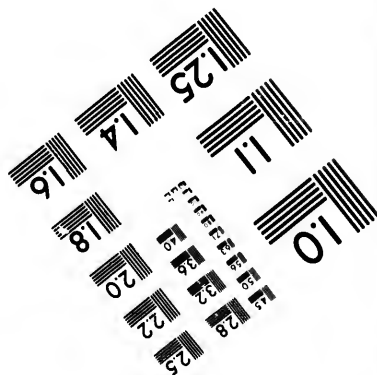
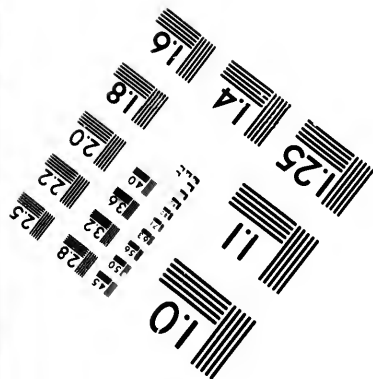
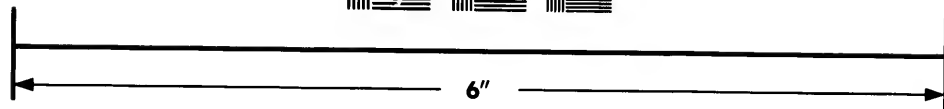
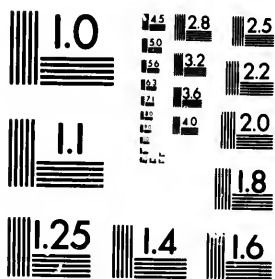
Traver (U. S. C. S.)

330 22 36





**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**Photographic  
Sciences  
Corporation**

23 WEST MAIN STREET  
WEBSTER, N.Y. 14580  
(716) 872-4503



NEW YORK STATE SURVEY.—LOT AND TOWN CORNERS.

DESCRIPTION OF LOT CORNER.	GEOGRAPHICAL POSITIONS.			COURSES AND DISTANCES FROM STATE SURVEY MONUMENTS TO LOT CORNERS.			
	Township.	Latitude.	Longitude.	From station.	True bearing.	Magnetic bearing.	Distances.

CAYUGA COUNTY.							
N. E. corner of lot 57.....	Brutus.....	43 01 42	76 33 14	Tanner.....	N. 32 25 E.	N. 36 14 E.	3181   48 20

MADISON COUNTY.							
S. W. corner of lot 62.....	Lenox.....	43 05 14	75 48 01	Allis.....	S. 63 14 E.	S. 55 35 E.	1001   15 17
S. E. corner of lot 6.....	".....	43 03 41	75 40 02	Bulger.....	S. 10 55 E.	S. 3 30 E.	1602   24 28
N. W. corner of lot 29.....	".....	43 01 22	75 46 25	Cranston.....	N. 33 20 W.	N. 26 14 W.	2147   22 53

ONEIDA COUNTY.							
S. E. corner of lot 2 of allotment 4.....	Rome.....	43 13 49	75 27 53	Rome.....	S. 31 29 E.	S. 23 37 E.	1635   25 53
N. E. corner of town.....	Stockbridge.....	43 02 16	75 33 18	Eaton.....	N. 10 40 E.	N. 18 36 E.	3224   48 85
S. E. corner of lot 57.....	Vienna.....	43 14 33	75 40 36	Vienna.....	S. 5 16 W.	S. 13 40 W.	1732   26 54

ONONDAGA COUNTY.							
N. W. corner of lot 44; also angle of town line.....	Camillus.....	43 05 53	76 15 50	Davison.....	S. 46 20 E.	S. 39 46 E.	2127   32 23
S. W. corner of lot 12.....	De Witt.....	43 06 04	76 03 44	Collamer.....	S. 75 45 W.	S. 83 05 W.	645   9 77
S. E. corner of town.....	".....	42 59 07	76 01 32	Green.....	S. 51 59 E.	S. 43 00 E.	2152   32 60
S. W. corner of lot 31.....	Lysander.....	43 09 47	76 19 20	Munn Davis.....	S. 87 13 W.	.....	2079   33 02
N. E. corner of lot 73.....	Manlius.....	43 01 46	75 51 57	Engle.....	N. 43 05 E.	N. 50 22 E.	2478   37 54
S. W. corner of lot 38.....	".....	43 03 53	75 56 35	Kirkville.....	S. 18 41 W.	S. 25 41 W.	2815   42 05

N. E. corner of lot 113.....	Onondaga.....	43 00 17	76 11 31	Cossitt.....	N. 21 54 E.	N. 28 10 E.	1579   24 23
N. W. corner of lot 17.....	Pompey.....	42 58 00	76 02 32	Clapp.....	S. 22 18 W.	S. 29 30 W.	1255   19 02
S. W. corner of lot 110.....	Salina.....	43 05 46	76 11 24	Chestnut Bridge.....	S. 31 45 W.	.....	312   4 72
S. W. corner of lot 45.....	Skaneateles.....	42 55 22	76 22 52	Hoxsie.....	S. 27 10 W.	N. 31 00 E.	2747   41 02
N. E. corner of lot 22.....	".....	42 58 53	76 22 11	Seeley.....	N. 15 53 E.	N. 21 43 E.	2020   30 61
S. E. corner of lot 42.....	Van Buren.....	43 05 42	76 16 49	Davison.....	S. 32 07 E.	S. 25 33 E.	3033   45 95

WAYNE COUNTY.							
N. W. corner of lot 73.....	Galen.....	43 03 21	76 52 37	Clyde.....	N. 64 27 W.	N. 58 44 W.	2207   33 44

YATES COUNTY.							
S. W. corner of lot 24.....	Milo.....	42 34 43	77 02 15	Milo.....	S. 27 49 W.	S. 85 00 W.	3889   58 92

## NEW YORK STATE SURVEY.

ELEVATIONS, OF THE TOPS OF THE NEW YORK STATE SURVEY MONUMENTS, ABOVE MEAN TIDE AT GOVERNOR'S ISLAND, NEW YORK, BY TRIGONOMETRICAL LEVELING.

STATION NAME.	Monument number.	Township.	Elevation of monuments above sea.
<b>ALBANY COUNTY.</b>			
Vanderzee .....	Bolt.	Bethlehem .....	158 feet.*
Van Wie. ....	146	Bethlehem .....	28
<b>CAYUGA COUNTY.</b>			
Mitchell .....	115	Sennett .....	881
NILES .....	107	Niles .....	1623
Tanner .....	116	Brutus .....	755
VICTORY .....	U. S. L. S.	Victory .....	568
<b>MADISON COUNTY.</b>			
Allis .....	121	Lenox .....	503
Bulger .....	112	Lenox .....	833
Canastota .....	143	Lenox .....	588
Cranson .....	122	Lenox .....	1321
FENNER .....	130	Fenner .....	1862
<b>ONONDAGA COUNTY.</b>			
Carpenter .....	105	Onondaga .....	1105
Chestnut Ridge .....	111	Salina .....	498
Clapp .....	131	Pompey .....	1280
Collamer .....	144	De Witt .....	485
Cossitt .....	119	Onondaga .....	1020
Davison .....	128	Van Buren .....	631
Draper .....	100	Geddes .....	653
Eagle .....	123	Manlius .....	1253
FABIUS .....	125	Fabius .....	2020
Fairmount .....	103	Camillus .....	736
Giles .....	114	Skaneateles .....	1265
Green .....	124	De Witt .....	974
HOWLETT HILL .....	109	Marcellus .....	1136

\* Top of bolt.

ELEVATION—Continued.

SURVEY MONU-  
MENTS NEW YORK, BY

Elevation of monu-  
ments above sea.

158 feet.\*

28

881

1623

755

568

503

833

588

1321

1862

1105

498

1280

485

1020

631

653

1253

2020

736

1265

974

1136

STATION NAME.	Monument number.	Township.	Elevation of monu-ments above sea.
Hoxsie .....	134	Skaneateles .....	1198
Kingsley .....	126	Van Buren .....	537
Kirkville .....	120	Manlius .....	507
Munn Davis .....	140	Lysander .....	535
Olympus .....	101	Syracuse .....	681
RIPLEY HILL .....	106	Spafford .....	1968
Seeley .....	137	Skaneateles .....	1109
Sherwood .....	104	Camillus .....	799
Sorrel Hill .....	110	Van Buren .....	641
ONEIDA COUNTY.			
Eaton .....	129	Stockbridge .....	1318
Prospect .....	117	Kirkland .....	1384
Rome .....	142	Rome .....	510
STARR HILL .....	127	Steuben .....	1800
TASSEL .....	29	Marshall .....	1946
Vienna .....	138	Vienna .....	568
OSWEGO COUNTY.			
AMBOY .....	141	Amboy .....	793
GILBERTSVILLE .....	108	Schroepfel .....	521
RENSSELAER COUNTY.			
Grandview .....	149	East Greenbush .....	420
Hallenbeck .....	151	East Greenbush .....	638
Rysedorph .....	2	East Greenbush .....	411
Teller .....	148	East Greenbush .....	407
Traver .....	152	Schodack .....	236
Van Denburgh .....	Bolt.	Schodack .....	264*
YELLOW PINE .....	U. S. C. S.	Schodack .....	460**
WAYNE COUNTY			
CLYDE .....	U. S. L. S.	Galen .....	633
YATES COUNTY.			
MIL0 .....	118	Milo .....	1343

\* Top of bolt.

\*\* Top of underground mark.

## TABLE

*Showing approximate declination of magnetic needle.*

STATION.	County.	Township.	Variation of the needle.	Date.
			West,	
Helderberg .....	Albany .....	New Scotland .....	8 45	September, 1877.
Cass .....	" .....	" .....	8 45	December, 1877.
Clarksville .....	" .....	" .....	8 45	" "
Freleigh .....	" .....	Watervliet .....	9 30	" "
Knowersville .....	" .....	Guilderland .....	8 45	" "
Niskayuna .....	" .....	Watervliet .....	9 45	" "
Slingerland .....	" .....	New Bethlehem .....	8 45	" "
Winn .....	" .....	Guilderland .....	9 00	November, 1877.
Tanner .....	Cayuga .....	Semett .....	3 49	June, 1878.
Allis .....	Madison .....	Lenox .....	7 39	July, 1879.
Bulger .....	" .....	" .....	7 16	" "
Canastota .....	" .....	" .....	7 24	" "
Crauson .....	" .....	" .....	7 16	" "
Eaton .....	" .....	Stockbridge .....	7 56	" "
Rome .....	Oneida .....	Rome .....	7 52	" "
Vienna .....	" .....	Vienna .....	8 24	" "
Clapp .....	Onondaga .....	Pompey .....	7 12	August, 1878.
Collamer .....	" .....	De Witt .....	7 20	July, 1879.
Cossitt .....	" .....	Onondaga .....	6 46	August, 1878.
Davison .....	" .....	Van Buren .....	6 34	" "
Eagle .....	" .....	Manlius .....	7 17	" "
Green .....	" .....	De Witt .....	6 59	" "
Hoxsie .....	" .....	Marcellus .....	6 50	" "
Kirkville .....	" .....	Manlius .....	7 03	July, 1879.
Seeley .....	" .....	Marcellus .....	5 50	August, 1878.
Conover .....	Schenectady .....	Esperance .....	9 30	November, 1877.
Chapman .....	" .....	Duanesburg .....	8 30	" "
Sears .....	" .....	" .....	9 15	" "
Van Atten .....	" .....	Glenville .....	10 15	" "
Mann .....	Schoharie .....	Schoharie .....	9 00	" "
Summitt .....	" .....	Summit .....	8 45	" "
Holmes .....	" .....	Richmondville .....	9 00	" "
Clyde .....	Wayne .....	Galen .....	5 43	June, 1878.
Milo .....	Yates .....	Milo .....	7 15	" "



magnetic needle.

p.	Variation of the needle.	Date.
	West,	
1.	8 45	September, 1877.
	8 45	December, 1877.
	8 45	" "
	9 30	" "
	8 45	" "
	9 45	" "
em	8 45	" "
	9 00	November, 1877.
	3 49	June, 1878.
	7 39	July, 1879.
	7 16	" "
	7 24	" "
	7 16	" "
	7 56	" "
	7 52	" "
	8 24	" "
	7 12	August, 1878.
	7 20	July, 1879.
	6 46	August, 1878.
	6 34	" "
	7 17	" "
	6 59	" "
	6 50	" "
	7 03	July, 1879.
	5 50	August, 1878.
	9 30	November, 1877.
	8 30	" "
	9 15	" "
	10 15	" "
	9 00	" "
	8 45	" "
e	9 00	" "
	5 43	June, 1878.
	7 15	" "

12° 38'

73° 50'

73° 10'

73° 46'

Parish Sp

73° 44'

ALBANY

GREENBUSH

S.R. Academy

Moles

Westloe I.

179

Larney Pt.

141

Denison

266

Cross Over Lt.

Toller

142

12° 36'

Patterson

167

Patterson's Hook

Park

(Copper bolt)

Piscanoe I.

158

Belvedere

Oran

170

Dunham's Hook

165

Cooper's Creek

154

Van Woe's Stone Lt.

155

Van Woe's

162

Mader

152

42° 34'

D.R. Ch.

(1/2 mile north of Baker's Corner)

Winnes' Dock

160

Parada Hook

(Copper bolt)

Campbell I.

163

Fedar Hill

(Copper bolt)

Van Denbury

150

## NOTES

*This triangulation is being executed in cooperation with Lieut. J. H. Willard, U. S. Engineer, in charge, under Gen'l. Newton, of improvements of the Upper Hudson River, with the purpose of establishing as soon as possible a system of permanent land marks for locating positions of "bulkhead lines" and boundaries of grants under water.*

42° 32'

*Figures on the map under names of stations are the numbers cut in granite monuments marking these sites.*

CASTLETON

Baker

102

Van A. Lt.

107

Castleton

D.R. Ch.

73° 44'      73° 12'      73° 40'      12° 38'

GREENBUSH

oles

Cup Oteolls Ho

Ryselorph

Teller

Delveter

Oranulvren

Hallenbeck

12° 36'

Barn fupola

E GREENBUSH

D B Ch  
M E Ch

Creek  
Lt

Teller

Dock

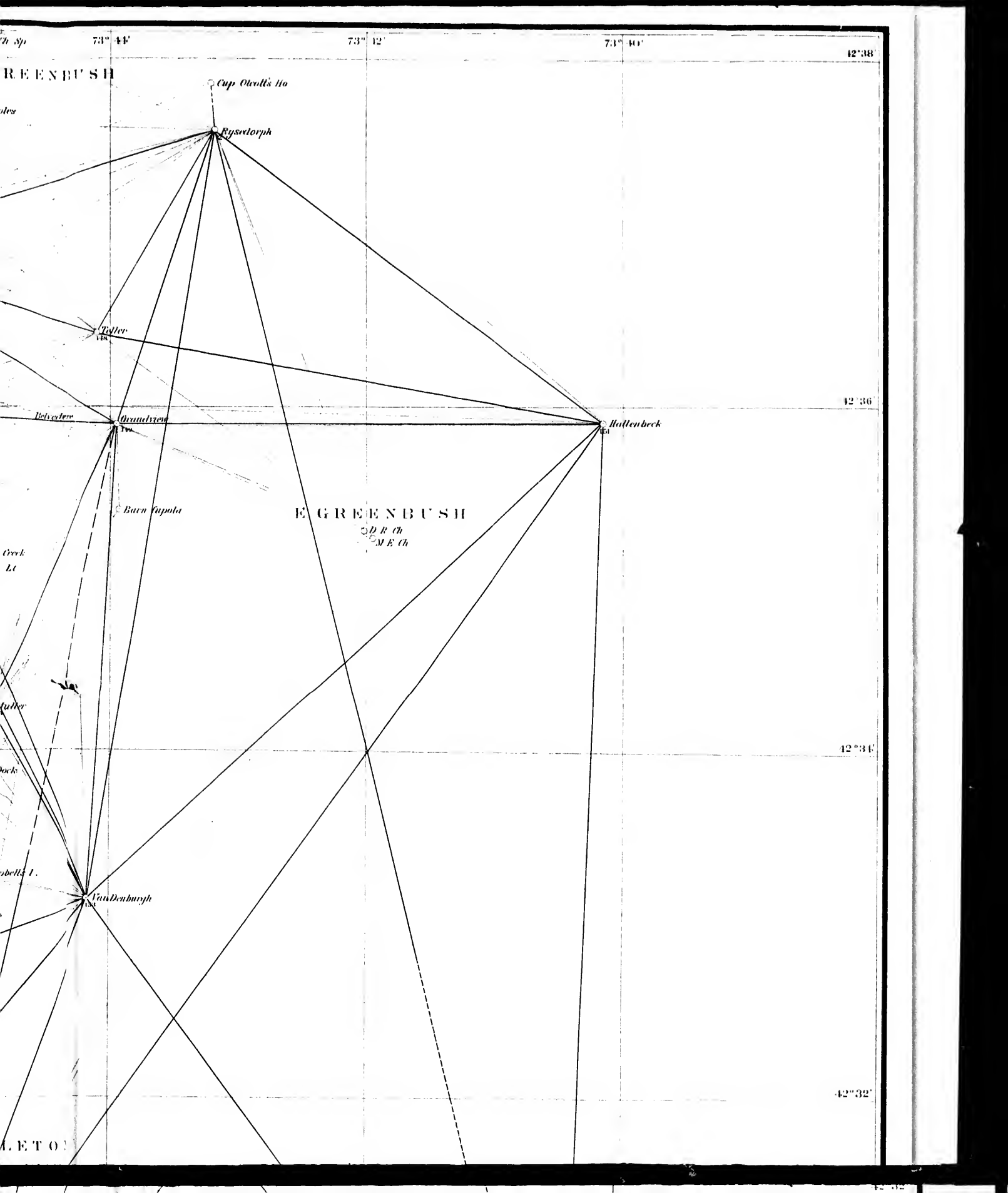
12° 34'

Abells I.

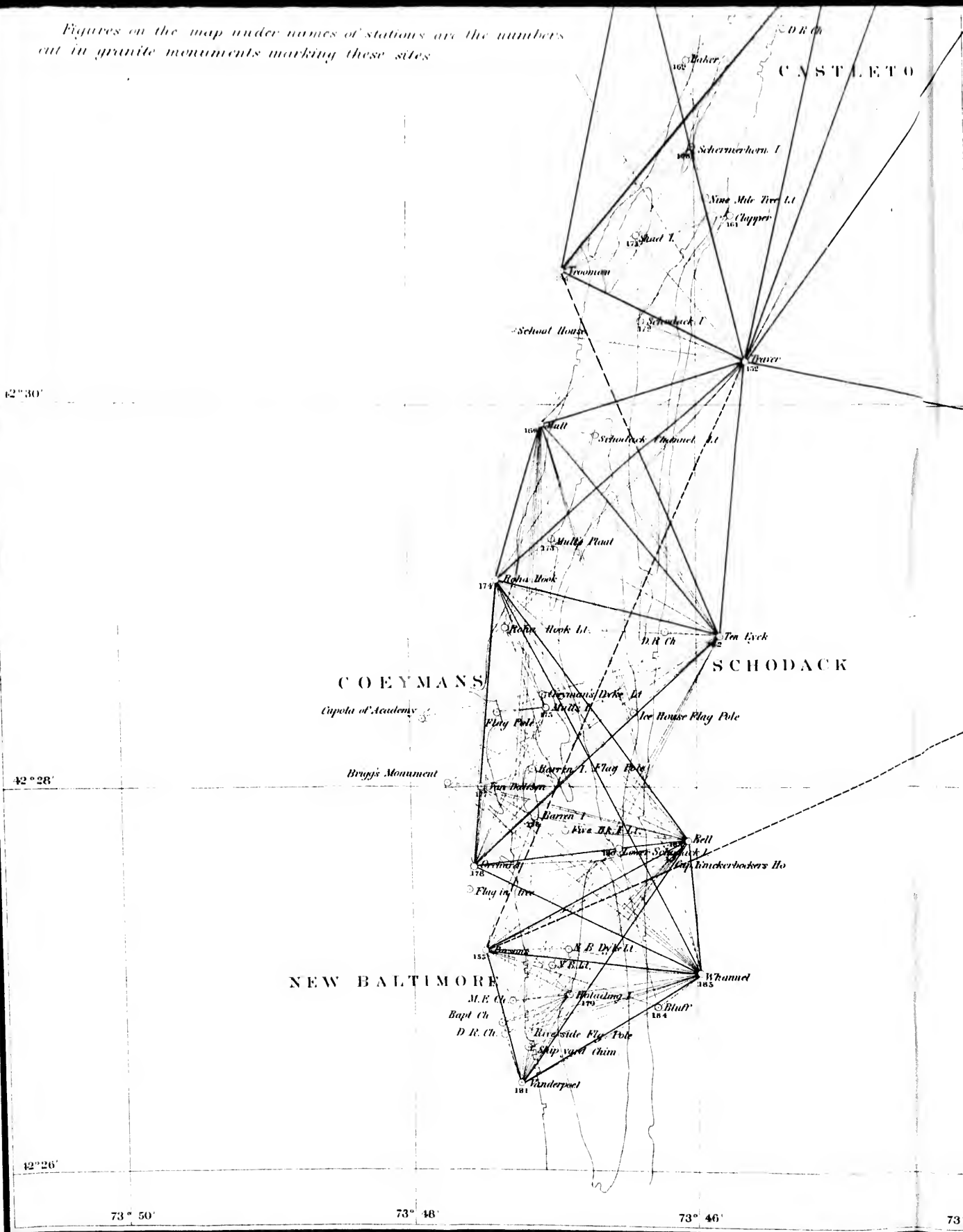
Vandenburg

12° 32'

A. E. T. O.



Figures on the map under names of stations are the numbers cut in granite monuments marking these sites



42° 30'

42° 28'

42° 26'

73° 50'

73° 48'

73° 46'

73°

ST. L. E. T. O.

ACK

42° 30'

Yellow Pine

42° 28'

NEW YORK STATE SURVEY

JAMES T. GARDNER, DIRECTOR.

SKETCH OF THE TRIANGULATION OF THE  
**HUDSON RIVER**  
FROM ALBANY TO NEW BALTIMORE

Scale 10,000

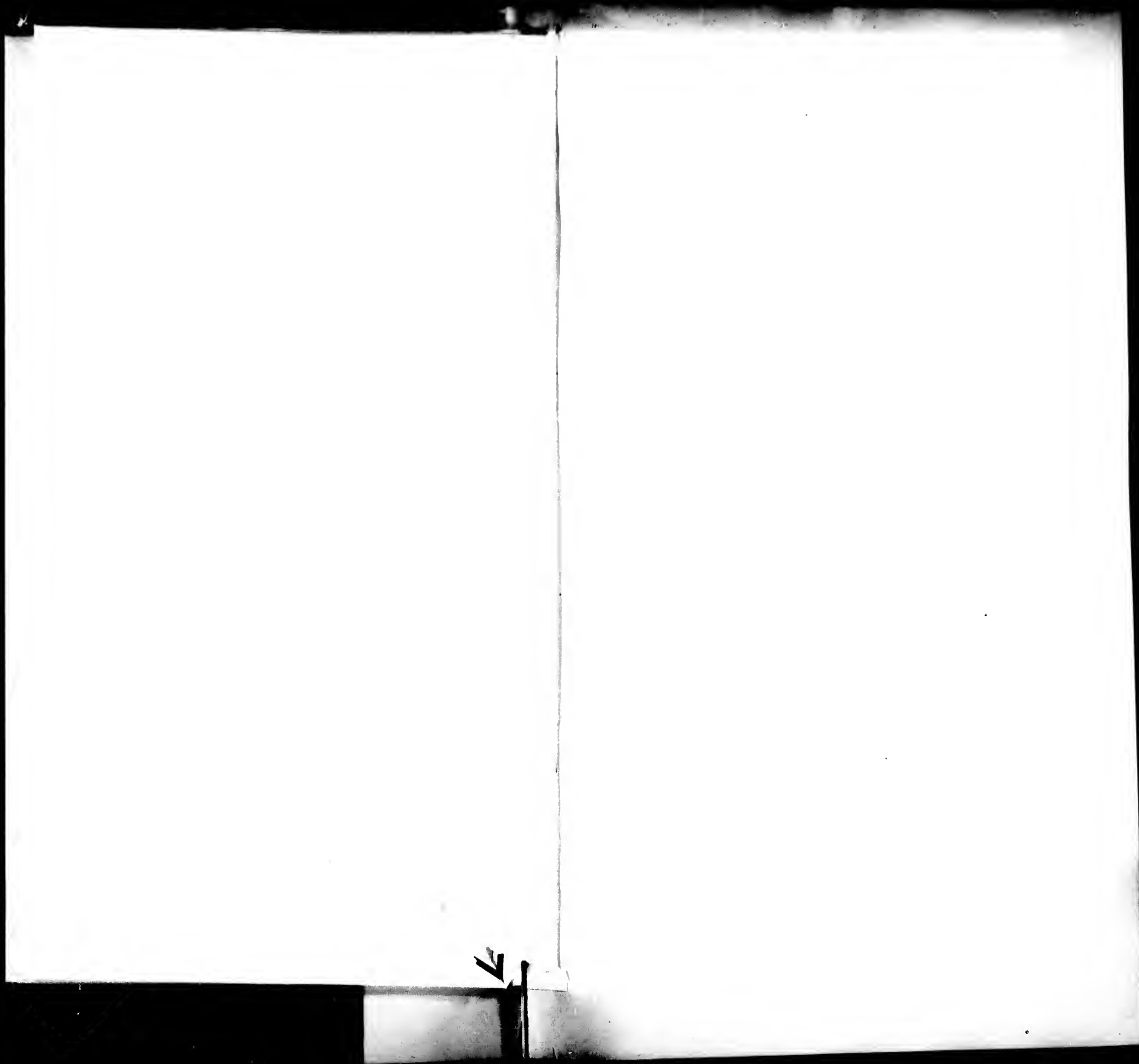
1879.

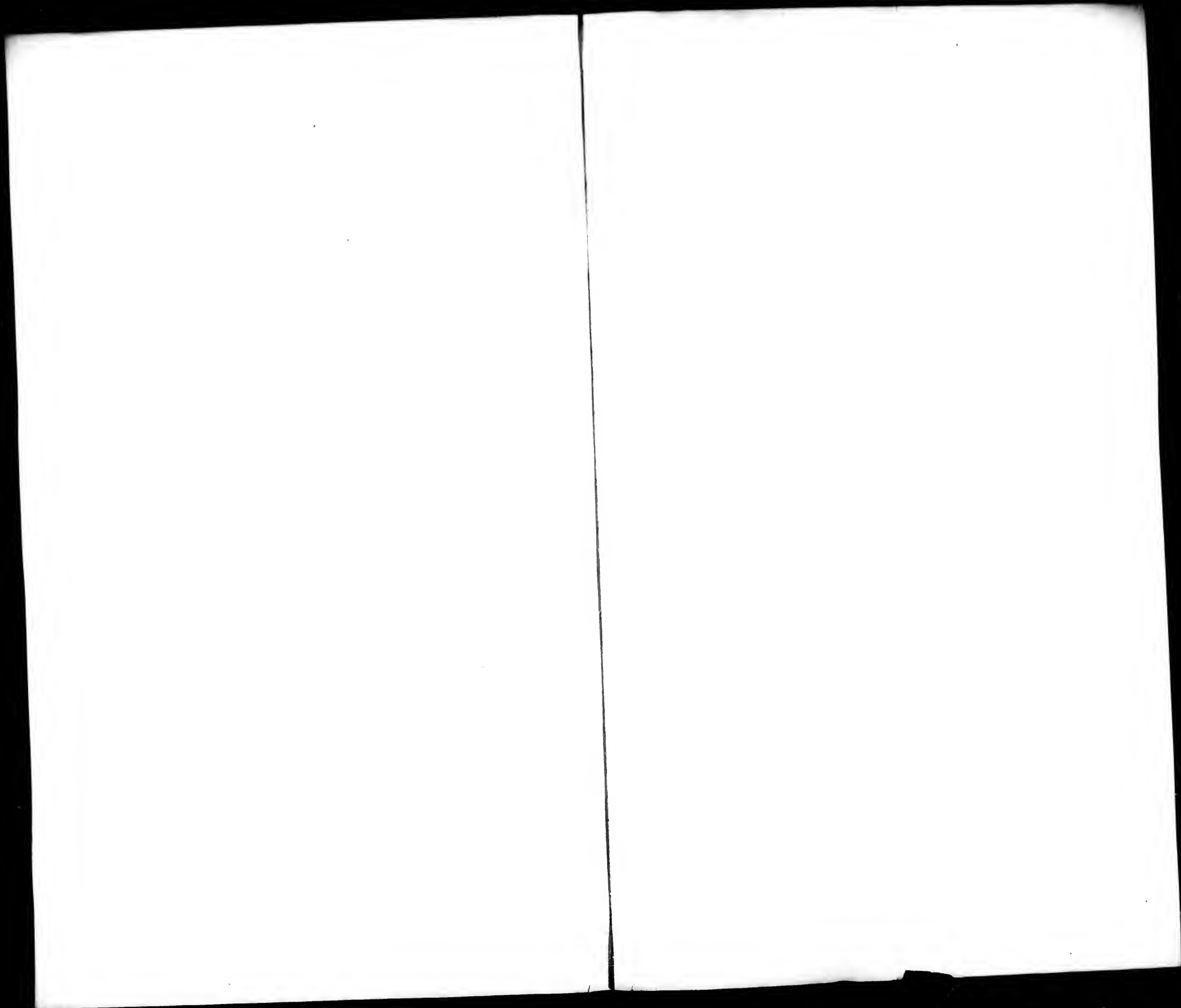
42° 26'

73° 44'

73° 42'

73° 40'





77° 40'

77° 20'

63° 00'

63° 40'

*L*

*A*

*K*

*E*



77°00'

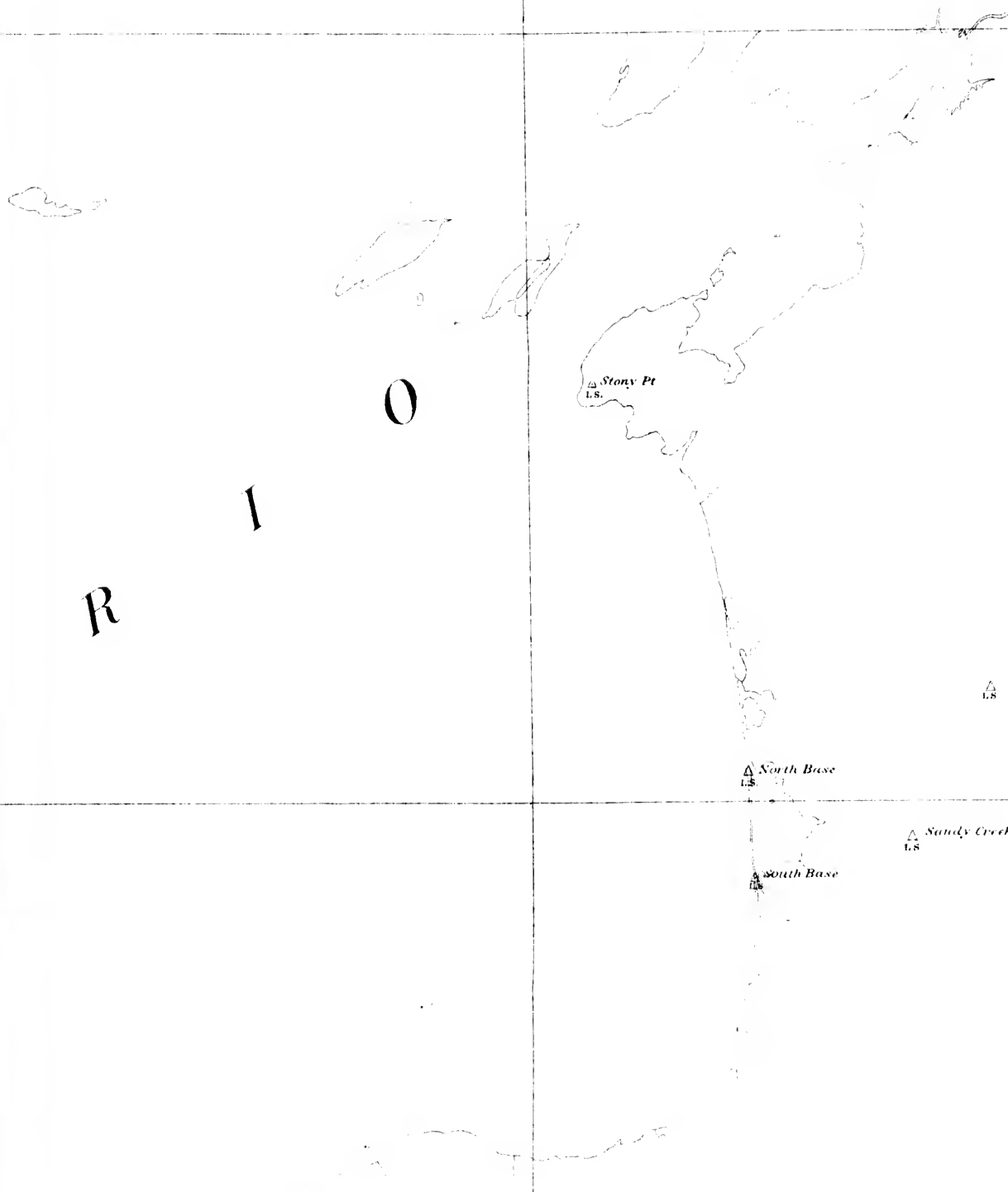
76°40'

O  
N  
T  
A  
R  
I  
O

9'

76°20'

76°00'



Watertown

R

I

0

△ Stony Pt  
L.S.

△ North Base  
L.S.

△ South Base  
L.S.

△ Mannsville  
L.S.

△ Sandy Creek  
L.S.

OSWEGO

75°40'

75°20'

Watertown

43°20'

ROCHESTER

*Walworth*  
15

*Sodus*  
15

*Pulnyra*  
15

*Turks Hill*  
15

43°00'

OSWEGO

△ Oswego  
L.S.

○ Falley Academy  
Fulton

△ Sodas  
L.S.

○ Victory  
L.S.

Clyde

○ Clyde  
L.S.

○ Warner  
116

○ Mitchell  
115

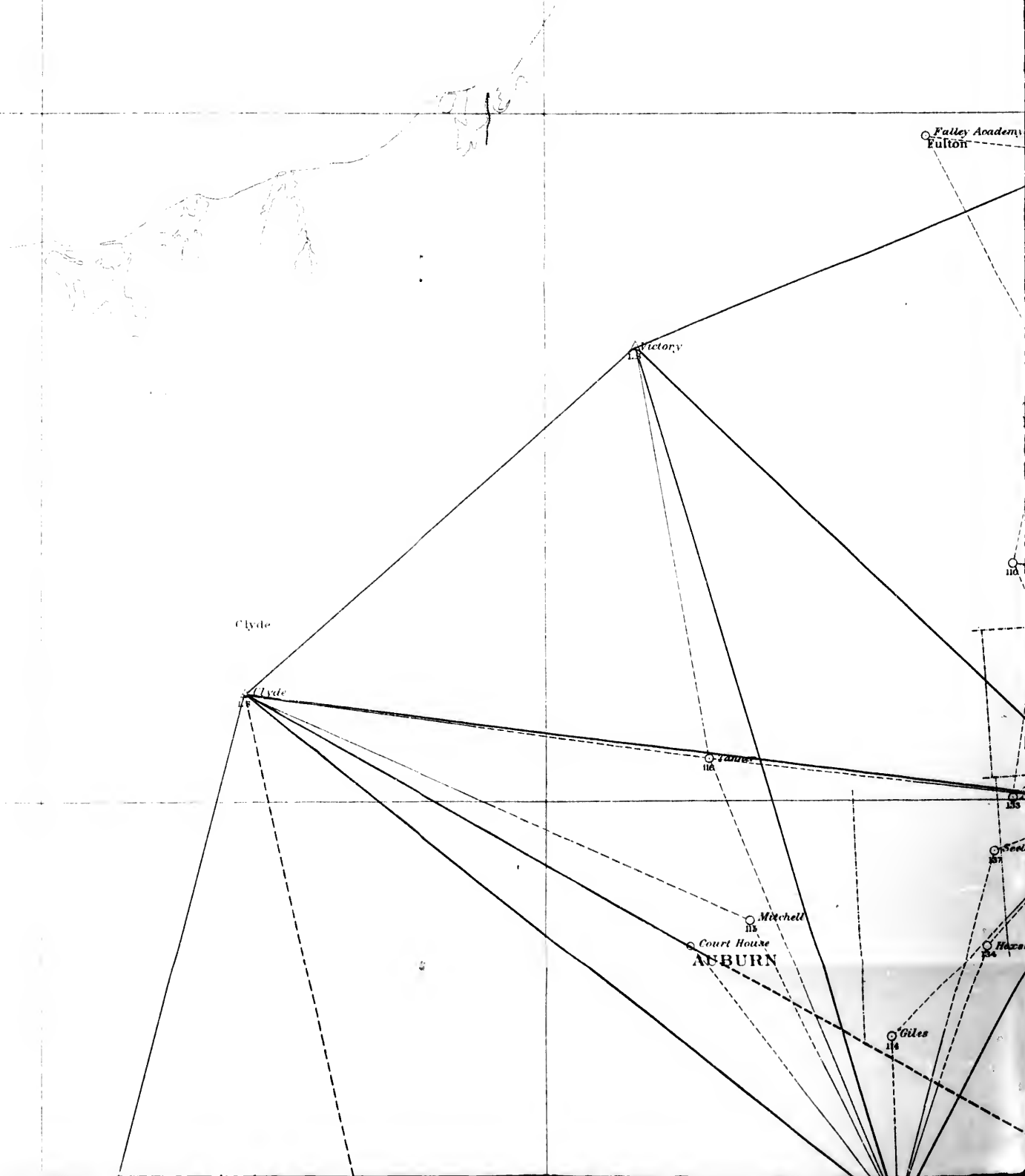
○ Court House  
ABBURN

○ Giles  
114

○ Seal  
117

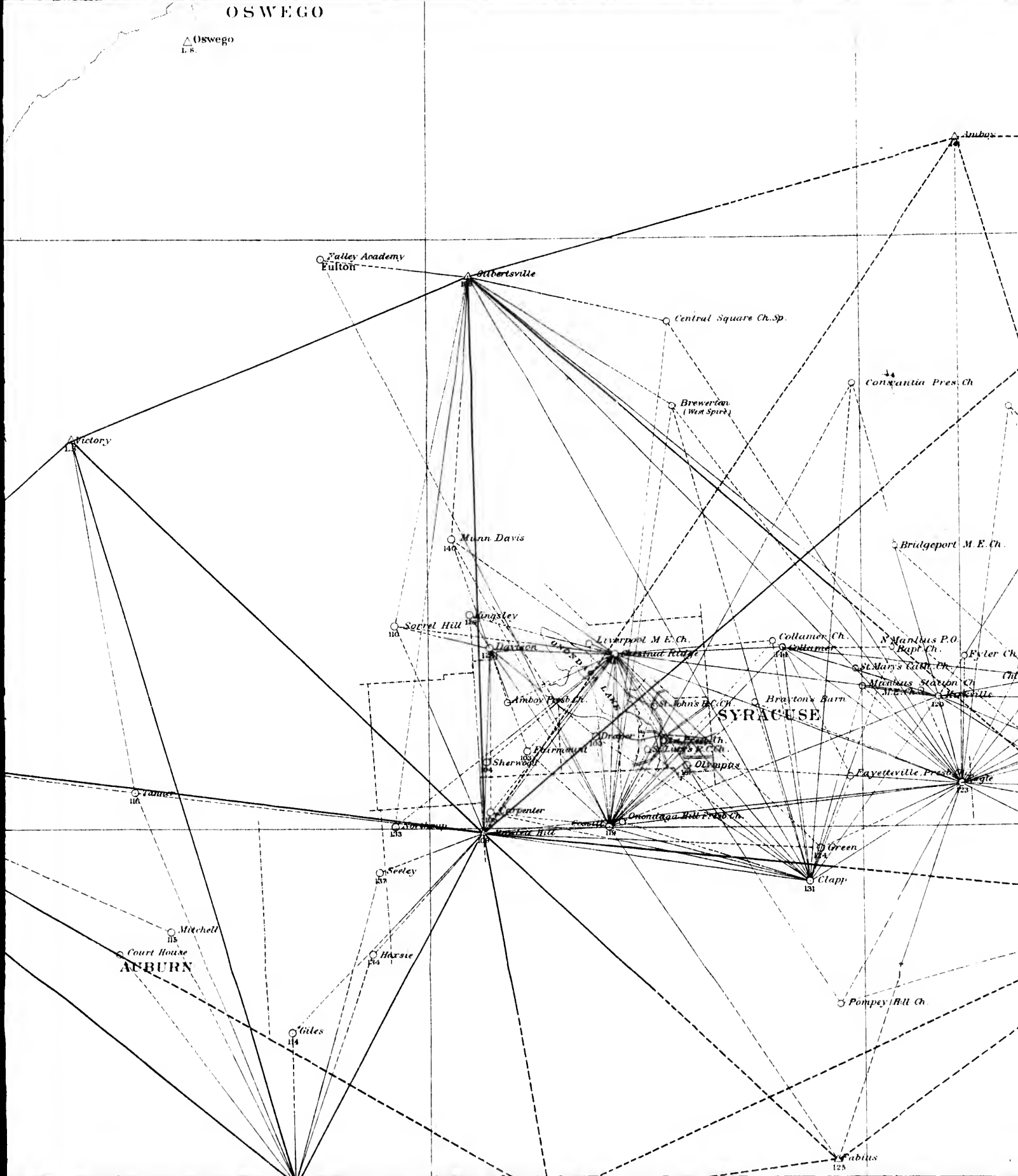
○ Hazen  
114

vra



OSWEGO

△ Oswego  
L.F.



Court House  
AUBURN

SYRACUSE



12°40'

Penn

12°20'

100

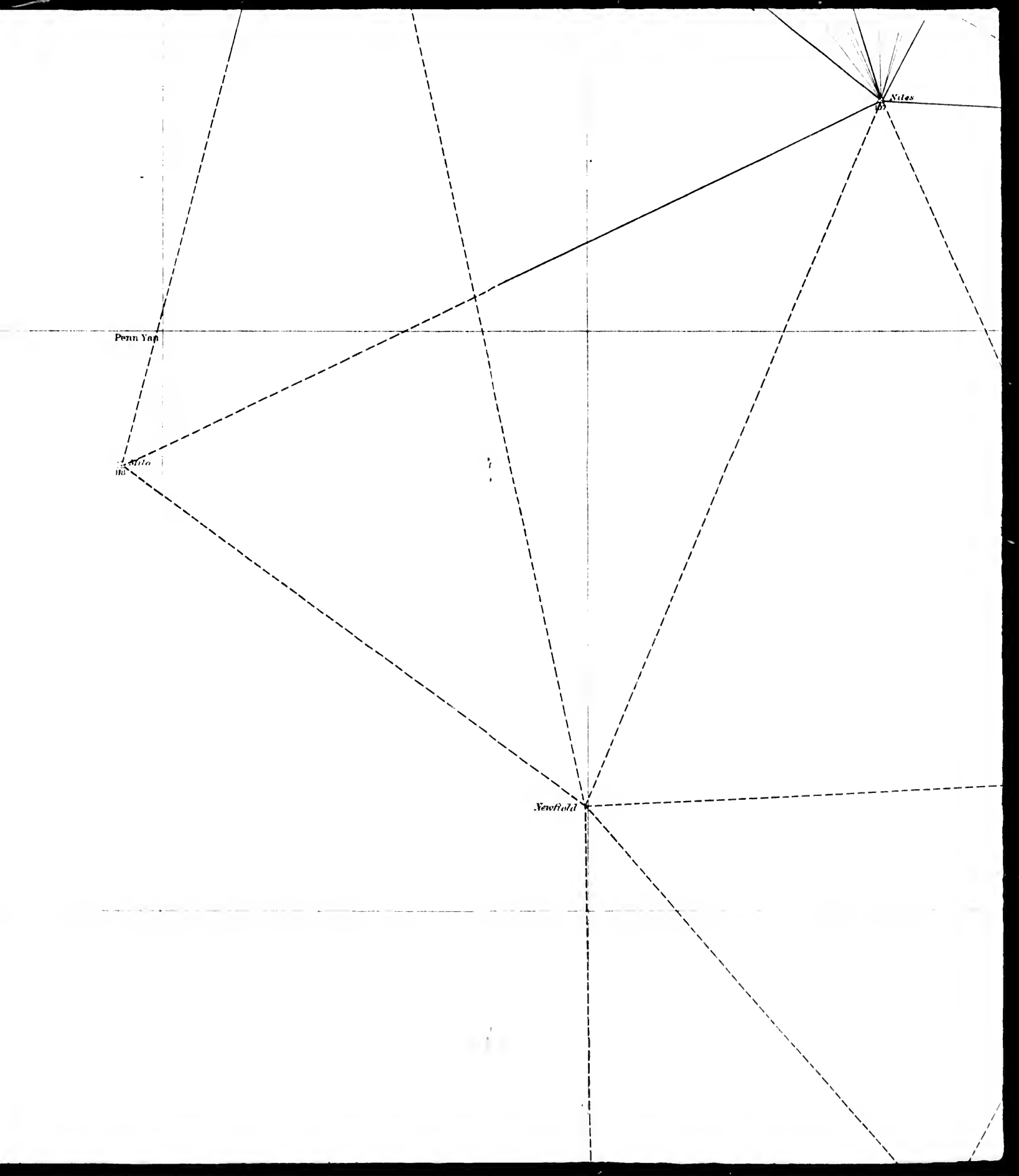


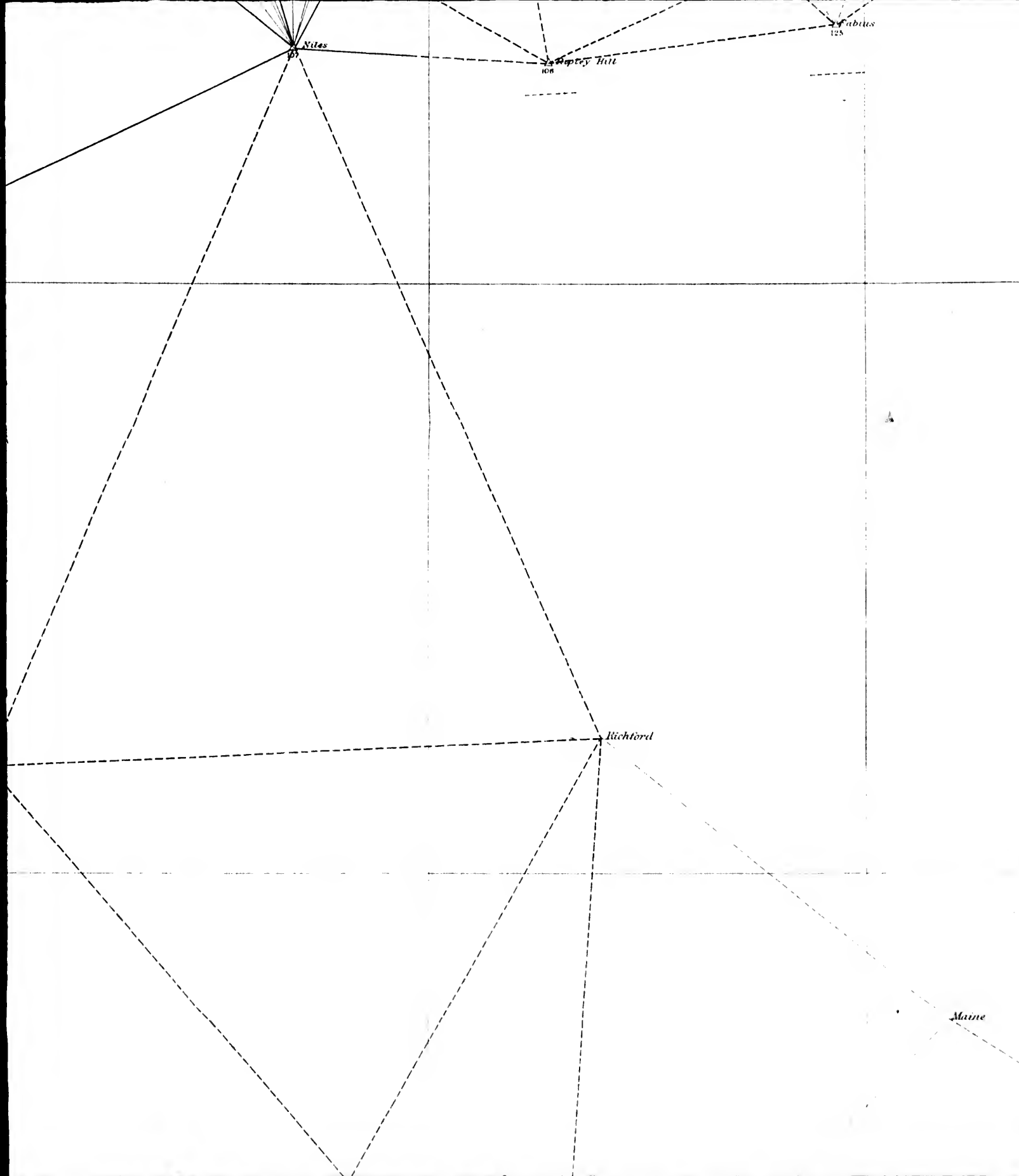
Penn Yan

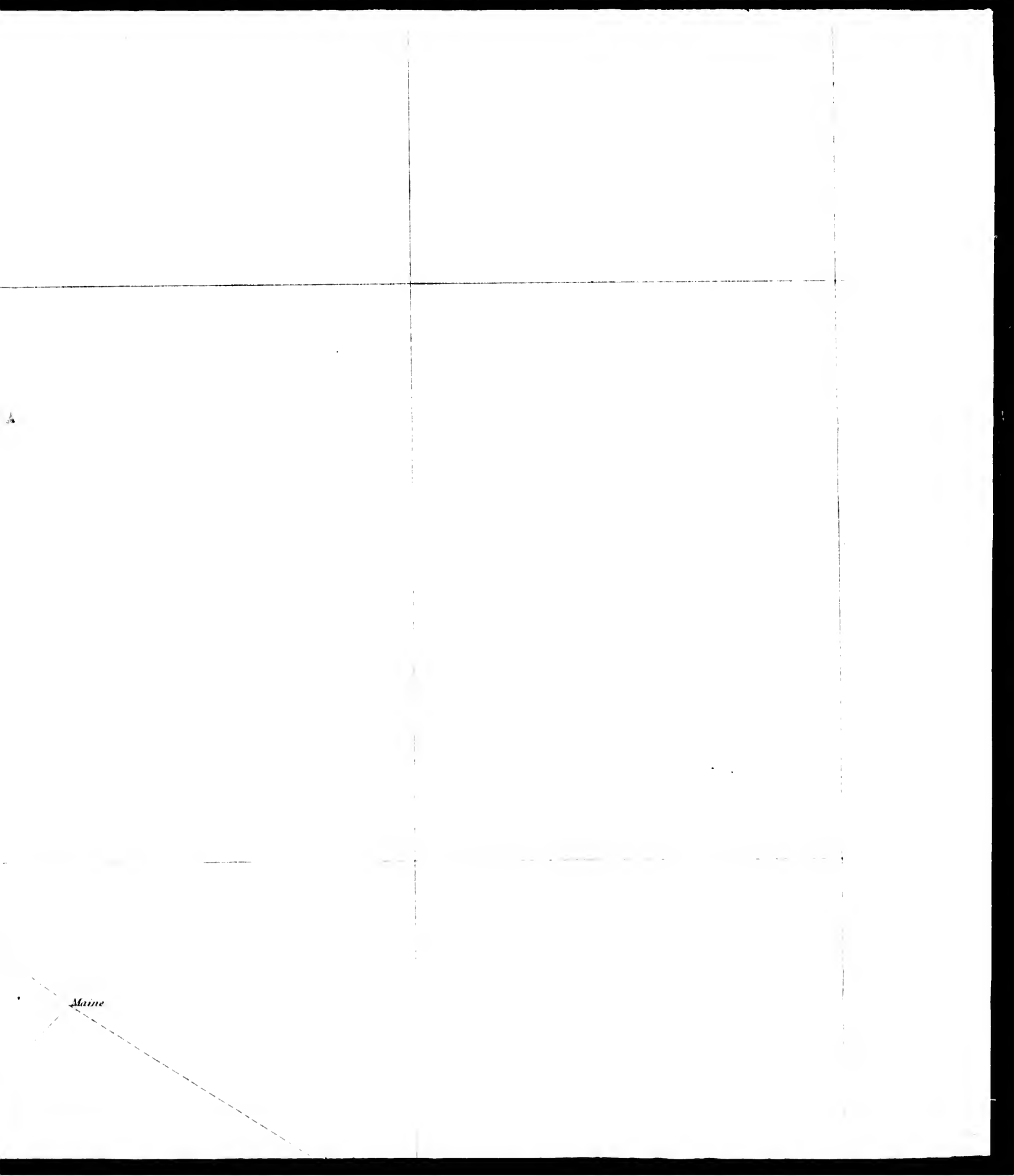
Stilo

Niles

Newfield







*Maine*

42° 00'

APPROXIMATE BOUND

P E N I N S

41° 40'  
77° 40'

77° 20'

THE BOUNDARY BETWEEN NEW YORK AND PENNSYLVANIA

S

Y

L

Y

A

N

77°00'

76°40'

P E N N S Y L V A N I A

Onego

A N I A

76°20

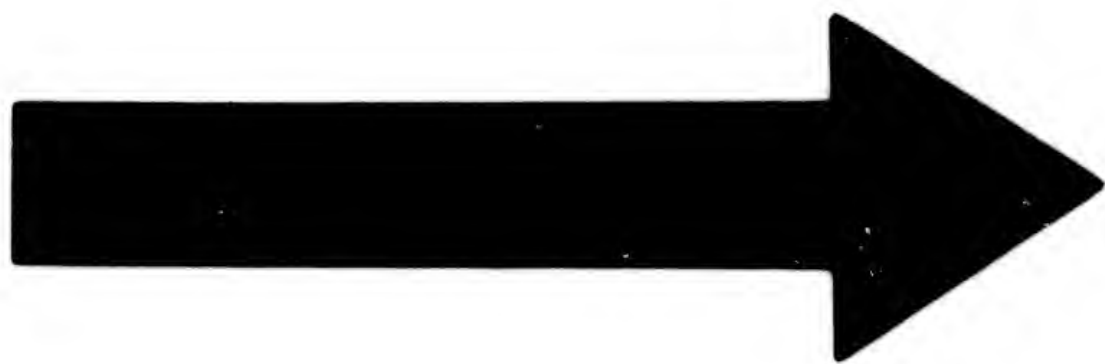
76°00



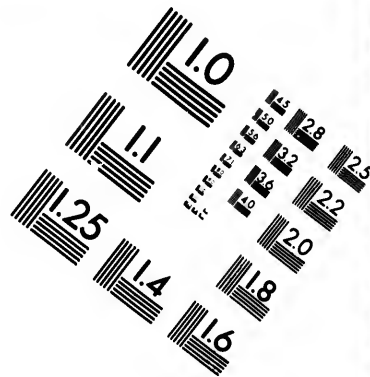
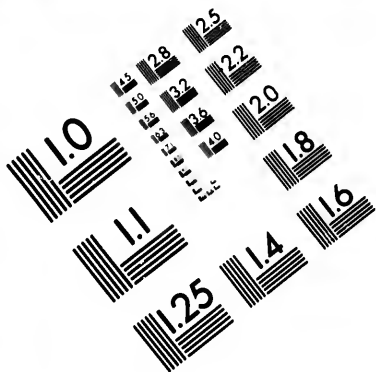
Walsor

75° 40'

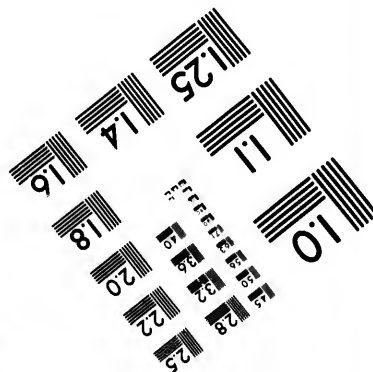
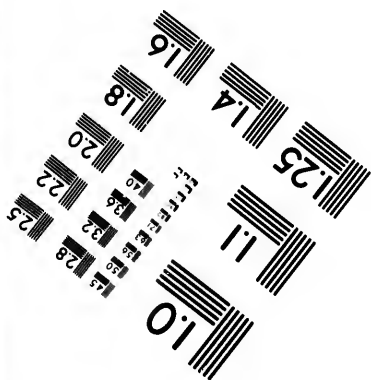
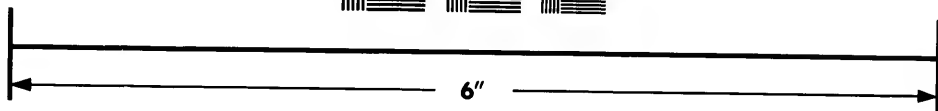
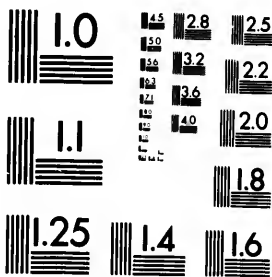
75°







**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**Photographic  
Sciences  
Corporation**

23 WEST MAIN STREET  
WEBSTER, N.Y. 14580  
(716) 872-4503

14 28  
16 32  
18 36  
20 40  
22 44  
25 50

10

75° 00'

74° 40'

N. Y. STATE SURVEY

JAMES T. GARDNER, DIRECTOR.

# THE STATE OF NEW YORK

SHEET No. 1.

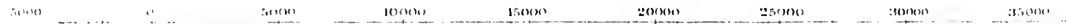
## EASTERN AND CENTRAL NEW

Scale:  $\frac{1}{300,000}$

STATUTE MILES.



METRES.



1879.

### AUTHORITIES N. Y. STATE SURVEY.

Triangulation by	JAS. T. GARDNER, Director	1877
"	" " " " and	1878
"	" Horace Andrews, Jr., Assistant	
"	" O. S. Wilson, " and	1879
"	" Horace Andrews, Jr.	

74°20'

74°00'

FOR.

OF

ORK

L NEW YORK

30

35

40

45

30000

35000

40000

45000

1877

1878

1879

74°00'

73°40'

73°20'

73°00'

44°00'



Whitehall

43°40'

"	"	"	"	and	1878
"	"	Horace Andrews, Jr., Assistant	"		
"	"	O. S. Wilson,	"	and	1879
"	"	Horace Andrews, Jr.	"		

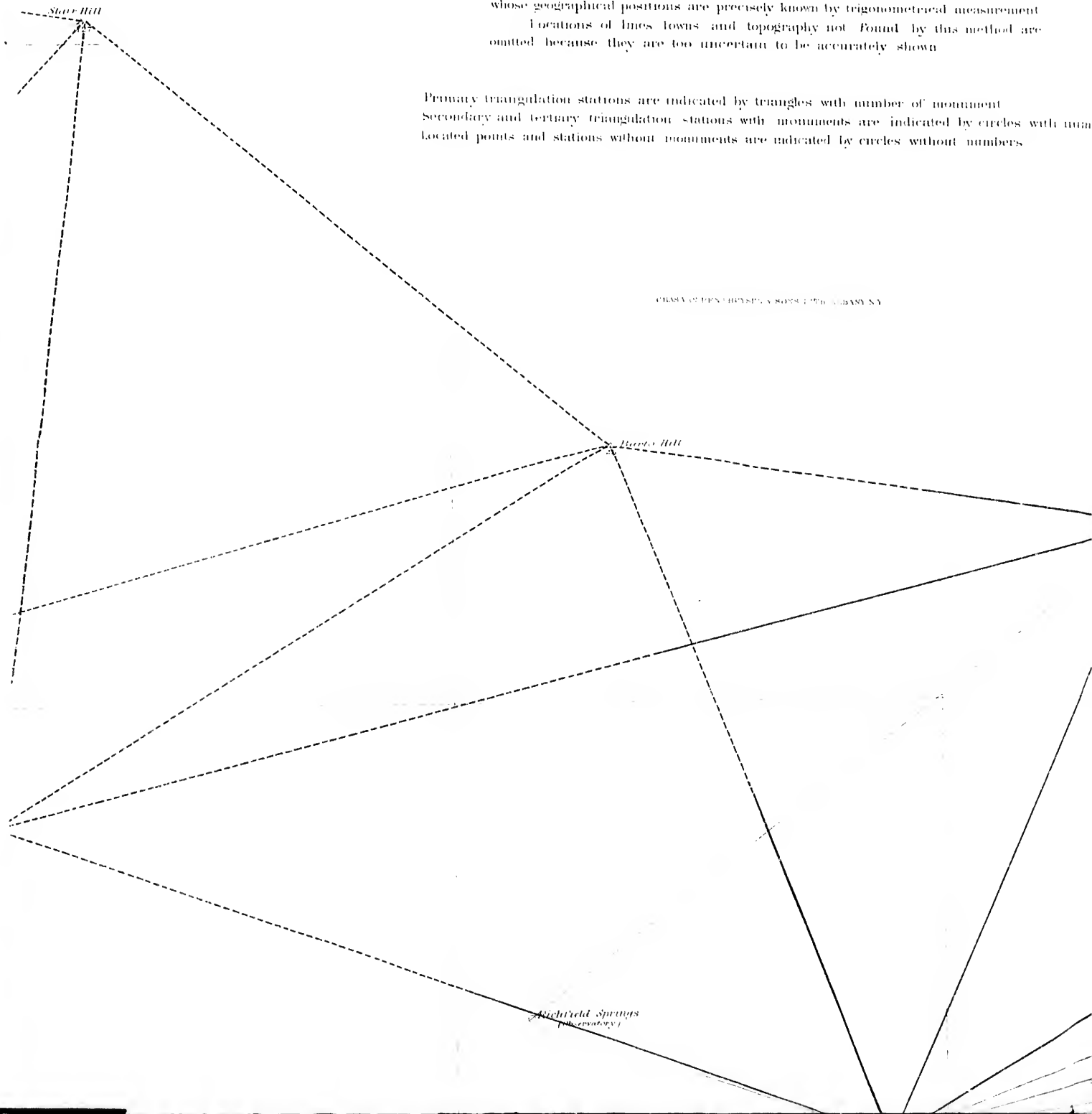
The Hudson River and Lake Champlain, from the U.S. Coast Survey  
 Lake Ontario from the U.S. Survey of the Northern and  
 Northwestern Lakes.

Note

This Map represents only those boundaries, points and topographical features whose geographical positions are precisely known by trigonometrical measurement. Locations of lines, towns and topography not found by this method are omitted because they are too uncertain to be accurately shown.

Primary triangulation stations are indicated by triangles with number of monument.  
 Secondary and tertiary triangulation stations with monuments are indicated by circles with number.  
 Located points and stations without monuments are indicated by circles without numbers.

CLASS OF MAPS CHIPPESWAG, SOUS. 1. 176. ALBANY, N.Y.



1878

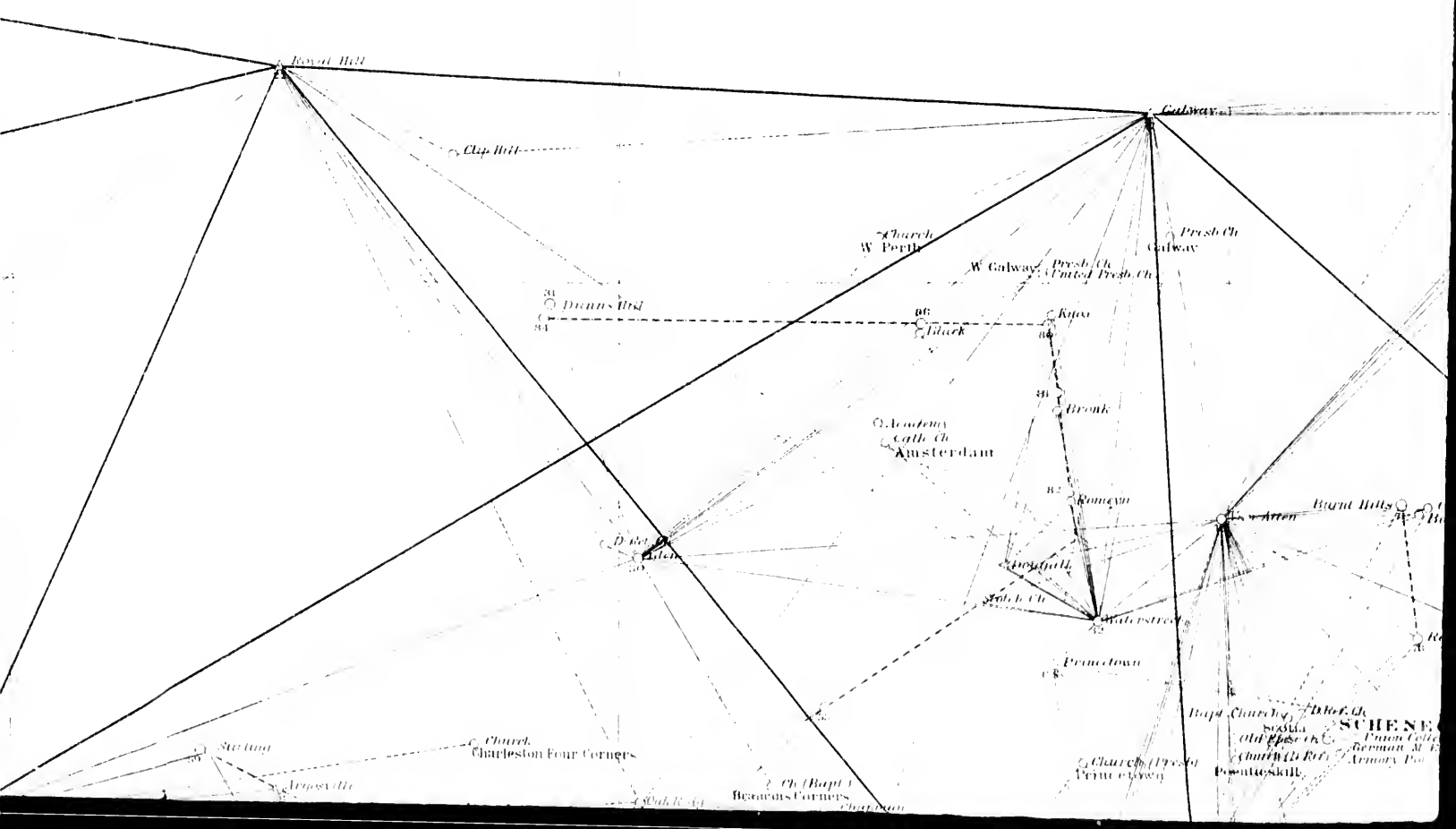
1879

est Survey  
and

graphical features  
eal measurement  
this method are  
n

monument  
ted by circles with numbers  
front numbers

109  
74  
C



SCIENCE  
Union Coll  
German M F  
Armory Pl





43°20'

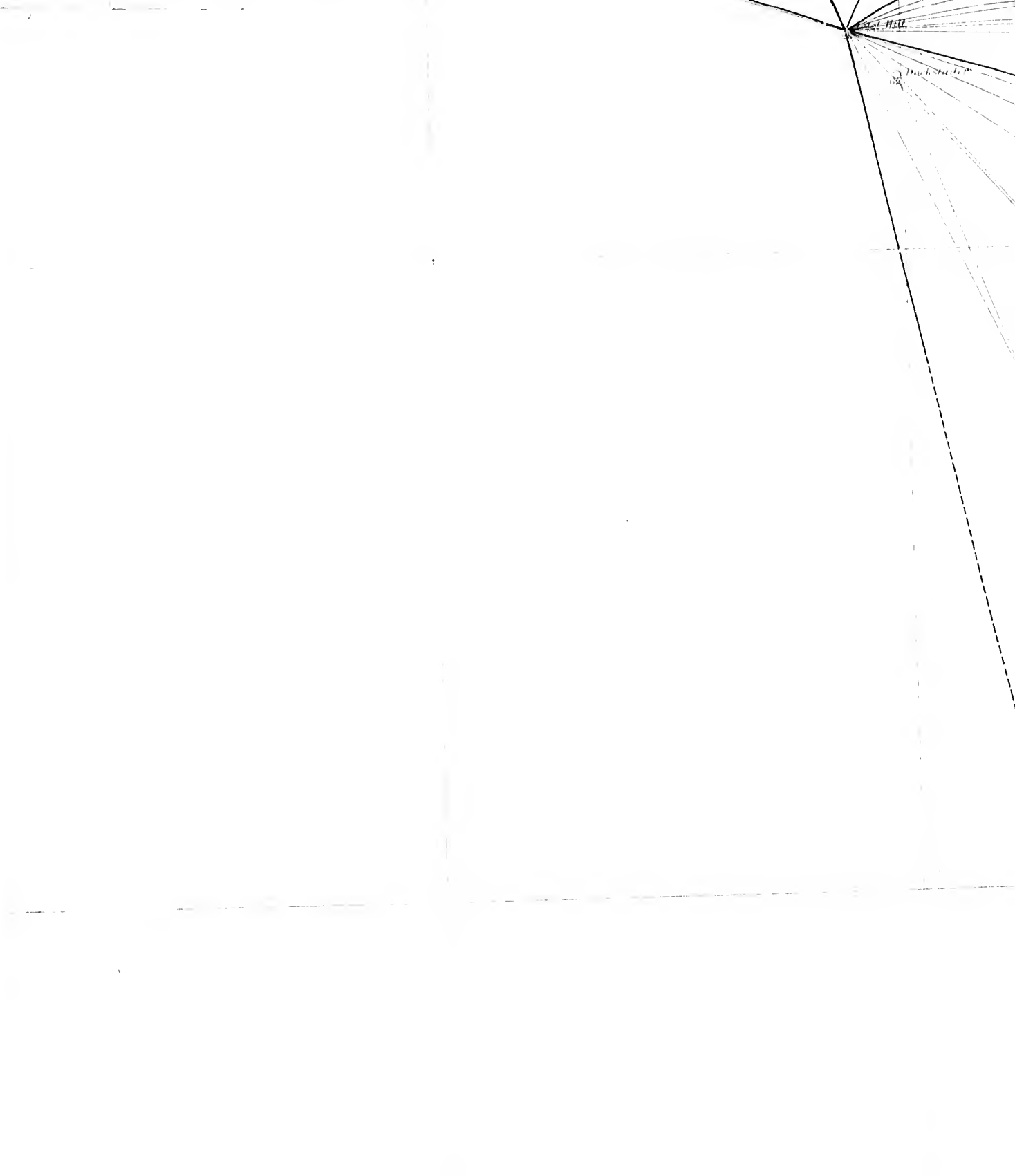
*Mt Equinox*

*Greenwich*

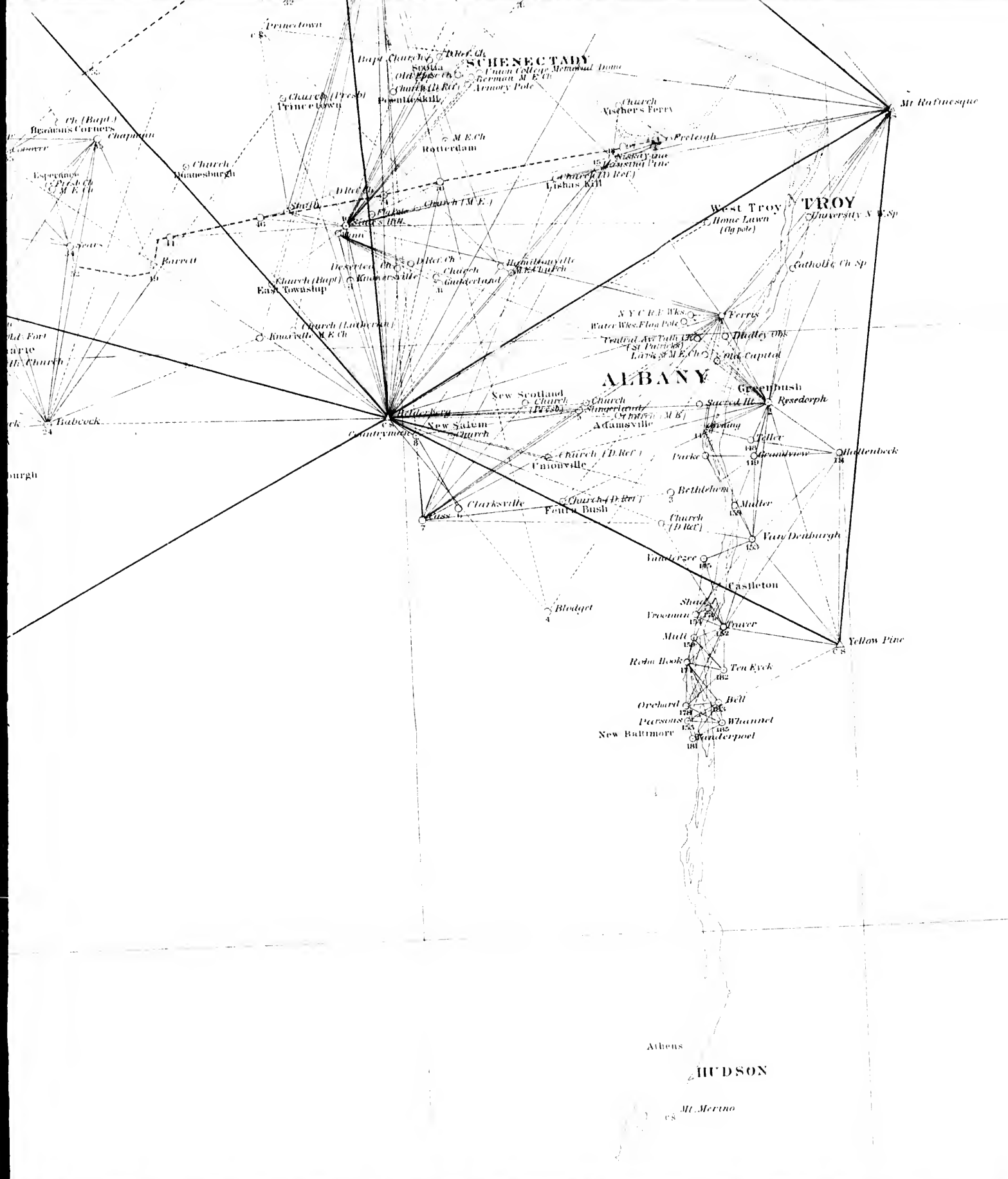
43°00'

1811

1812







**SCHENECTADY**

**TROY**

**ALBANY**

**HUDSON**

Princeton

Mr. Rufesque

Bapt. Church  
Old Dutch Ch.  
Church (Presb)  
M.E. Ch.  
Armory Pole

Church  
Vischer's Ferry

Church  
Hainesburgh

M.E. Ch.  
Rotterdam

Preleigh

Barret

Church (M.E.)

West Troy  
Home Lawn  
(High pole)

University N.W. Sp.

Church (Bapt)  
East Townslup

Church (M.E.)

Hamiltonville  
M.E. Church

Catholic Ch. Sp.

Church (Lutheran)  
Amherst M.E. Ch.

NY C.R. Wks.  
Water Wes. Fla. Pole

Ferris

Traded Ave. Park (St. Paul)  
Lark M.E. Ch.

Hadley Ch.

**ALBANY**

Greenbush

New Scotland  
Church

Church  
Stamper  
Adamsville

Sacred Ill.

Rosedorph

New Salem  
Church

Church (D. Ref.)  
Unionville

Parke

Teller

Hollenbeck

Clarksville

Church (D. Ref.)  
Fruit Bush

Bethlehem

Muller

Van Denburgh

Blodget

Vanderzee

Castleton

Shaul

Trosman

Mull

Orchard

Parsons

New Baltimore

Bell

Whannet

Wanderpoel

Yellow Pine

Athens

**HUDSON**

Mt. Merino

*Mt Rafinesque*

*W. Sp.*

42° 40'

*Greylock*

*lock*

*Pine*

*Perry's Peak*

42° 20'

20

75°00'

74°40'

KINGSTON

74° 40'

74° 20'

74° 00'



U  
T  
D  
S  
O  
S  
R  
I  
V  
E  
R

Barrytown

RINGSTON

Boltz

POUGHKEEPSIE

20'

74°00'

73°40'

*Bald Peak*

42° 00'

41° 40'

33° 40'

73° 20'

73° 00'

