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# New York State Museum Bulletin

Published by The University of the State of New York

No. 313

ALBANY, N. Y.

October 1937

## NEW YORK STATE MUSEUM

CHARLES C. ADAMS, *Director*

### THIRTY-FIRST REPORT OF THE DIRECTOR OF THE DIVISION OF SCIENCE AND STATE MUSEUM

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THE UNIVERSITY OF THE STATE OF NEW YORK

1937

# THE UNIVERSITY OF THE STATE OF NEW YORK

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School Buildings and Grounds,

*New York State Education Department*

*The New York State Museum, February 15, 1937*

*The Honorable Frank P. Graves*

*President of the University and*

*Commissioner of Education*

SIR: I beg to submit herewith the report of the Director of the New York State Museum for the period from July 1, 1935, to June 30, 1936.

Very respectfully

CHARLES C. ADAMS

*Director*



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## THE LEGAL STATUS OF THE NEW YORK STATE MUSEUM

All scientific specimens and collections, works of art, objects of historic interest and similar property appropriate to a general museum, if owned by the State and not placed in other custody by a specific law, shall constitute the State Museum. [*Education Law*, § 54.]

The Librarian of any library owned by the State, or the officer in charge of any state department, bureau, board, commission or other office may, with the approval of the Regents, transfer to the permanent custody of the State Library or Museum any books, papers, maps, manuscripts, specimens or other articles which, because of being duplicates or for other reasons, will in his judgment be more useful to the State in the State Library or Museum than if retained in his keeping. [*Education Law*, § 1115.]

## THE FUNCTIONS OF THE STATE MUSEUM

"The Museum is the natural scientific center of the State government; it is the natural depository of all the material brought together by the state surveys; it is the natural custodian of all purely scientific state records; it is the natural center of the study of the resources of the State as a political unit; it must maintain its capacity for productiveness in pure scientific research—pure science has been the justification of the State Museum from the beginning of its history. \* \* \* In brief, the distinctive sphere and scope of the State Museum corresponds with the scientific interests and welfare of the people within the geographic boundaries of the State.

"The truest measure of civilization and of intelligence in the government of a state is the support of its institutions of science, for the science of our time in its truest sense is not the opinions or prejudices, the strength or weakness of its votaries, it is the sum of our knowledge of nature with its infinite applications to State welfare, to State progress and to the distribution of human happiness."—*Henry Fairfield Osborn, an address delivered at the dedication of the New York State Education Building, October 15, 1912.*

## THE FUNCTIONS OF A MUSEUM

"A museum is an institution for the preservation of those objects which best illustrate the phenomena of nature and the works of man, and the utilization of these for the increase of knowledge and for the culture and enlightenment of the people.

"In addition to local accessories, the opportunity for exploration and field work are equally essential, not only because of considerations connected with the efficiency of the staff \* \* \* but in behalf of the general welfare of the institution. Other things being equal, exploration can be carried on more advantageously by the museum than by any other institution of learning, and there is no other field or research which it can pursue to better advantage.

"To aid the occasional inquirer, be he a laboring man, schoolboy, journalist, public speaker, or savant, to obtain, without cost, exact information upon any subject related to the specialties of the institution; serving thus as a "bureau of information."

"A museum to be useful and reputable must be constantly engaged in aggressive work either in education or investigation, or in both.

"A museum which is not aggressive in policy and constantly improving can not retain in its service a competent staff and will surely fall into decay.

"A finished museum is a dead museum, and a dead museum is a useless museum."—*G. Brown Goode, formerly assistant secretary, Smithsonian Institution.*

## THE VALUE OF RESEARCH

"In the eyes of the world today the reputation of a country does not depend alone on the size of her armaments, the size of her empire or volume of her trade so much as upon the contribution she can make to the progress and happiness of mankind in art, in literature and in science.

"The development of industry depends more or less on the application of new ideas and discoveries in pure science. Successful industrial research is ultimately dependent on the prosecution of research in pure science with the object of adding to our knowledge of the processes of nature, and generally without regard to the practical applications."—*Stanley Baldwin, Lord President of the Council, Opening the Mond Laboratory at Cambridge, England. From the New York Times of February 19, 1933.*

## RESEARCH AND EDUCATION

"The future of America is in the hands of two men—the investigator and the interpreter. We shall never lack for the administrator, the third man needed to complete this trinity of social servants. And we have an ample supply of investigators, but there is a shortage of readable and responsible interpreters, men who can effectively play mediator between specialist and layman. The practical value of every social invention or material discovery depends upon its being adequately interpreted to the masses. Science owes its effective ministry as much to the interpretative mind as to the creative mind. The knowledge of mankind is advanced by the investigator, but the investigator is not always the best interpreter of his discoveries. Rarely, in fact, do the genius for exploration and the genius for exposition meet in the same mind. . . . The interpreter stands between the layman, whose knowledge of all things is indefinite, and the investigator whose knowledge of one thing is authoritative. The investigator advances knowledge. The interpreter advances progress. History affords abundant evidence that civilization has advanced in direct ratio to the efficiency with which the thought of the thinkers has been translated into the language of the workers. Democracy of politics depends upon democracy of thought. 'When the interval between intellectual classes and the practical classes is too great,' says Buckle, 'the former will possess no influence, the latter will reap no benefit.' A dozen fields of thought are today congested with knowledge that the physical and social sciences have unearthed, and the whole tone and temper of American life can be lifted by putting this knowledge into general circulation. But where are the interpreters with the training and the willingness to think their way through this knowledge and translate it into the language of the street? I raise the recruiting trumpet for the interpreters."—*Glenn Frank.*

## FORM OF BEQUEST

I do hereby give and bequeath to the Board of Regents of The University of the State of New York, in trust for the New York State Museum:

## Museum Committee of the Board of Regents

OWEN D. YOUNG, *Chairman*  
WM LELAND THOMPSON  
JOHN LORD O'BRIAN

## State Museum Council

THOMAS D. THACHER  
PIERREPONT B. NOYES  
ORANGE L. VAN HORNE  
SANFORD L. CLUETT  
WALDEMAR B. KAEMPFERT

## State Museum Staff

CHARLES C. ADAMS Ph.D., D.Sc. . . . . . *Director of State Museum*  
ALVIN G. WHITNEY A.B. . . . . . *Assistant Director of State Museum*  
RUDOLF RUEDEMANN Ph.D. . . . . . *State Paleontologist*  
DAVID H. NEWLAND B.A., Ph.D. . . . . . *State Geologist*  
ROBERT D. GLASGOW Ph.D. . . . . . *State Entomologist*  
HOMER D. HOUSE Ph.D. . . . . . *State Botanist*  
CHRIS A. HARTNAGEL M.A. . . . . . *Assistant State Geologist*  
WINIFRED GOLDRING M.A. . . . . . *Assistant State Paleontologist*  
DAYTON STONER Ph.D. . . . . . *State Zoologist*  
KENYON F. CHAMBERLAIN . . . . . *Assistant State Entomologist*  
ELSIE G. WHITNEY A.M. . . . . . *Assistant State Botanist*  
NOAH T. CLARKE . . . . . *State Archeologist*  
EDWIN J. STEIN . . . . . *Museum Draftsman and Photographer*  
WALTER J. SCHOONMAKER . . . . . *Assistant State Zoologist*  
ARTHUR PALADIN . . . . . *Museum Technical Assistant*  
*(Taxidermy)*  
CLINTON F. KILFOYLE . . . . . *Museum Technical Assistant*  
*(Paleontology)*  
JOHN L. CASEY . . . . . *State Museum Guide*

## Honorary Curators

WILLIAM L. BRYANT . . . . . *Honorary Curator of Fossil Fishes*  
HARRY S. PECK . . . . . *Honorary Curator of Minerals*

## Collaborator

DR EPHRAIM P. FELT

### Temporary Scientific Appointments

ARETAS A. SAUNDERS Ph.B.....	<i>Temporary Ornithologist</i>
GORDON I. ATWATER.....	<i>Temporary Geologist</i>
ROBERT B. GORDON Ph.D.....	<i>Temporary Botanist</i>
NELSON C. DALE Ph.D.....	<i>Temporary Geologist</i>
WILLIAM L. LASSITER M.A.....	<i>Temporary Curator of History</i>
A. F. BUDDINGTON Ph.D.....	<i>Temporary Geologist</i>
JOHN H. COOK.....	<i>Temporary Geologist</i>
ROGERS McVAUGH Ph.D.....	<i>Temporary Botanist</i>
HENRY VAUGHAN.....	<i>Temporary Geologist</i>
A. GLENN RICHARDS Ph.D.....	<i>Temporary Entomologist</i>





Figure 1 New York State Education Building. The upper floors are devoted to the offices, laboratories and exhibits of the New York State Museum.

# THIRTY-FIRST REPORT OF THE DIRECTOR OF THE DIVISION OF SCIENCE AND STATE MUSEUM

BY CHARLES C. ADAMS Ph.D., *Director*

*New York State Museum*

## FOREWORD

This annual report covers the fiscal year closing June 30, 1936. On April 15, 1936, the Division of Science and State Museum ended its first century of activity. For this reason it is appropriate to utilize, as an introduction to this report, two radio talks, one given April 14, 1936, and the other May 19, 1936, which were devoted to certain aspects of the past century, and a glance to the future of this institution.

## ONE HUNDRED YEARS OF SCIENTIFIC STUDY<sup>1</sup>

### THE PUBLIC INVENTORY

You will, on a moment's reflection, recall that every day is the 100th birthday anniversary or centenary of some historic event. We pay little attention to most of them, because they are not worth any special consideration. However, now and then one calls for serious thought. Tomorrow, April 15th, is the 100th anniversary of the establishment of the first scientific agency of the New York State Government. And what does that really mean today? This was the State Geological and Natural History survey, which in later years, was known as the State Cabinet of Natural History, and finally came to be known as the Division of Science and the State Museum, or commonly called the New York State Museum, which is now located in the State Education Department, at Albany.

And what is remarkable or noteworthy about this event? The State Government in 1836 was only 59 years old. At that time it required about ten years of agitation and education before the necessary legislative support was secured for this scientific beginning. We can understand the situation better if we recall that the State Government is a huge business enterprise, and, to

<sup>1</sup>Radio address given by the Director of the State Museum, Station WGY, April 14, 1936.

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be efficient, it demands much information on a very great variety of subjects. Even local city or county government requires considerable familiarity with local conditions in order to conduct such governmental work well; and in the case of the State as a whole, the difficulties are greatly magnified.

By degrees the public has learned that it could not depend on chance or private initiative to provide adequate scientific knowledge of the natural resources of the State. There is no obligation for individuals to make privately acquired information freely available to the public, and public interest can not and should not depend upon charity. No self-respecting government will permanently follow such a policy.

The previous 59 years of government had been conducted without taking stock, that is, making an inventory of its possessions, and as a result many very serious and preventable mistakes were inevitable under such circumstances. This is the same kind of difficulty that a farmer would encounter if he did not know the character of the soil, or the crops which he attempted to cultivate; or a merchant, if he did not know the stock of goods on his shelves or their value. It was therefore a very important step when the State Government decided to begin seriously to make an inventory of its natural resources and possessions. Is this not worthy of our thought today?

### THE NATURAL RESOURCES

Our next important consideration is: What are the major natural resources and natural advantages which make New York the Empire State? In our daily lives, living in the midst of these advantages, we easily overlook their presence and their true significance. Our natural resources include the broad general physical features of our State, such as our favorable climate; our geographic position in relation to the sea—with the best harbor on the Atlantic coast; the great valley routes of the Hudson, Champlain and Mohawk to the Great Lakes and to Canada, and most important of all, to the interior of the continent, the greatest food-producing area on earth, and thus freely connecting our two major industrial and commercial cities, New York City and Chicago. These are commonplace facts and relations that must never be overlooked. They are certainly outstanding advantages of supreme importance from the standpoint of public welfare of this State.

With such a sketch of the general favorable background, let us consider certain additional natural resources, which by themselves,

would possibly not mean much, but which under the existing favorable conditions, reinforce the others and make for a cumulative advantage of the greatest economic and social importance. These resources include: the soil, surface, ground and mineral waters, water powers, and such mineral deposits as iron ore, salt, gypsum, zinc, talc, garnet, sand, gravel, clay, limestone, oil and gas, a truly important series of minerals which daily influence the life of everyone.

Nor is this all, for we must not overlook our other natural resources, including plants and animals, such as the marine fisheries of the coast, the fish and the shellfish, the fresh water commercial and sport fisheries of the rivers and the lakes; the fur-bearing animals, such as the muskrat, skunk and beaver, whose skins for a single year are worth about a million dollars; the considerable variety of water and game birds and other minor game animals and wild life. The plant world, as well, must not be neglected, as for example the wild flowers, shrubs, trees, and the forests which cover millions of acres in this State and contribute so much to the industries and to the scenery. Such a summary glance of our native, natural resources shows that this State is unusually fortunate in its possessions. But possessions alone without knowledge, appreciation of their value and wise utilization are of no great advantage, and may be a handicap. What has been done to supply the necessary scientific and technical information about these resources upon which all intelligent utilization must be based?

### SCIENTIFIC AND TECHNICAL STUDIES

What then, has been the relation of the State Museum and its antecedents to the scientific study of these natural resources? That is a practical question, and the answer is a very definite one. The scientific and technical staff has been actively engaged throughout the State in field, laboratory and office studies, making detailed observations, mapping, making sample collections of these resources, and finally studying them in relation to the industries involved. As a result of these studies hundreds of reports have been published on the rocks, fossils, minerals, plants, insects, birds, fishes and quadrupeds, as well as on historical subjects, as the State Museum is the State repository for historic objects and materials. It is on the basis of these collections that the exhibition halls of the State Museum have been developed. These halls in normal economic times are regularly visited each year by 200,000 persons, including

large numbers of school children, who come by means of the school busses; and during the summer by great numbers of automobile tourists from all parts of America.

An example of the direct local benefit of this kind of reliable information is that supplies of raw materials for local road construction and other purposes are thus made known, as are the general prospects for valuable mineral resources; and that many persons are protected from fraudulent claims made for oil, gas, coal and gold. These protective services are extended to the diffusion of information regarding means of preventing injury to plant and animal crops by insects and other pests. The State Museum has thus made extensive and important contributions to our knowledge of the natural resources, and has at the same time made this information available to the public.

### NEW CONDITIONS

With the passage of the years the economic and social conditions have changed very greatly, and the relative values of the natural resources have changed correspondingly. Certain resources that once were of little value have since become of great importance, and resources once valuable are of slight consequence now. For example, flagstones, so much used formerly for sidewalks, have been replaced by brick and cement, and milling stones, by which in the old days our flour and corn were ground, are replaced by steel rollers. The fertility of the soils has declined, much of our surface waters have been drained away; the streams are clogged by eroded soil, and polluted by sewage and industrial refuse; the forests have been depleted; and while certain valuable mineral deposits have been exhausted, wholly new uses have been developed for such as sand, gravel, limestone, clay, gypsum and salt, and new mineral deposits have been found and developed, so that the old knowledge of these resources must be constantly revised and renewed. The older scientific studies of these resources went out of date, and new and more careful and refined studies had to be made to keep up with the times and with the advances in all phases of industry and society. If the times did not change, if the newspapers did not get out of date, scientific studies might last forever! But under healthy economic and social conditions science changes even more rapidly than society! And thus its results are soon out of date, and must be constantly renewed.

I have now briefly sketched some of the accomplishments of the

Division of Science and the State Museum, and its predecessors during the past 100 years, in building up a sound body of fact and inference on the natural resources of the State, and finally in making the results available to the general public of this State. What of the future?

## THE NEXT ONE HUNDRED YEARS OF THE STATE MUSEUM<sup>1</sup>

### 1 PROGRESS IN STUDYING AND MAPPING THE RESOURCES

In my radio talk on April 14th, I spoke of the 100th birthday anniversary of the establishment of the first scientific agency of the New York State Government, that finally became the Division of Science and State Museum in the Education Department. Attention was then called to the study of the natural resources that was begun and has been conducted during the past 100 years.

Let us now consider, in the light of the past, some of the things that should be done by the State Museum during the next 100 years. I shall not attempt to speak for the whole period nor as a prophet, but in terms of some of the practical things that could and should be done in the near future that are intimately related to the work of the State Museum.

First of all, we know that conditions will change, economically and socially, and that these conditions will, with advance in technology, cause changes in the relative value of our natural resources, and even the importance of our present favorable geographic position.

As I stated in my former broadcast, scientific and educational studies must be continued and even be expanded. Our public officials should have up-to-date information on the scientific advances relating to all the natural resources of the State, including the soils, rocks, minerals, water, and the plants and animals living on land, in our fresh water lakes and streams, and in the bordering Atlantic ocean. This expansion and development should be kept at least fully modern, or better, a bit in advance of the times. The results of such studies should be made public in both popular and technical language for widespread diffusion. Merely to state the facts is not enough, for their meaning should be pointed out. And, finally, comprehensive studies should be made that look toward the future and that will contribute to broad public policies of the State.

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<sup>1</sup>Radio address given by the Director of the State Museum, Station WGY, May 19, 1936.

So much for the general statement of the problem. Now let us be more specific, and begin with emphasis on the kinds of basal facts which are often best expressed by reports and maps. I shall mention first some general improvements which must precede scientific advances and upon which progress of the State Museum depends to some degree.

1 **Geographical and topographic maps.** Many of the topographic maps or quadrangle units prepared by the United States Geological Survey, in cooperation with the State of New York, are now old and do not meet present-day needs. The need for more accurate maps increases constantly. Such maps will be of great value locally in road construction and for many other purposes.

2 **Aerial maps.** Aerial or airplane maps of the State are increasingly demanded and are needed for many kinds of scientific work, not only for revealing the physical features of the land, but for many biological purposes as well. We are just beginning to appreciate the educational value of such maps. They will be of great assistance in the study of our natural resources.

3 **Geological maps.** While the mapping of the rocks, minerals and fossils of the State has made much progress, the newer geological maps must also be more detailed, and the older ones should be carefully revised. With the new emphasis now being placed on marginal lands, the importance of such maps is greatly increased. Land utilization policies can not be safely established without account being taken not merely of the topography and the soil, but also of the mineral resources below the surface. The presence of valuable minerals, such as limestone, gypsum, molding sand, clay, sand, gravel, iron ore, oil and gas, can not be ignored in any sound program of land classification and utilization.

Careful studies of the glacial deposits of the State, the sands, gravels and clays, are urgently needed for their bearing not only on agriculture and forest soils, but as well for their bearing on the ground waters that supply our springs and wells. We have come to realize this acutely during the recent drought years.

4 **Biological and vegetational maps.** The native plants and animals of the State call for increased study. The forests and other plants of the State should be carefully mapped. Our forests occupy a very large area of the State, and with the extensive abandonment of marginal farm land, this area will greatly increase. Different parts of the State are more favorable to some plants and animals than others; for example, many kinds of these thrive on Long Island and not in the Catskills and the Adirondacks. The

natural distribution of plants and animals is thus of considerable practical importance. Maps showing the natural distribution of the native vegetation have long been known as valuable indicators of the quality of the soil and of intimate local biological conditions, and useful for the growth of crop plants and many kinds of wild animals.

5 **Popular and technical reports.** Every fact, of course, can not be best expressed by maps. There are many subjects worthy of special attention that are best presented to the public by circulars, handbooks, bulletins and reports, with photographs and colored plates. These include special reports on iron ore, clay, gravel, oil, gas, mosquito control, wild flowers, fossils, birds and similar subjects. This information is just the kind that your local county or regional planning boards and the Division of State Planning officials urgently request.

## 2 HISTORY OF NEW YORK INDUSTRIES AND ARTS

New York is the leading industrial State of America. The history of its industries covers many of the most important steps in the history of the whole country. The state law relating to the State Museum includes history and the arts within its field, as well as science. The State Museum is therefore eager to acquire and exhibit historic objects which illustrate significant features in the development of industries and the arts of this State.

What does this mean? The geological history of the State has been very extensively explored, published and illustrated by exhibits in the State Museum, but reference is here made to the need of materials and objects relating to human history. The history of the New York Indians has been studied, and is beautifully illustrated by the Iroquois Indian groups in the State Museum. But the concrete objects and materials illustrating the colonial and later history of industry and the arts have been neglected, although the Historic Collections do contain a large number of implements used in the old household industries and in agriculture. This is a field that should be greatly expanded in the next 100 years.

This same condition is even more true of the fine arts. This State has produced many famous artists, who have contributed much to the credit of the Nation, but the State Government has sadly neglected this phase, and has made no collection of fine arts worthy of mention, in spite of the fact that New York City is the leading art center in America. Here is a great and important field that is destined to receive attention in the future.

There is, however, no prospect for these two fields of industry and arts to develop in any important way until the State Museum has a new building, built for and devoted solely to its own needs, a building not made a memorial or monument to an architect, but built solely to display exhibits, to store materials for study and to provide working quarters and laboratories for an able staff.

Museum officials have for many years had more than one dream of this kind for a new building, but at dawn, as with many dreams, it was discovered that someone else had appropriated the idea and had departed with the speed of the famous seven league boots! And strange as it may seem there has been hardly a word of protest!

### 3 TRAVELING MUSEUMS

Instead of telling you what I think might be done for the rural schools, let me ask you a few questions, such as:

1 Why should not the State Museum have a fleet of automobiles, or better, of vans, filled with interesting and beautiful exhibits which would be appropriate for instruction in the rural schools? Why could these not make regular tours of the State, spending a few days at each consolidated school, so that large numbers of children, and even their parents, would have a chance to see for themselves some of the interesting and instructive exhibits that could be presented in an interesting and attractive form on wheels? Would you as a parent, teacher or pupil welcome the arrival of such a traveling museum in your school yard?

2 Why should not the consolidated schools have a local teaching school museum, just as they have a school library? This school museum should consist only of objects that can and will be used in the regular instruction of the school classes. A representative from the State Museum might well advise and assist the school museum teacher in naming or labeling specimens, or securing certain loans and donations, and arranging for the visit of the proposed State Museum bus or van? Talking about and looking at pictures is no substitute for seeing and even handling objects of study.

Again, have you ever seen a school museum in action? A museum actually in use by the pupils who are proud to add to its usefulness by the donation of natural history specimens, appropriate samples of commercial products or historic objects?

But before you start on this path I warn you that if you do not wish such a museum to grow do not start it, as the live and active interest of the children, under the intelligent guidance of live teachers, is bound to make extra work for someone and take up space!

But the results of such teaching with real objects will be immediate, and ten years later you will still see the good results of this method.

My final word to the school children is—and it is not for the ears of the old folk or the teachers—if you have not visited the State Museum at Albany, ask your teachers this question: Why have we not taken the school bus and made a visit to the New York State Museum? More than 300 classes made such a visit to the Museum during the past year from 36 different counties. Is your county one of the forward or backward counties in this respect?

## A SUMMARY OF THE YEAR'S WORK

1 Geological field or laboratory work was done on the following quadrangles: Schunemunk, Randolph, Cattaraugus, Catskill, Coxsackie, Santa Clara, Oriskany, Indian Lake, Thirteenth Lake, Willsboro, Clyde and Sodus Bay, Childwold, Morrisville, Wellsville and Salamanca. Other special studies include the continuation of the monograph on the Graptolites, Devonian stratigraphy, coral reefs, Devonian crinoids, Burden iron ore, oil, gas and mineral statistics. Field work on a popular handbook on the geology of the Lake George region has been continued.

2 Work in the field of botany has included field studies and office work on the vegetation of the Allegany State Park region and of Cattaraugus county, field work on the eastern end of Oneida lake, a revision of the list of ferns and flowering plants, studies of fungi, continuation of the preparation of a popular handbook on the ferns and their allies. Progress has been made on a report on the plants of Columbia county.

3 Economic studies cover a variety of topics, such as recent developments of oil and gas, current mineral statistics, special studies of insect pests of fields, gardens and forests, continuation of studies of the black flies and cooperation on mosquito control.

4 The archeological and industrial history collections continue to expand, particularly the historic materials, and progress is made each summer in cataloging and storing this material. It is significant to note that from year to year the quality of the donations continues to improve.

5 The ninth annual session of the Allegany School of Natural History in the Allegany State Park was very successful. The school is conducted by the Buffalo Society of Natural Sciences with educational supervision by the State Museum. The State Museum also cooperates and continues field work on local scientific

and educational problems in the vicinity of the park. This work has demonstrated that much more educational utilization can be made of the State Park system than is currently done. Likewise the administration of the parks calls for considerable scientific and educational assistance and cooperation.

6 There are about 23 cooperative projects in operation, including those with several federal agencies, several state departments and universities, as well as with individuals.

7 A list of the publications will be found in the Annual Bibliography of the State Museum.

### COOPERATION WITH STATE AND OTHER ORGANIZATIONS

As was emphasized in the 30th Annual Report, there is a large amount of unemployment involving technical, scientific and clerical workers, and the State Museum has made special effort to give work to such persons. This appeared to be a rare chance to perform public service and also to permit the Museum to do a great amount of work in arrears because of its understaffed condition. A large number of important field investigations could have been conducted advantageously in various parts of the State. A ground water survey of the capital district would have given work to a considerable number of unemployed geologists and geologic engineers. Certain local planning boards continue to call for fundamental, physical and biological surveys and special studies, but this help could not be provided on account of our limited facilities or with relief help. As a result of these conditions only a very small amount of relief work has been done, a very unfortunate condition. In spite of these conditions many relief workers on other projects have called on the State Museum for assistance on their own projects.

During the past year the State Museum has cooperated with the following agencies or individuals:

1 United States Bureau of Mines, Washington, D. C. The Museum has continued the long-standing plan of collecting jointly the statistics of mineral production from the mines and quarries of the State.

2 New York State Department of Agriculture and Markets. Cooperative entomological studies of the European pine shoot moth and of other insect pests of ornamental trees and shrubs have been continued.

3 New York State Conservation Department. The Director of the State Museum is a member of the State Council of Parks in the Department of Conservation. The geologists of the Museum staff advise the Conservation Department on the purchase of lands when mineral resources are involved. The State Entomologist has made studies of the Pales weevil injurious to Scotch and other pines, and has made studies of the European pine shoot moth, the latter with the added cooperation of the Westchester County Park Commission and of the State Department of Agriculture and Markets. The Division of Fish and Game has cooperated with the State Entomologist on the relation of mosquito control to wild life. The Allegany School of Natural History is conducted in the Allegany State Park by the Buffalo Society of Natural Sciences. The State Museum has continued to cooperate in this and conducts scientific studies of park problems in this park.

4 The State Health Department has cooperated with the State Entomologist of the Museum staff in the control of the blood-sucking flies on the grounds of the State Tuberculosis Hospital at Ray Brook, and the Division of Sanitation on the relation of mosquito control to wild life on Long Island.

5 State Law Department, Office of the Attorney General. The Museum geologists cooperate with the Office of Land Titles on the purchase of mineral lands in the Adirondacks and on other legal problems.

6 State Executive Department, Division of State Planning. The State Museum has cooperated in many ways with the Division of Planning.

7 Buffalo Society of Natural Sciences, Buffalo, N. Y. The Museum cooperates in conducting the Allegany School of Natural History in the Allegany State Park. The School has assisted in the conduct of local scientific surveys in the region of the park. There is also cooperation with the Allegany State Park Commission.

8 Yale University, Department of Geology, New Haven, Conn., has cooperated in a study of the magnetite deposits of Lyon Mountain.

9 Colgate University, Department of Geology and Geography, Hamilton, N. Y., cooperates on a geological survey of the Morrisville quadrangle.

10 Princeton University, Department of Geology, Princeton, N. J. This cooperation resulted in a geological survey of the Piseco Lake quadrangle. The study is now completed.

11 The University of Rochester, Department of Geology. Cooperation on a geological survey of the Clyde and Sodus Bay quadrangles.

12 Cooperation within the Education Department: State Library, conducting exchanges of Museum publications; Department Editor, on the publication of Bird and Arbor Day numbers of the Bulletin to the Schools.

13 Dr Rudolf Ruedemann, State Paleontologist of the Museum staff, has cooperated with several universities and museums.

14 Dana Natural History Society, Albany, N. Y. Cooperation on a lecture on birds to Albany school children on Bird Day, March 27, 1936, by Edward Avis.

15 United States Department of Agriculture, Bureau of Entomology, has cooperated on plans for scientific studies to determine the relation of mosquito control operations to wild life conservation. This cooperation is a continuation of the work begun as a state branch of the Federal Civil Works Administration (C.W.A.) mosquito control relief program, and has been extended to include cooperation with the United States Biological Survey on the same series of studies.

16 The American Humane Association, Albany, N. Y. This organization has been conducting a prize competition in order to secure a more humane trap for catching animals. In this worthy endeavor the Zoology office of the State Museum has cooperated. This work has been under way for eight years.

17 The National Association of Audubon Societies has cooperated with the State Entomologist on the relation of mosquito control to wild life.

18 National Research Council, Wild Life Committee. The Director is a member of this committee, which has been studying the facilities devoted to research and the training of research workers on wild life.

19 Biological Survey, United States Department of Agriculture, cooperates in furnishing bands for the bird-banding studies of the State Zoologist, and has cooperated with the State Entomologist on plans for a study to determine the relation of mosquito control work to wild life conservation.

20 The City Health Department of New York City. The State Entomologist has cooperated with this department on the control of mosquitoes and on their relation to wild life.

21 The Suffolk County Mosquito Extermination Commission has cooperated with the State Entomologist on methods of controlling mosquitoes in relation to wild life conservation.

22 The Nassau County Mosquito Extermination Commission has cooperated with the State Entomologist on the control of mosquitoes and their relation to wild life.

23 The Eastern States Association of Official Mosquito Control Workers. The State Entomologist has participated in the organization and activities of this interstate association, in which the following states are represented: Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Massachusetts and New Hampshire, as is also the Federal Bureau of Entomology, United States Department of Agriculture.

### STATE PLANNING BOARD

The functions and relation of the State Planning Board to the Federal National Resources Board, and their relation to the State Museum were discussed in the 30th Annual Report, "The Relation of Natural Resources to Regional and County Planning," Museum Bulletin 310, p. 121-141. The State Museum is in hearty accord with all such efforts to develop public policies based on sound scientific and technical studies looking toward public interest and advantage.

The Museum needs additional funds and personnel if it is to expand its work to meet urgent local requests for assistance.

The fundamental importance of the local natural resources and the relative advantages of geographic position are physical facts which are fundamental in sound public planning, although this is not always fully appreciated. We have here the same kind of problem as when dealing with the natural resources of the state parks in relation to the public. Ultimately there should be a balancing of the local needs with those of the general public interest.

Local planning boards can not in general expect, with their limited resources, to conduct the essential local scientific surveys of their natural resources. Such work should be conducted in cooperation with the State Museum, but when these studies reach the planning and engineering stage, only occasional scientific assistance may be needed. It is frequently observed, however, that engineers and administrators plunge ahead without adequate scientific and technical advice, and many avoidable errors are thus made, and even permanent injury has thus been done.

## STATE COUNCIL OF PARKS

The State Council of Parks, in the Department of Conservation, is the "central advisory agency for all parks and parkways, and all places of historic, scientific and scenic interest." The Director of the State Museum is a member of the council, and has attended regularly the monthly meetings and inspection trips through the parks and parkways. The State Museum has also cooperated in the educational supervision of the Allegany School of Natural History in the Allegany State Park for the past nine years, and has conducted scientific and economic studies of the natural resources in this park. The results of many of these studies have been published and others are in preparation. Important cooperative entomological experiments have been conducted by the State Entomologist, of the Museum staff, with the Westchester County Park Commission and with the Long Island State Park Commission, in connection with the mosquito control problem in relation to wild life on the tidal marshes.

## ALLEGANY SCHOOL OF NATURAL HISTORY

"Future educational systems of the States will undoubtedly offer increasing possibilities for intellectual and spiritual growth of adults. In this connection, the wide field of nature will be recognized as a major asset, furnishing inspiring original materials teaching their own lessons. A well-developed State Park system, closely articulated to the educational program of the State, may be an extremely important instrument for use in ways of which we are as yet scarcely aware."—*John C. Merriam, President, Carnegie Institution of Washington, 1932.*

The ninth session of the Allegany School of Natural History was held from July 5 to August 24, 1935, in the Allegany State Park. The school was conducted by the Buffalo Society of Natural Sciences with the cooperation and educational supervision of the State Museum, and with the cooperation also, of the Commissioners of the Allegany State Park, and in affiliation with the University of Buffalo.

This school has been conducted with certain very definite purposes. First of all, it has been planned to demonstrate the advantages of the extensive system of state parks for educational as well as recreational purposes. Only a beginning has been made in the educational utilization of these parks. There yet remain many unique advantages which are undeveloped. The Allegany School has not duplicated work that is done by other educational agencies. The park officials are not in a position to conduct scientific studies of the natural resources of the park, and are yet in constant need of just such information.

Sooner or later this problem comes to every large park. In my opinion the scientific and educational work in the state parks should be supervised or conducted by the Education Department, just as definitely as any other kind of educational activities within its field.

Dr R. E. Coker, director of the school, reports that the ninth session was very successful. A brief summary of Doctor Coker's report as director of the school is published in the 75th Annual Report of the Buffalo Society of Natural Sciences for 1935-36, page 19.

## RELATION OF THE MUSEUM EXHIBITS TO SCHOOLS AND COLLEGES

(Figures 2, 3, 4)

That the schools and colleges show an increasing appreciation of the value of objective teaching is a healthy sign of advance. This has not been the result of a sudden spurt but one that appears to be of gradual and increasing normal growth. Book learning and laboratory methods have long been utilized, but excursions to the fields and forests, to historical, industrial and governmental sites, and to public museums, have been of much slower development. The excellent and increasing custom of making school excursions by bus or train to the State Capitol, and on to Washington, is one that deserves every encouragement. Properly conducted excursions will open up many vistas to the young, expanding mind.

The number of classes of school children and college students which visit the State Museum exhibits continues to increase. During the past year the number of classes was 445, with a total attendance of 12,315, and a class average of 28. This is the largest recorded attendance. For the preceding year the number of classes was 333 and the total number was 8364. This is a large increase for one year. The attendance for the past nine years, as recorded by the Museum guide, is as follows:

<i>Year</i>	<i>No. classes</i>	<i>No. students</i>	<i>No. counties</i>
1927-28.....	200	5 500	13
1928-29.....	175	4 750	21
1929-30.....	235	6 308	25
1930-31.....	264	7 128	30
1931-32.....	253	6 726	28
1932-33.....	309	7 981	31
1933-34.....	301	8 769	28
1934-35.....	333	8 364	36
1935-36.....	445	12 315	39

Most of the classes from a distance are from the high schools. The following 39 counties were represented: Delaware, Schenec-





Figure 3 School class from Malden, Ulster county, visit the State Museum and examine the restoration of the mastodon



Figure 4 Children from Glens Falls visit the Iroquois Indian Groups of the State Museum

curriculum. Of course, loan exhibits would meet to some degree this same need were funds for their production available, as was urged ten years ago, at which time a comprehensive educational Museum program for the schools was presented to the Regents in the budget request, and to which frequent reference has been made in the later Annual Reports. Cf. 25th Report, p. 18, and Radio talk of May 19, 1936.

Requests continue to come from teachers, school officials and individuals, seeking assistance in the naming of natural history specimens, as well as requests for small collections for teaching purposes. Properly trained teachers could readily prepare valuable teaching collections and build up local school museums that would be of much value, and much of this initiative should come from the teachers colleges and normal schools.

As in past years, the Museum staff aids the Department Editor in the preparation of the Bird and Arbor Day Bulletin to the Schools. The Museum also cooperates with the Dana Natural History Society in giving a lecture to the school children on birds. This year it was by Edwin Avis and was given on March 27th.

The Museum has exerted an influence on schools through publication and distribution of the bird and wild flower volumes and portfolios and the Museum handbooks, which are available to large numbers of teachers and pupils.

Finally, it is well to recall that in adult education activities there is a vast field of education which is largely independent of the whole school system. As a research institution the State Museum, through its exhibits, its publications, correspondence and conferences, is constantly devoted to this phase of education.

## MUSEUM ATTENDANCE

Although it is not possible to count the attendance to the exhibition halls, nor to distinguish between those on business errands or those who come for consultation, careful estimates are made and school classes are counted so that it is known that in normal times the exhibition halls have about 200,000 visitors annually. At the bottom of the depression this number declined about 40,000. The estimated attendance for the present year is about 175,000, a substantial increase over last year.

A few years ago an effort was made to learn what was the possible ratio between the attendance of a museum and the population of the city in which it was located. The ratio ran as high as 856

per cent. The New York State Museum with an attendance at the rate of 200,000 a year, and a population of Albany of about 120,400 gives a percentage of 166. This would place the State Museum at 15 in the rating of 105 museums listed. Undoubtedly this high percentage is due to the large number of automobile tourists who visit Albany during the summer months.

Attention has already been called to the large increase in the number of pupils and students visiting the Museum. The school classes alone in April, May and June showed an increase of 2400.

For a number of years the Museum has been closed on Sunday, but because of Albany's celebration of the granting of the Dongan charter to the city, a special legislative appropriation was made to keep the State Museum open between May 24 and July 1, 1936. The hours were from 10 a.m. to 5 p.m. During this period the Museum was open six Sundays and on Memorial Day, and the total attendance was 4833. During the same period the attendance at the Capitol and at the State Office Building was 5316. Most of these visitors were from out of the city. They were particularly orderly and displayed a very keen interest in the exhibits.

The largest attendance is during July and August, when it is estimated the visitors reach 35,000 each month. This is the tourist season and a large part of the attendance is from outside of the State.

## INFORMATION AND PUBLICITY

Even with its limited resources the State Museum has in the past 100 years accumulated a considerable body of data on the natural resources of the State, with the result that a large public looks to the State Museum as a bureau of information on such subjects. This results in an extensive correspondence and many office visitors.

Members of the Museum staff, working in cooperation with other agencies, act as diffusion agents. Press releases also assist in keeping the public informed about aspects of the work of the Museum. The announcement of the Allegany School of Natural History was widely distributed and reached a large public interested in schools.

There are a considerable number of requests for public lectures, but with our limited travel funds and without official automobiles, not many invitations can be accepted, even when expenses are provided. During the past year members of the staff have given 18 lectures or talks, reaching about 1300 persons, in the following six counties: Albany, Columbia, Monroe, New York, Queens and Schenectady.

Six radio talks were given in cooperation with the Rural Education Division over station WGY as follows:

- 1 January 14th, Dr H. D. House, "Botanical Work of State Museum"
- 2 February 11th, Dr Dayton Stoner, "Spring Birds"
- 3 March 10th, Dr H. D. Newland, "Ground Water and Rural Wells"
- 4 April 14th, Dr C. C. Adams, "One Hundred Years of Scientific Study"
- 5 May 19th, Dr C. C. Adams, "The Next One Hundred Years of the State Museum"
- 6 June 16th, Dr H. D. House, "Poison Ivy"

### CONDITION OF EXHIBITION HALLS, STUDY COLLECTIONS AND SPECIAL EXHIBITS

(Figures 5, 6, 7)

Considerable progress was made between January and June in controlling the injury caused by the leaks on the western half of the roof. This was accomplished by cementing and by placing a series of large metal pans to catch the water and thus prevent damage to the exhibits. This has given the best protection that we have had in several years and is greatly appreciated.

Other improvements worthy of mention include the installation of an electric water cooler for visitors; the cleaning of Zoology Hall in September; the cleaning of the stenciled corridors of the Iroquois Indian Groups between October and December, and for the first time since installation; the replacing of ropes around certain of the fossil floor exhibits with iron railings; the painting of the walls of Botany Hall during December and January and of the floors of the Indian Groups during January and February.

In recent years the screens below the skylight of the Geology Hall were cleaned, but so many were found defective that they could not be used again and were discarded. The result has been that by April the excessive heat had definitely begun to injure the exhibits. Thus some wax figures in the brick yard model exhibit melted down and had to be replaced by plaster figures. In the Paleontology Hall the marine wax groups were similarly threatened and were also injured. In order to protect these, screens were used but they interfered with the proper lighting of the exhibits. The only remedy is to install adequate screens under the skylight. As a partial remedy five additional ventilators were built in the

roof during May, and although this assisted it is not a satisfactory solution of the problem.

The large attendance is evidenced by the wearing away of the paint on the cases, caused by the visitors leaning on the cases, with the result that there is almost constant need of repainting them.

No important improvements were made for the storage of the study collections, but a new storage room was installed with shelving for publications near the Indian Groups. This was completed in April and has been a great convenience.

During the summer of 1936 Albany celebrated its 250th anniversary of the granting of the Dongan Charter, and it was this that led to providing funds for the opening of the State Museum on Sundays. In connection with this celebration it was proposed by the Albany Colonial Study Club that it exhibit at the Museum a beautiful set of models of old buildings which had been prepared by Paul Schrodtt, a local contractor. The character of this exhibit was well explained by the label prepared by Mrs Clifford D. Gregory, president of the club as follows:

As a tribute to Albany during the 250th year's celebration of the granting of the Dongan Charter, this collection (of miniature buildings of old Albany 150 years ago) has been prepared as an exhibit in the State Museum.

The collection includes the Old Capitol with its figure of Justice, the old City Hall which was burned, the Dutch Reformed Church, and the west side of North Pearl street (including the house numbers, the names of the occupants and other information). In the background will be seen in dim photographic effect a vision of the present-day Pearl street. The workmanship has consumed several years and is a fine tribute to the skill of the artisan Paul Schrodtt. The exhibit is sponsored by the Colonial Study Club of Albany. (Figures 5, 6, 7.)

This exhibit aroused much interest and was kept on display from April 16 to September 5, 1936.

Such temporary exhibits are very much welcomed, because for financial reasons and on account of limited space, our exhibits are too permanent and are not changed as often as is desirable. This permanence leads to a monotony that is repellent, and hastens "museum fatigue," except to the periodical visitor, or one who has largely forgotten his former visits. The general public knows that permanent store window exhibits in up-to-date commercial establishments are not considered appropriate, but unfortunately it is not equally recognized that permanent exhibits in museums should be equally out of date, as far as a general policy is concerned. In



Figure 5 Model of Old State Capitol, Philip Hooker, architect. Model made by Paul Schrodt. Photograph courtesy J. A. Glenn.



Figure 6 Model of old City Hall of Albany. Philip Hooker, architect. Model made by Paul Schrodt. Photograph courtesy of J. A. Glenn.



Figure 7 Model of Old Dutch Reformed Church, Albany, N. Y. Model made by Paul Schrott. Photograph courtesy of J. A. Glenn.



the future, with adequate funds and space provided, permanent exhibits will be largely relegated to special rooms, and will form a minority of the exhibits. Not only does the technic of exhibition change, but public interest and estimates of relative value. Therefore a museum to be intelligently responsive to its times should be able to change and adjust its exhibits frequently. An exhibit should not be made a part of the building, but so constructed that it could be moved intact, and periodically stored in order to help maintain a living interest on the part of the visiting public.

## PRINTING AND PUBLICATIONS

"After all it is the written word that lives."—*Dr W. M. Beauchamp.*

The following is a list of the serial publications of the State Museum printed during the fiscal year:

**Adams, Charles C.**

1936 Twenty-ninth Report of the Director. N. Y. State Mus. Bul., 306:1-98

**Chadwick, G. H.**

1936 The Name "Catskill" in Geology. N. Y. State Mus. Bul., 307:1-116

**Felt, E. P. & Chamberlain, K. F.**

1935 The Occurrence of Insects at Some Height in the Air, Especially on the Roofs of High Buildings. N. Y. State Mus. Cir., 17:1-70

**Goldring, Winifred**

1935 Geology of the Berne Quadrangle. N. Y. State Mus. Bul., 303:1-238  
(Chapter on Glacial Geology by John H. Cook, p. 222-30)

**Newland, D. H. & Hartnagel, C. A.**

1936 The Mining and Quarry Industries of New York State for 1930 to 1933. Also, Recent Natural Gas Developments in New York State. N. Y. State Mus. Bul., 305:1-164

**Rich, J. L.**

1935 Glacial Geology of the Catskills. N. Y. State Mus. Bul., 299:1-179

**Smith, Burnett**

1935 Geology and Mineral Resources of the Skaneateles Quadrangle. N. Y. State Mus. Bul., 300:1-120

Accompanying this report is also the Annual Museum Bibliography which includes papers by members of the staff, and also papers by others which are based at least in part on the collections of the State Museum, or which are the result of some form of cooperation with it.

The need of funds to reprint various State Museum publications is one that continues to be a serious problem. Frequent requests are made for publications that are out of print and can not be supplied. So little has been done to meet this need that it would require \$25,000 to reprint the publications for which there is the greatest demand. This is only a part of the larger problem of a general printing policy for the State Museum publications, which has never been properly solved. Neither the general public interest

nor protection of the State's interest can be given proper attention at present. As has been mentioned in previous Annual Reports, Dr H. A. Pilsbry's monograph on the land and fresh water mollusca of the State remains in manuscript after its completion for more than ten years. Another report of unusual merit, by Dr S. C. Bishop, on the salamanders, should be published. Elsewhere I have discussed certain phases of this problem (Suggestions for a Printing Policy for the New York State Museum. *The Museum News*, v. 11, p. 7-8, 1935.) The reprinting of the bird plates, the wild flower volumes, and certain Museum handbooks is an aspect of the problem that calls for careful study.

### PHOTOGRAPHY AND DRAFTING

In the conduct of scientific and scholarly investigations no satisfactory substitute has been found for photographs, drawings and maps. These are not only a part of the record, supplementing the written notes, but are an essential part in presenting the results of these studies in printed form for public use. The workers in the field, as a rule, make their own exposures, and the negatives are developed and printed at the Museum, in order to attain uniformity and permanence of the record. The quality of the record thus preserved under this system has improved considerably.

The older negatives, photographs, drawings and maps are by degrees being systematized, indexed, and the older negatives placed in better envelopes which protect them from dust and injury. During the past year relief workers have been available part of the time and this has helped substantially in advancing this work.

Additional electric outlets have been placed in the dark room, increasing the safety of the room.

The photographer and draftsman reports the preparation of 1027 negatives, 2447 prints, 87 lantern slides, 12 transparencies, 13 maps and 7 labels.

### HISTORICAL COLLECTIONS AND ALLIED MATTERS

(Figures 8, 9, 10, 11, 12)

"I warmly sympathize with the ambition expressed in your annual report to have this Museum more than a mere zoologic or scientific museum. It should be a museum of arts and letters as well as a museum of natural history. . . . "There should be here a representation of all our colonial and revolutionary life. There should be in this museum for the instruction and inspiration of our people, a full representation of American history since the time when New York cast off its provincial character and became an integral portion of the American republic."—*Theodore Roosevelt's address at the opening of the New York State Museum, December 29, 1916.*

A visitor to the exhibition halls of the Museum is likely to observe, the statue of Joseph Henry and to glance at the little bell which he

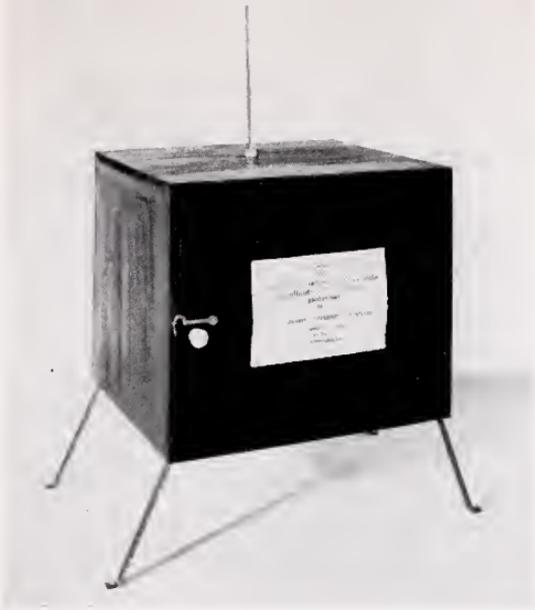


Figure 8 Replica of incubator used by Doctor Edward Livingston Trudeau, Saranac Lake, Adirondacks, for cultivating for the first time in America, the tuberculosis bacilli. Model made by Dr E. R. Baldwin. Donated to the New York State Museum by Dr Edwin M. Jameson, Saranac Lake, N. Y.

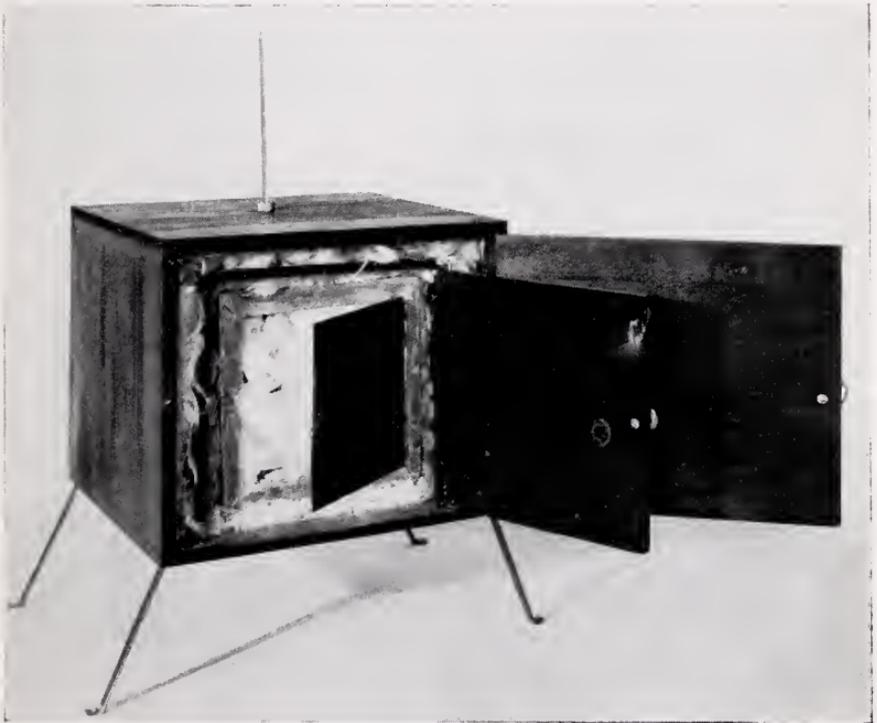


Figure 9 Another view of the Trudeau incubator replica with doors open to show the interior



Figure 10 Tablet marking the site of the first gas well in the United States, lighted in honor of General LaFayette's visit June 4, 1825, Fredonia, N. Y.



Figure 11 Part of a silver tea set by Isaac Hutton (1767-1855) of Albany. Donated by Katharine E. B. Potter.

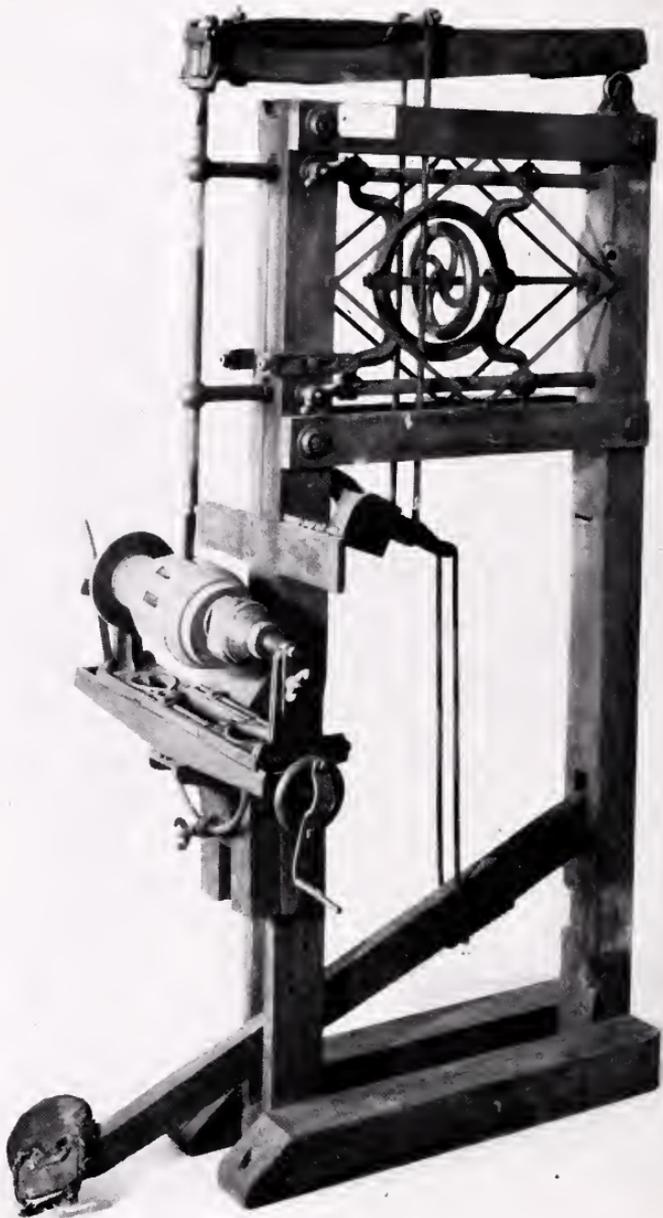


Figure 12 Old foot power machine (cutterhead tenoning) for making holes in the hubs of wheels for the spokes. Presented by Donald B. Goold, Albany, N. Y.

first rang with electricity, and pass on without realizing the importance of that event, or that history falls within the field of the State Museum, because so little space is devoted to exhibits of this nature. Even the historic Iroquois Indian Groups do not overcome this impression, and yet they represent primarily an early chapter in the human history of this State. These examples illustrate how difficult it is with the limited space available for historic exhibits, to impress upon the public the importance of preserving and exhibiting the major aspects of the history of this State. Agriculture was once its main industry, but long ago commerce and industry moved to the front; but this important change can not be presented to the thousands of school children that every year come to the Museum from about 40 counties, as a part of regular school work (see figures 3 and 4). Until a new building is provided for the State Museum this important aspect of the life of the State can not be properly displayed.

But before exhibits can be developed, extensive collections of historic objects must be made, not casually but according to some general plan and policy. These collections should be studied carefully and an appropriate selection of the materials made for the exhibits. Such a program involves years of work, a larger staff and finances.

In spite of handicaps, the historic collections continue to grow simply because of the healthy public interest in such matters, and its encouragement by the Museum.

The State Museum is interested not only in the general history of the State, but also in certain special phases, such as the early household industries, the history of medicine (figures 8, 9), engineering (figure 10), and other professions (figure 11). Objects illustrating such history are particularly welcome. Already the collections of old medical and dental instruments, surveying instruments, old wood (figure 12) and metal-working tools, particularly those of the Shakers, are of value. The materials illustrating early history of photography have real merit. The collection of jeweler's tools, examples of the designs made and the finished work of Herman W. Antemann, presented by his daughter, Elizabeth Antemann, is an excellent example of the kind of materials desired.

In the last Annual Report (Museum Bul. 310, p. 47) attention was called to a valuable donation through Mrs P. M. Wheeler, Redwing Farm, Adamsville, R. I., of mementoes of Dr James Hall, formerly State Geologist of the Museum staff. Some of his out-

standing mementoes were figured in that report, and others are shown in figures 13-17.

W. L. Lassiter, Temporary Curator of History, during July and August continued recording and caring for the historic collection. Cataloging of the Shaker collection, which had been on hand for several years, was completed. A list was also made of the Shaker documentary materials.

To care for the accumulating materials it has become necessary to make boxes in which the materials are stored, in order to keep them in order and protect them from dust and injury.

### MUSEUM COLLABORATORS

In order to encourage cooperation in the scientific and other aspects of the work of the Museum, the Regents on April 18, 1929, authorized the Director to appoint collaborators.

Dr E. P. Felt is at present the only Museum Collaborator. He has carefully revised his Museum Bulletin 200, Key to American Insect Galls, and has submitted it for reprinting.

### STATE MUSEUM COUNCIL

The State Museum Council is an advisory group appointed by the Board of Regents to advance the general welfare of the Museum. Its duties are thus explained by the Rules of the Board of Regents:

Section 13 *Councils*. The Commissioner with the approval of the Regents shall appoint the following councils, of five members each; college, academic, library, *museum*, music, nurse training school, industrial education, agricultural education, character and humane education, physically handicapped children, and medical. These councils shall serve as advisory bodies with which the officers of the Department may consult regarding institutions in the University or registered in the Department. One member of each council shall be appointed yearly to serve for a term of five years beginning with the first day of October next following the ending of the term to which each, respectively, is to succeed, except that an appointment to fill a vacancy created otherwise than by the expiration of a term shall be for the unexpired term. The deans of the dental, pharmacy and veterinary medical schools shall, respectively, act as similar councils for dental, pharmacy and veterinary medical interests."

There was no meeting of the Council called this year.



Figure 13 Dr James Hall, Wollaston Medal of the Geological Society of London, 1858

REGIA · LYNCEORVM · ACADEMIA

AN · A · SOCIETATE · INSTITVTA · CCXCI

JACOBVM HALL

INTER · SODALES · SVOS · EXTEROS · IN · CLASSEM  
DISCIPLINARVM · PHYSICARVM · MATHEMATICARVM  
ET · RERVM · NATVRALIVM · ADSCRIPTOS · VLTRO  
ACCIVIT · PARTA · NOMINIS · FAMA · COLLEGIVM  
CONDECORARI · EXPETENS · EADEM · AVGVTRATA  
ILLVM · NOVIS · INGENII · MONVMENTIS · COMMVNIA  
STVDIA · AVCTVRVM

GRATVLANS · SODALI · OPTATISSIMO  
FRANCISCVS BRIOSCHI LYNCEORVM PRINCEPS  
INCISAM · SOCIETATIS · TESSERAM · MITTIT  
ROMAE · VIII · ID · AVG · MDCCCXCIV

PETRVS BLASERNA | AB · ACTIS  
ALOYSIVS FERRI

Figure 14 Membership tablet of Academia Regia dei Lincei, Rome, for Dr James Hall



Figure 15 Decoration of Knight Commander of the Order of Saint Maurizio and Lazzaro, conferred by His Majesty, King Humbert of Italy upon Dr James Hall



Figure 16 Souvenir medal, 1872.  
M. E. Chevreul Membre De L'Academie Des Sciences. Alphee Dubois.  
Dr. James Hall Collection.



Figure 17 Souvenir Medal, 1891. Academie Royale Des Sciences, Des Lettres Et Des Beaux-Arts De Belgique. A Jean-Servais Stas, né a Louvain Le 21 Aout 1813, ELU Membre De La Classe Des Sciences EN 1841. Souvenir Jubilaire (5 Mai 1891). Dr James Hall Collection.



## SUMMARY OF THE ACTIVITIES OF THE SCIENTIFIC STAFF

(Figures 18-26)

"It is essential that this Museum should command the service of many different men for work in many different fields, and that its work should be so closely related to work of the same kind elsewhere that it shall all represent a coordinated whole. This is true of all departments of the work, but especially so of those departments which have a direct utilitarian bearing.

"This Museum, like every other institution of the type, should do everything to develop large classes of workers of this kind. And yet, friends, we must never forget that the greatest need, the need most difficult to meet, is the need to develop great leaders and to give full play to their activities. In the entirely proper effort to develop numbers of individual workers there must be no forgetfulness of this prime need of individual leadership if American achievement in the scientific field is to be really noteworthy. Yet in scientific as well as in historical associations and academies, this fact is often forgotten.

"The really great works must be produced by some individual great man who is able to use to the utmost advantage the indispensable preliminary work of a multitude of other observers and investigators. He will be the first to recognize his debt to these other observers and investigators. If he does not do so he will show himself a poor creature. On the other hand, if they are worth their salt they will be proud to have the great architect use all the results of their praiseworthy and laborious and necessary labor in constructing the building which is to crown it."—*Theodore Roosevelt's address at the opening of the New York State Museum, December 29, 1916.*

From an administrative point of view the following is a summary of the scientific work of the staff:

**Paleontology.** Dr Rudolf Ruedemann, State Paleontologist, has continued his work on the Catskill quadrangle, and the field work is nearly completed. John H. Cook is reporting on the glacial geology of the quadrangle. George H. Chadwick has not yet completed his part of the report on the Catskill quadrangle conducted with Doctor Ruedemann.

The monograph on the Graptolites and their stratigraphy, by Doctor Ruedemann, is still in preparation. Cooperative studies on Quebec and Oklahoma Graptolites have been published.

Winifred Goldring, Assistant State Paleontologist, completed her report on the Berne quadrangle, and it has been published as Museum Bulletin 303. In many respects this is a model of what such reports should contain, and is popularly written. Substantial progress has been made on the field and laboratory work on the Cocksackie quadrangle, and it is estimated that about two more seasons will be needed to complete the study. The glacial geology is being studied by John H. Cook.

The stratigraphy of the Devonian (Hamilton) is being investigated in cooperation with Dr G. Arthur Cooper and George H. Chadwick. A report on coral reefs was completed, and also one on Devonian crinoids.

Dr A. C. Tester, Temporary Geologist, has not yet completed his report on the Randolph quadrangle.

Gordon I. Atwater, Temporary Geologist, began field work on the revision of the Salamanca quadrangle, but completion of the study was delayed on account of the defective topographic map.

Professor L. W. Ploger, Temporary Geologist, has continued his study of the geology of the Cattaraugus quadrangle.

Dr R. J. Colony, Temporary Geologist, was nearing the completion of his report on the Schunemunk quadrangle when he died March 25, 1936. His report will be completed by his colleagues in the Department of Geology of Columbia University.

Professor N. C. Dale, Temporary Geologist, continued his study of the geology of the Oriskany quadrangle.

Dr G. Arthur Cooper, Temporary Geologist, continued the preparation of his report on the Hamilton formation, and a special report on the fossils of the Allegheny State Park.

Professor H. D. Whitnall and his colleagues of Colgate University have continued their cooperative study of the Morrisville quadrangle.

Professor John G. Woodruff, of Colgate University, has continued his cooperative study of the Wellsville quadrangle.

Dr Tracy Gillette, of the University of Rochester, who is making a cooperative study of the Clyde and Sodus Bay quadrangles, is nearing the completion of his report.

John H. Cook, Temporary Geologist, continued his studies of the glacial geology of the Catskill and Cocksackie quadrangles, as previously mentioned.

**Economic Geology.** Dr D. H. Newland, State Geologist, has made substantial progress on the field study of the geology, scenery and economic minerals of the interesting and complicated Lake George region, with the intention of preparing a popular handbook on the area. Henry Vaughan, Temporary Geologist, is assisting in this study.

On account of the pressure of other work the study of the limestones has not made much progress.

Doctor Newland, assisted by C. A. Hartnagel, Assistant State Geologist, completed a statistical summary of the mining and quarry industries for the years 1930-33, including natural gas developments, and the results have been published as Museum Bulletin 305. The natural gas industry is undergoing a substantial revival and merits special attention.



Figure 18 An urban mosquito control problem in a residential section, before treatment. Drainage blocked by fill across ravine for boulevard and for buildings. Fill for side street at left, and abandoned highway embankment at right, hold the two mosquito breeding ponds. Cooperative project, New York State Museum, City of Albany and Works Progress Administration. Photograph by R. D. Glasgow.



Figure 19 Same general view as figure 18, after treatment. Abandoned highway embankment graded to fill ponds and bring surface above sewer inlet. Cooperative project, New York State Museum, City of Albany and Works Progress Administration. Photograph by R. D. Glasgow.



Figure 20 An urban mosquito control problem in residential section; in process of treatment. Street fills across ravine have blocked natural drainage. Earth fill covering trunk sewer at left. Workmen filling and grading swamp to bring surface above sewer inlet. Cooperative project, New York State Museum, City of Albany and Works Progress Administration. Photograph by R. D. Glasgow.



Figure 21 An urban mosquito control problem, before treatment. Fill for street across ravine and for buildings has blocked natural drainage. Brush-covered earth fill over trunk sewer at left. Large swamp at right. Cooperative project, New York State Museum, City of Albany and Works Progress Administration. Photograph by R. D. Glasgow.



Figure 22 An urban mosquito control problem. Mosquito-breeding water backed up by city dump that blocks natural drainage (middle distance). Cooperative project, New York State Museum, City of Albany and Works Progress Administration. Photograph by R. D. Glasgow.



Figure 23 Four fledgling barn swallows used in banding studies. Photograph by Dayton Stoner.



Figure 24 Beaver dam on Black brook near Stephentown Center, Rensselaer county, New York, April 27, 1936. Photograph by W. J. Schoonmaker.

The Assistant State Geologist has given special attention to the recent oil and gas developments, and is completing a report on the Randolph Mammoth.

Dr A. F. Buddington, Temporary Geologist, completed his report on the Santa Clara quadrangle and began field work on the Willsboro quadrangle.

Mrs Medora H. Krieger, Temporary Geologist, continued her laboratory work on the Indian Lake quadrangle.

Dr Ralph S. Cannon jr has completed the report on the Piseco Lake quadrangle, made in cooperation with Princeton University.

The geological report on the Childwold quadrangle, made in cooperation with the Department of Geology of the University of Rochester, has been continued by Nelson B. Dodge and Norman I. Stymus.

Some valuable clerical help has been secured from relief workers.

**Botany.** Dr H. D. House, State Botanist, reports that no important changes were made in the Newcomb or Oneida Lake floral reports. Progress has been made on the revision of Museum Bulletin 254, and on the bibliography of the flora of the State.

Relief help has made it possible to make very important improvements with the herbarium and the collections, and more than 4000 specimens have been mounted and much other valuable work has been done.

Mrs Elsie G. Whitney, Assistant State Botanist, has continued her work on the handbook of the ferns and their allies.

Dr Robert B. Gordon, Temporary Botanist, has continued the editing of the handbook on the vegetation of the Allegany State Park region, and has nearly completed his study and the ecological mapping of the vegetation of Cattaraugus county.

The Handbook on the fleshy fungi by L. C. C. Krieger, Temporary Mycologist, has been printed and distributed. It is a very important and useful manual, beautifully illustrated by the author.

Dr Rogers McVaugh, Temporary Botanist, has continued his study of the flora of Columbia county and has made considerable progress on his report.

**Entomology.** Dr R. D. Glasgow, State Entomologist, has continued his field and laboratory studies of various insect pests, including the larch case bearer, birch leaf miners, Narcissus bulb pests, pine weevils, Juniper webworm, spruce galls, and the black flies and mosquitoes of the Adirondacks.

With the help of various federal agencies much work has been done on mosquito control, particularly about New York City and on

Long Island, where the Nassau and Suffolk County Extermination Commissions are actively at work, particularly on the salt marshes. Conflicting opinions about the methods used, particularly as to their influence on wild life, called for further scientific study of the problem from various angles, as was indicated in the last Annual Report of the State Museum. A comprehensive research program was inaugurated by federal, state, county and municipal officials which promises a better knowledge and understanding of the situation.

A local cooperative relief project developed by Doctor Glasgow and executed by the city of Albany resulted in the improved control of mosquitoes in certain residential parts of the city (figures 18-22).

Dr A. Glenn Richards jr, Temporary Entomologist, was assigned to local intensive studies supplementing the work of Doctor Glasgow on Long Island.

K. F. Chamberlain, Assistant State Entomologist, has continued the renovation of the old but valuable biological material in the collection, and has made much progress transferring the collection to the new insect boxes.

Relief assistance has made possible much work on the old files of photographic materials, care of the office library and the translation of pertinent articles in various foreign languages.

**Zoology.** Dr Dayton Stoner, State Zoologist, has continued his intensive studies of the swallows by the banding method (figure 23). These studies have been made at Oneida lake and in the vicinity of Albany. Preliminary reports have been prepared on these studies. A study has also been made of the temperature and rate of growth of the barn swallow.

A study has been continued of the birds frequenting Washington Park, Albany, and 90 kinds have been recorded.

W. J. Schoonmaker, Assistant State Zoologist, has continued his study of the woodchuck, and has extended his study of the mammals of Rensselaer county (figure 24).

Aretas A. Saunders, Temporary Ornithologist, working in the Allegany State Park, has continued his studies of the local birds. He has completed a manuscript, Ecology of the Birds of Quaker Run Valley for a Museum Handbook, and has made considerable progress on a Museum Bulletin entitled Breeding Birds of the Allegany State Park.

Doctor Stoner prepared a temporary exhibit (figure 25) of recent accessions, and with relief help made considerable progress



Figure 25 Temporary exhibit of recent accessions in zoology

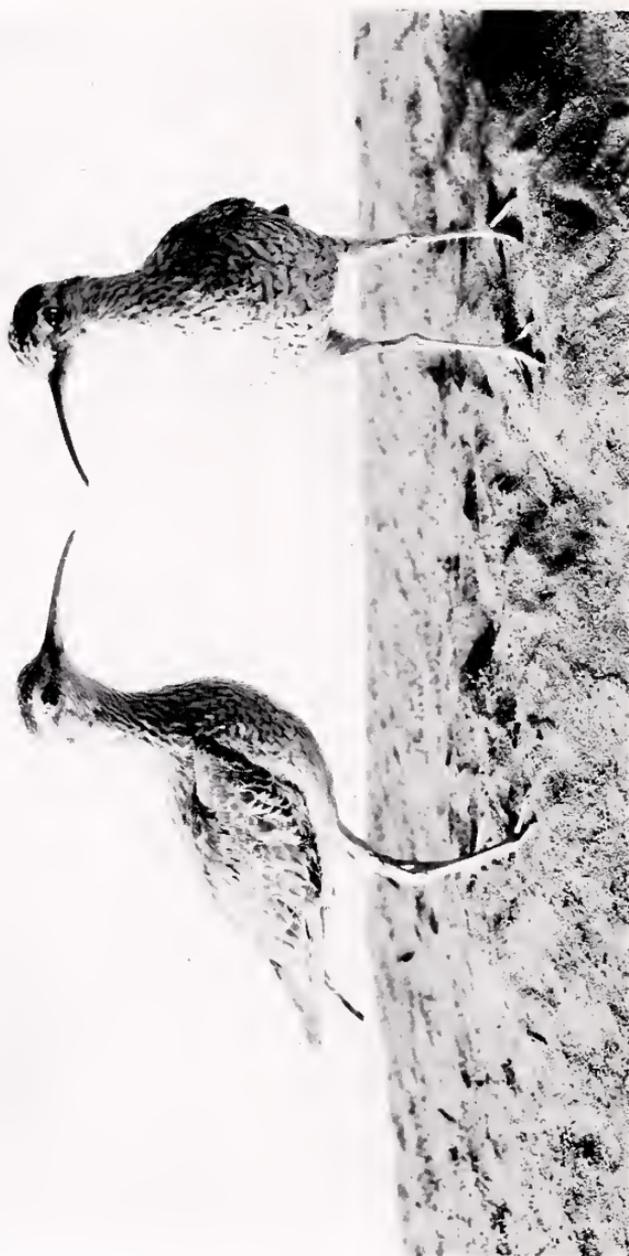


Figure 26 Mounted specimens of the Eskimo curlew (*Phaeopus borealis*) in the New York State Museum. This bird is now believed to be extinct.

on the files of the vertebrate records. A Museum specimen of the rare or Eskimo curlew is shown in figure 26.

**Archeology and History.** Noah T. Clarke, State Archeologist, assisted by relief help, has been able to make much progress in renovating the study collection and cataloging the materials. The John Fea collection of Indian materials, consisting of about 1200 specimens, was a welcome donation.

W. L. Lassiter, Temporary Curator of History, as has been the procedure for many years, devoted July and August to cataloging and caring for the historic materials. With the assistance of a relief worker most of the Shaker collection has now been cataloged.

## GENERAL ADMINISTRATIVE PROBLEMS

### THE CENTENARY APRIL 15, 1936

In recent Annual Reports attention has been called to the fact that the antecedent of the Division of Science and State Museum—the State Geological and Natural History Survey—was established by the Legislature on April 15, 1836, and that some appropriate recognition should be made of the centenary of this important event.

The object of such a celebration is not simply to advertise the institution, but to review or orient the institution. It is a common human trait to be so busy over details that often the larger objectives are slighted or overlooked. The value of an anniversary has recently been well expressed by Dr Stuart Gager as follows:

But what is the point and purpose of recognizing an anniversary? . . . It is not so much to celebrate past achievement, but to reveal to the world the nature of the institution; for those in charge of it to clarify and possibly to restate their ideals in the light of the wisdom gained by past experience, and with a clear vision of future and larger accomplishments, made possible by new conceptions, new deeds, new methods and techniques, new resources and new enthusiasm. (*Gager, Science, v. 84, 1936, p. 365.*)

To which it is necessary to add explicitly, rather than to allow it to be assumed, that this aim should be further supplemented by the idea that much emphasis should be placed upon the *higher or cultural values of science.*

### HISTORICAL POLICIES

Repeatedly attention has been called in these Annual Reports to the unsatisfactory status of the state-owned historical and scientific reservations, and the need of a thorough investigation of their

status and a constructive policy for their use and administration. As these sites are primarily preserved for their educational value, and only secondarily for recreation, a predominant educational policy is needed for their administration. Any other policy is almost certain to lead to their deterioration. These should be passed on to "future generations unimpaired"—the ideal of the National Parks. This does not seem to be a debatable question. In New York State this problem has never been squarely faced and treated on its merits. It is a perennial problem and will not be settled until treated so properly and as an educational problem.

A second problem that has long called for attention is the status and care of the historic materials, mainly battleships that lie upon state land in the public waters of the Atlantic ocean, Great Lakes, Lake Champlain and Lake George. Many of these are of the greatest possible interest and are worthy of the best care that the State can give them. The State Museum has kept a close watch on these matters for years and welcomes the paper published elsewhere in this Report by Dorothy Smith, Assistant Attorney General of the State Department of Law, who has made a very careful study of the vessels and summarizes the results of her investigations.

#### WORLD'S FAIR OF 1939

Anyone acquainted with the Centennial of 1876 at Philadelphia, the World's Fair of 1893 at Chicago, the Pan-American Exposition at Buffalo in 1901, the Universal Exposition at St Louis in 1904 and the Century of Progress Fair at Chicago in 1933 and 1934, knows of their great influence on museums, and realizes that in most cases not only do these expositions provide occasions for advertising the natural resources, industries and achievements of their promoters, but very generally the collections and the exhibits, ultimately, at the close of these fairs, are acquired by various public museums, and have even been the cause of their establishment. The United States National Museum is an outgrowth of the Centennial, and the Field Museum of Natural History, of the World's Fair, and are well-known examples of the influence of such expositions. Some of the best exhibits in the New York State Museum were the outcome of such fairs. For example, the large relief map of the State was made for the World's Fair of 1893 and the Pan-American Exposition in 1901, at Buffalo, was the source of several economic exhibits in the hall of geology.

Plans are now under way for a World's Fair in New York City in 1939, to commemorate the 150th anniversary of the founding of

the Government of the United States and of the inauguration of George Washington. It is obvious that if the State Museum and the natural resources of New York State are to be properly represented in this proposed fair, plans should be developed to meet this occasion, and for securing desirable exhibits at the close of the fair. Such plans must be made far in advance, as there is always much competition for the valuable exhibits.

In order to make any satisfactory utilization of such exhibits and materials, however, the already overcrowded condition of the State Museum points emphatically to the necessity of planning more definitely for the long proposed new Memorial State Museum Building. The overcrowded condition of the present quarters makes the acquirement of valuable and extensive exhibits from such a source impossible, unless special storage quarters are provided. The very lack of adequate exhibit and storage space for such materials is a great hindrance to its acquisition.

Regarding plans for the proposed new State Museum building, reference should be made to the 25th Annual Report (Mus. Bul. 293, p. 81-110, 1932). Failure to meet this occasion properly would be an irreparable loss to the State Museum, as such an opportunity may not arise again for a generation.

## ANNUAL FINANCIAL AND STATISTICAL SUMMARY

### THE STATE MUSEUM BUDGET

The following budget does not include the cost of heat, light, janitor service, orderlies (watchmen), carpenters, painters and elevator men. Certain other items also are furnished by the Education Department, such as postage, stationery, express, drayage in part, telegraph and telephone, and are therefore not included in the budget. The traveling expenses have been budgeted so that each member of the scientific staff is able to plan his work to the best advantage.

Facilities provided by cooperative projects supplement to an important degree the state appropriation. It is impossible to estimate the amount of these funds precisely, since they include the federal franking privilege, cooperation with many individuals, with organizations and with other state departments. Labor, supplies, expert services, use of automobiles etc. have been provided by this cooperation. Such financial assistance is of the greatest value; but the funds do not pass through the Museum.

The annual and statistical summary for the fiscal year July 1, 1935, to June 30, 1936, follows:

### APPROPRIATIONS AND FUNDS FOR FISCAL YEAR

(July 1, 1935, to June 30, 1936)

#### *Appropriations*

#### Salaries:

Administrative staff .....	\$9 000 00
Permanent scientific staff.....	33 450 00
Temporary expert services.....	2 800 00
Scientific assistants .....	5 200 00
Clerical, labor etc.....	10 220 00
<b>Total salaries .....</b>	<b>\$60 670 00</b>

Equipment and supplies.....	\$2 800 00
Traveling (of which \$310 was made available for out-of-state travel) .....	2 700 00
Printing .....	5 300 00
<b>Total budget .....</b>	<b>\$71 470 00</b>

#### DIRECTORY DATA

*Name of Museum:* New York State Museum.

*Location:* Albany, New York, U. S. A.

*Name of Director:* Charles C. Adams.

*Name of Assistant Director:* Alvin G. Whitney.

*Date of Founding:* The Museum is the outgrowth of state surveys begun in 1836; formal organization of the Museum was effected in 1843.

*Open to the public:* Open week days from 9 a. m. to 5 p. m.

Closed on Sundays and on all legal holidays.

Total number of hours open to the public for the year, about 2430.

#### *Staff:*

Administration officers .....	2
Permanent scientific staff.....	11
Technical and clerical assistants.....	11
Part-time employes .....	10
<b>Total staff .....</b>	<b>34</b>

Work relief employes (?)

#### *Salary schedules, 1935-36:*

Administrative .....	\$3000 to \$6000
Scientific professional staff.....	\$1720 to \$4500
Technical assistants (nonprofessional grade).....	\$1600 to \$2000

#### *Hours and vacation:*

Hours of work a week,  $36\frac{1}{4}$ .

Vacation allowance,  $16\frac{1}{2}$  working days, and all legal holidays.

## NEEDS OF THE STATE MUSEUM

### THE GENERAL FINANCIAL PROBLEM

The State Museum moved into its present quarters in the State Education Building in 1912. After 20 years, in 1932, a careful comparison was made of its financial status during that interval. The results were very significant, as they showed a salary increase of about \$25,000 in 20 years. Equipment, supplies and traveling and temporary expert services increased about \$1300 in 16 years! The staff had declined from 28 to 24 persons in 15 years. The printing funds have never been wholly adequate to meet the needs. These are fair samples of the relatively stationary or declining conditions of the financial support of the State Museum during the 20-year interval.

The tragic feature of the situation is that during this same period there was a great period of economic prosperity, during which museum and similar scientific and educational agencies all over the United States underwent unprecedented expansion. Likewise, within the State, while other educational agencies were expanding and new ones being developed, the State Museum did not maintain normal growth, but actually showed a relative decline. The neighboring state of Pennsylvania expended for its geologic work alone \$67,500; Illinois \$125,000, and California \$63,000 in a single year, and the State Museum, for the same period, with its very much broader field, has had about \$75,000. Throughout this period of relative decline of financial support, the public need for scientific and educational work, within the field of the State Museum, has constantly increased. This has led to the suggestion that the State Museum, like the State colleges in the Education Department, should have its own trustees, who would be able to actively devote considerable time to promoting the general welfare of the Museum.

As a natural result of this retarded condition of the Museum, other state agencies have encroached upon the legitimate field of the State Museum and tended to take over its functions; and all in spite of the fact that aside from finances, they are not properly staffed for such scientific, economic and educational work, nor have they the library, collections, files of data, and in common with administrative departments, they do not generally have the viewpoint conducive to research and the educational approach. Furthermore, various administrative agencies at Albany frequently need

scientific and technical assistance and cooperation which can best and quickest be furnished by an agency at Albany.

This long-standing financial situation has received constant emphasis in each Annual Report for many years, and has become a monotonous feature, but until conditions materially improve, it seems necessary to continue calling attention to the facts of the situation.

### THE CURRENT FINANCIAL PROBLEM

As shown by the financial summary the budget for the past fiscal year was about \$71,000. In addition to this there have been contributions from cooperating agencies, which are very difficult to estimate. Special economy reductions from the regular budget items or allotments have been made. On the other hand, valuable assistance has been received from the relief agencies, which have furnished clerical help.

Considering the value of the natural resources of the State, and their economic and social importance in a State with the largest population and the greatest wealth, however, it is at once apparent that a budget of \$71,000 is inadequate to cover an up-to-date, state-wide scientific survey of the natural resources.

### SCIENTIFIC AND HISTORIC RESERVATIONS

No satisfactory policy has been put in practice for the care of state scientific and historic reservations. The present situation is anomalous, and important opportunities have been and are slipping away. Too often the public looks upon such reservations merely as a passive exhibit and not as an active scientific and educational agency contributing definitely to our knowledge and to public education. The State Council of Parks has recommended that these state reservations be transferred to the Education Department for administration.

The present passive state policy regarding scientific reservations raises the question as to what is the best method of administering them. Probably several methods should be used. The Director believes that the present method must further be supplemented by privately endowed state reservations. In the 24th Report of the Director (Mus. Bul. 288 p. 51-56, 1931) a system of reservations for the State Museum was urged. There should be at least a limited number of these in various parts of the State, so carefully selected as to be worthy of a permanent staff devoted exclusively to local scientific studies that can be advantageously made at such

locations. Some of these reservations might well be permanent bases for a variety of scientific work, particularly in the biological sciences. State parks will be suitable for certain kinds of studies, but their aims are so different that they can not be expected to be a substitute for the scientific reservations. These parks also have their own scientific problems that call for special study.

Some of these reservations could be made to serve as important agencies in the encouragement of local scientific work, by providing camps and laboratories, similar to that of the Allegany School of Natural History in the Allegany State Park, and by encouraging mature naturalists, teachers and scientists to make them bases for year-round or summer research and constructive work. There are many city laboratories, seaside laboratories and similar facilities for indoor studies, but none whatever for year-round inland, outdoor or field study or research. Such a reservation would not be a school in any sense of the word, but a field base, camp or workshop where productive scientific field work could be conducted advantageously.

#### RESEARCH FELLOWSHIPS

Cooperative research with various industries has often been found to be mutually advantageous. Such cooperation may be conducted by several methods. A method that deserves particular commendation is the establishment of research fellowships. By this method the cooperating agency would finance the work of capable research assistants or fellows, who work under the supervision of a member of the State Museum staff, on some problem in which the cooperator is particularly interested. The results of such studies should be published by the State Museum and thus made public. In 1929 a fellowship of this kind was initiated with the Narcissus bulb growers on Long Island, working under the direction of the State Entomologist. This is a method that could be considerably expanded to advantage.

#### GROUND WATER RESEARCH

(Figure 27)

As the population of the State increases, the demand for underground waters for public and private supplies, as well as for industrial use, increases very rapidly. One-half of the public waterworks of the State obtain all or part of their supplies from ground waters. The mode of occurrence, the quality and the quantity of the water are thus of great importance, as was particularly realized during the severe droughts of recent years. Millions of dollars are invested in public water supply plants, and the delivery

or sale of water to the consumer makes it one of the most important mineral resources of the State. The products of the mines and quarries during prosperous times have for a single year amounted to more than \$100,000,000 worth of raw materials, and it is not unlikely that the ground waters are worth considerably more than half that amount. Although the State Museum has collected observations and records on this subject for many years, it has never had the funds, men and equipment to make an adequate statewide study of this vital problem.

That ground water is of the greatest public importance and not merely a passing fancy is clearly indicated by the Federal Report of the National Resources Board for 1934 (p. 311) which states:

“Water, not soil, is the resource that ultimately will limit the productive capacity of the lands of the United States, viewed as a whole. Even now, the further development of large areas depends in considerable part on the extent to which available supplies of ground and surface waters are conserved. \* \* \* Further factual surveys and investigations of ground water resources are an indispensable prerequisite to their proper administration, equitable allocation, and more efficient utilization. The wide range in the character of the requisite studies is suggested by the pressing need for determination, among other things, of (1) the extent, depth, thickness, water content, sources of supply, and rates of replenishment of the principal ground water horizons; (2) the types of wells best suited to the various aquifers; (3) the best placement of wells in critical areas to avoid the pollution of their waters, and to promote the most effective utilization of the available supplies of water; (4) variations in the level of the water table in each distinctive ground water area, by measurement at regular intervals through the years of the height of the water in properly selected wells; and (5) the relation of pond storage, of reservoir storage, and of irrigation (project irrigation and supplemental irrigation) to the replenishment of ground water and the accumulation by it of deleterious or beneficial substances in the soil. The fundamental concern of the Nation in ground water resources, a concern certain to increase with passing years, indicates the need of a broad, comprehensive, and more definite national policy with respect to them, particularly from the standpoint of their varied interstate relationships.”

Regarding the quality of water the report continues (p. 315-16):

“It is obvious that the concentration of industries in certain sections of the country may not be continued indefinitely, and some intelligent plan for the dispersion of such activities must be developed in the immediate future. Since many industries are dependent upon an adequate and chemically satisfactory water supply, any comprehensive program of industrial decen-

tralization is intimately related both to the quantitative and qualitative nature of the water resources available. So many factors are involved in the geographical establishment of group industries that it is difficult to evaluate the importance of water resources responsible for such grouping, but water quality is as important an item in some industries as fuel or raw materials. There is a dearth of accurate information on the economic importance of water quality and industrial expansion and development. Compilation of such data is urgently required and essential for the promotion and development of continued industrial growth. It is recommended, therefore, that any plan of decentralization of industries include a comprehensive study of water quality, with special consideration to the economic importance of such factors. \* \* \* There is an appreciable influx of salt water into many of the tidal rivers during dry periods of the year. This condition is responsible for marked increase in hardness, total solids, and chlorides in the lower portions of the tidal rivers. Much difficulty is experienced in conditioning water for domestic and industrial uses and imposes heavy financial losses. \* \* \* There are large groups of industries where water is an essential factor for manufacturing uses and is responsible for the development of specific types of industries in certain localities. In any Federal program of industrial decentralization of industries, the quantity and quality of water available should be given consideration. Depreciation of water quality due to drought and industrial wastes has an important bearing on the fish industry, especially shell-fish. This industry is of sufficient importance in certain sections of the country to warrant an economic study of these problems of stream control in areas where such industries are established."

The map (figure 27) showing the concentration of the valley population between Long Island and Buffalo is at the same time a map of the precise area in which the problem of ground water studies are destined to become acute first, and it is even now late to begin intensive research of this problem.

#### TEMPORARY STORAGE SPACE

Pending the construction of a new State Museum Memorial Building the problem of temporary storage for collections is becoming more acute every year. The hallways or corridors have been utilized for storage because there was no adequate provision made for storage when the Education Building was planned; yet this has been discouraged for various reasons. The crowded condition of the storerooms is a menace to the collections, and the materials can not be consulted and used, although there is frequent need of this.

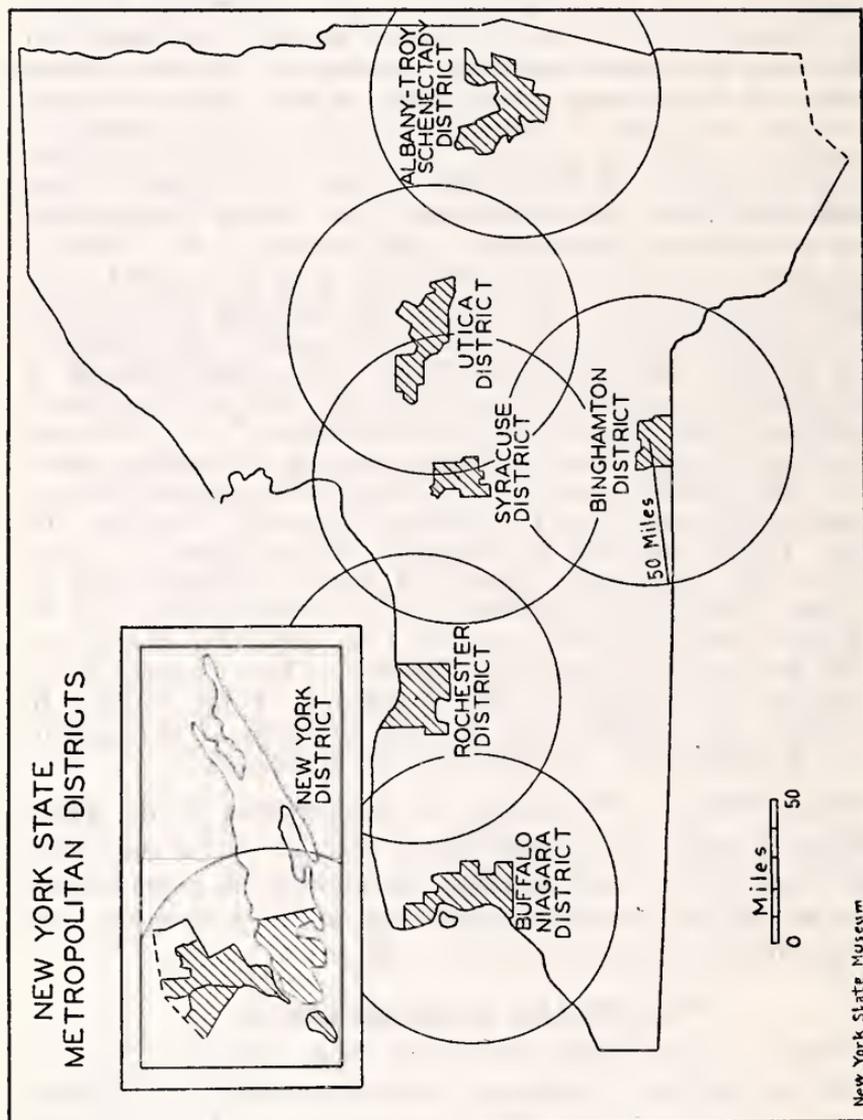


Figure 27 Map of metropolitan areas showing location of regions where ground water problems are becoming progressively acute, and require scientific study

## DONATIONS TO THE STATE MUSEUM

In spite of the preceding statement as to the need of storage space for the museum collections, it is desirable to inform the public that the State Museum welcomes donations of:

1 Scientific collections of natural history materials, minerals, fossils, rocks, and specimens of plants and animals, particularly when accompanied by scientific data.

2 Historical collections of objects illustrating the history of New York Indian materials from New York, objects of the Colonial period and the Revolutionary period, household and industrial equipment. Materials illustrating the history of the professions are particularly desired, such as illustrate the history of medicine and surgery, dentistry, engineering in its various aspects, and the tools and equipment used in various trades. Aviation should also be properly represented.

Historic objects related to the various wars in which New York has taken an active part are heartily welcomed.

In all cases it should be borne in mind that it is *primarily New York State material that is sought*, because first of all this is a New York State Museum, and also because space is lacking for other materials. Persons contemplating such donations should call at the Museum or write in advance about such proposed donations.

The State Museum has no desire to monopolize all such materials, but at present in many localities there are no local organizations able to care properly for such collections; and the State should give reasonable assistance in preserving them and making them available for future study and display.

## ENDOWMENT AND TRUST FUNDS

The preceding discussion of the urgent needs of the State Museum reveals the fact that, while the State has done much for the State Museum, it has not fully met its needs. Just as the citizens of the State have in the past generously donated much valuable material to the Museum, the public should be informed in what ways it may continue to assist.

Many persons do not realize that the State Museum, like the universities and other research institutions devoted to advanced learning, has in reserve many important problems and projects that require more money than the Museum budget provides. It is hoped that private citizens will assist in financing such worthy projects.

To make this more definite certain methods of assistance will be listed.

1 Donations of funds to be devoted to special scientific, educational or economic studies. A list of these can be furnished to any seriously interested person.

2 A donation of funds, the income alone of which is to be used to conduct special studies. This kind of a fund would give a fluidity which is particularly lacking under the present budget system. Such funds would enable the State Museum to undertake certain studies in advance of general public interest and legislative appreciation.

3 The donation of carefully selected tracts of land, suitable for scientific field stations, or for scientific reservations or important historic sites. Each tract should be provided with an endowment for maintenance. Such tracts could be made of the greatest scientific and educational importance under proper supervision.

In this connection attention should be called to the fact that gifts up to 15 per cent of net income, and that all bequests to the Board of Regents of The University of the State of New York in trust for the State Museum, are exempt from federal taxation, under the Federal Revenue Act of 1918.

## ANNUAL BIBLIOGRAPHY OF THE STATE MUSEUM

Publications by the Museum staff for the fiscal year ending June 30, 1936, or based, at least in part, on the Museum collections, or made in cooperation with the State Museum, follow:

### Adams, C. C.

- 1935 New York State Museum. In 31st Ann. Rep't of the Education Department, v. 1, p. 267-70  
 1935a The Relation of General Ecology to Human Ecology. Ecology, 16:316-35  
 1936 Suggestions and Recommendations in Planning for the Use and Administration of Water Resources. N. Y. State Mus. Bul., 306:87-96  
 1936a 29th Report of the Director of the Division of Science and State Museum. N. Y. State Mus. Bul., 306:1-98

### Chadwick, G. H.

- 1936 The Name "Catskill" in Geology. N. Y. State Mus. Bul., 307:1-116

### Dale, N. C.

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- 1935 The Occurrence of Insects at Some Height in the Air, Especially on the Roofs of High Buildings. N. Y. State Mus. Cir., 17:1-70

### Gardiner, E. N.

- 1936 Food and Health from Wild Greens or Pot Herbs in New York State. Nutrition Service, N. Y. State Dep't of Health, 4p.

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- 1936a Additional Notes on the Occurrence of Termites (*Reticulitermes flavipes*) in New York. U. S. Dep't Agric. Bur. Ent., Insect Pest Surv. Bul., 16, 3:91
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**Goldring, Winifred**

- 1935 Some Upper Devonian Crinoids from New York. Ann. Carnegie Mus., 24:337-48
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**House, H. D.**

- 1935 *Viburnum Rafinesquianum* Schultes. Torrey, 35:126

**McVaugh, Rogers**

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- 1936 A Study of the Plant Collections by Frederick Pursh during a Trip to New York and Vermont in the Year 1807. Barton, 17:25-32
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- 1934 Geology of the Potsdam Quadrangle. N. Y. State Mus. Bul., 297:1-98

**Ricards, B. R., ed.**

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**Rich, J. L.**

- 1935 Glacial Geology of the Catskills. N. Y. State Mus. Bul., 299:1-179

**Ruedemann, Rudolf**

- 1935 Memorial of Professor George H. Hudson. Proc. Geol. Soc. Amer. for 1934, p. 245-50
- 1935a The Eurypterids of Beartooth Butts. Proc. Philos. Soc., 75, 2:129-41
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- 1935 The Ordovician in Maine. Amer. Jour. Sci., 30:353-58

**Schoonmaker, W. J.**

- 1936 Size and Weights of Adirondack Deer. Jour. of Mammalogy, 10:67-68

**Smith, Burnett**

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**Snell, W. H.**

1932-1936 Notes on *Boletus*, I. *Mycologia*, 24:334-41, 1932; II. *l.c.*, 25:221-32, 1935; III. *l.c.*, 26:348-59, 1934; IV. *l.c.*, 28:13-23, 1936

**Stoner, Dayton**

1935 Temperature and Growth Studies on the Barn Swallow. *The Auk*, 52, 4:400-7

1935a An Example of Partial Albinism in the Eastern Crow. *The Wilson Bul.*, 47:274-76

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1936a Studies on the Bank Swallow, *Riparia riparia riparia* (Linn.) in the Oneida Lake Region. *Roos. Wild Life Annals*, 9:122-233

**Whitney, E. G.**

1936 Trailing Arbutus. *Univ. State of New York Bulletin to the Schools*, 22, no. 14:147-149

**Zenkert, C. A.**

1934 The Flora of the Niagara Frontier Region. *Bul. Buffalo Soc. Nat. Sci.*, 16:1-328

## MUSEUM ACCESSIONS FOR THE YEAR

Accessions are new additions to the Museum. These are classified into the following groups:

- 1 By donation: objects presented to the Museum
- 2 By exchange: for other Museum materials etc.
- 3 By purchase: payment from the Museum budget
- 4 By the staff: collected by the staff during official duties of any kind
- 5 By transfer, from other state departments or other divisions of the State Government, as provided by law

Gifts to scientific and educational institutions are listed at the end of this section.

### BY DONATION

Acheson Graphite Corporation, Niagara Falls, N. Y.

Sample of powdered graphite, Niagara Falls, N. Y.

Adler, Irving, Albany, N. Y.

Specimens of ants, Albany, N. Y.

Alexander, Ben, Narrowsburg, N. Y.

Tooth of horse, Narrowsburg, N. Y.

Altemueller, Mrs George F., Yonkers, N. Y.

Pupae of pigeon horntail, Yonkers, N. Y.

Antemann, Elizabeth, Albany, N. Y.

Handmade iron shovel

Arnold, E. J., Albany, N. Y.

Oak rib from Benedict Arnold's flagship "Royal Savage"

Aspinwall, Mrs Breck, Rome, N. Y.

Specimens of *Polystichum Braunii* and *Asimina triloba* from New York State

Atwater, Marjorie, Catskill, N. Y.

3 specimens of plants from New York State

10 specimens of plants from outside New York State

- Ayres, Douglas, jr, Fort Plain, N. Y.  
Roundworm, Fort Plain, N. Y.
- Bartram, Stuart, Albany, N. Y.  
25 specimens quartz crystals, Selkirk, N. Y.
- Bedell, Emma J., East Greenbush, N. Y.  
Hair work "Wreath of Flowers"  
Wash drawing of Danté
- Bernum, J. A., Watervliet, N. Y.  
Antique rifle
- Bono, Peter, Albany, N. Y.  
Painted turtle, Albany, N. Y.
- Bray, David, Albany, and Scott, Leo, Schenectady, N. Y.  
Skull of cow, Albany, N. Y.
- Brewster, P. J., Newtonville, N. Y.  
Specimen of luna moth, Newtonville, N. Y.
- Brown, Dr John S., Edwards, N. Y.  
3 specimens chalcopyrite, Antwerp, N. Y.  
6 specimens willemite from Balmat mine, Edwards, N. Y.  
Sphalerite with gangue of barite (some salt), Edwards, N. Y.
- Brunnis, Mrs J., North Elba, N. Y.  
Sharp-shinned hawk, North Elba, N. Y.
- Caldwell, F. V., Schenectady, N. Y.  
Unfinished bannerstone, near Alplaus, N. Y.
- Callison, E. H., State Planning Board, Albany, N. Y.  
Iron boot jack  
Broad ax
- Carter, A. L., Kenmore, N. Y.  
8 specimens of graptolites, LeRoy, N. Y.
- Caster, Dr Kenneth E., Ithaca, N. Y.  
7 specimens of *Paramphibius tridactylus*, Lanesboro, Pa.
- Cecelia, Sister M., Port Henry, N. Y.  
Larvae of ash sawfly, Port Henry, N. Y.
- Chrisp, Janet, Albany, N. Y.  
Brown bat, Albany, N. Y.
- Clarke, Mrs Noah T., Albany, N. Y.  
Caterpillar of tiger swallowtail, Malden Bridge, N. Y.
- Cook, David B., Albany, N. Y.  
Larvae of larch sawfly, Stephentown, N. Y.  
Gray squirrel, Palenville, N. Y.
- Cook, J. H., Albany, N. Y.  
Broad ax  
Carpenter's old iron brace
- Coughtry, W. L., Loudonville, N. Y.  
Egg-mass of fall canker worm, Loudonville, N. Y.
- Crawford, G. L., Plymouth, England  
3 arthropods, England
- Dalaba, Emerson, Stillwater, N. Y.  
Coyote, Luther Forest Preserve, 5 miles north of Stillwater, N. Y.
- Decker, C. E., Norman, Oklahoma  
107 specimens of graptolites from Arkansas and Oklahoma
- Dibble, Mrs M., Carlisle, N. Y.  
Skull of purple finch, Carlisle, N. Y.
- Dimmick, Leslie, Catskill, N. Y.  
Short-nosed sturgeon, Linlithgo, N. Y.
- Dobbin, Frank, Shushan, N. Y.  
107 specimens of plants mainly from New York State
- Doherty, A. Emmet, Peekskill, N. Y.  
Cryptozoon from Saratoga, N. Y.
- Douglass, D., Albany, N. Y.  
Garden spider, Albany, N. Y.
- Eggleston, O. P., Theresa, N. Y.  
2 arrowpoints; sample of red sand, Jefferson County, N. Y.

- Ennis, William W., Castleton, N. Y.  
Wood frog, Castleton, N. Y.
- Fairbanks, Mrs Henrietta H., Bainbridge, N. Y.  
30 specimens of plants from Chenango county
- Fea, Mrs John, Amsterdam, N. Y.  
The John Fea Collection of Indian materials and certain publications  
Old iron blade 21 inches long  
Old iron bayonet  
Homemade iron nail
- Flower, Rousseau H., Ithaca, N. Y.  
4 specimens of *Paramphibius tridactylus*, Lanesboro, Pa.
- Follett, Louis A., Saratoga Springs, N. Y.  
Bannerstone fragment; netsinker; 4 arrowpoints; 4 rejects; 3 scrapers;  
quartzite reject, Saratoga county, N. Y.
- Frale, Mrs Ruth, Albany, N. Y.  
Iron pyrite from Van Wies Point, N. Y.
- Frank, A., Harmon-on-Hudson, N. Y.  
Caterpillar and work of grape plume moth, Harmon-on-Hudson, N. Y.
- Frederick, A. C., Albany, N. Y.  
Specimens of cottony maple scale, Albany, N. Y.
- Futterer, Fred F., Albany, N. Y.  
4 American scoters, Thompsons Lake, N. Y.
- General Electric Company, Pittsfield, Mass.  
Periclase (artificial) made from magnesite from Bald Eagle, Calif.  
Periclase (artificial) made from imported magnesite, Yugoslavia  
Periclase (artificial) from artificial magnesite
- Goold, Donald B., Albany, N. Y.  
Cutterhead tenoning machine, Circa 1837
- Gorham, Mrs L. W., Loudonville, N. Y.  
Caterpillars of spring canker worm, Loudonville, N. Y.
- Greeley, Dr John R., Elsmere, N. Y.  
Chicken turtle, Charleston, S. C.  
Rough-legged hawk, New Scotland, N. Y.  
12 ruffed grouse, from Reedsville and West Berne, N. Y.
- Hansen, Charles H., jr, Schenectady, N. Y.  
Large specimen of galena and calcite, Treece, Kans.
- Haskins, Vernon, East Durham, N. Y.  
White-crowned sparrow, East Durham, N. Y.
- Hauenstein boys, The, Troy, N. Y.  
Skull of ruby-throated humming bird, Troy, N. Y.
- Heaton, Clement, West Nyack, N. Y.  
Drawing of stained glass window
- Hexoc, John, Albany, N. Y.  
Specimen of polyphemus moth, Cooperstown, N. Y.  
Specimen of io moth, Cooperstown, N. Y.
- Hemmann, Max, Ronneburg, Thuringia, Germany  
28 specimens of graptolites, Thuringia, Germany
- Henry, H. K., Saratoga Springs, N. Y.  
Specimens of June beetles, Saratoga Springs, N. Y.  
Specimens of alder leaf-beetles, Saranac Lake, N. Y.  
Specimens of scarab beetles, *Polyphylla*, and *Diplotaxis*, Saratoga Springs,  
N. Y.
- Hobert, S. G., East Greenbush, N. Y.  
Brown snake, East Greenbush, N. Y.  
Skull of crow, East Greenbush, N. Y.  
Nest of Baltimore oriole, East Greenbush, N. Y.
- Hoffman, Elsie, Albany, N. Y.  
Garden spider, Albany, N. Y.
- Holland Library, through Florence McDonald, Alexandria Bay, N. Y.  
Pyrrhotite, very magnetic, Alexandria Bay, N. Y.
- Holly, Elizabeth, Brooklyn, N. Y.  
Specimens of cigarette beetles, Brooklyn, N. Y.

- Holmes, Robert, Albany, N. Y.  
 Hair worm, West Albany, N. Y.
- Hooper, Frank Company, Barton Mines, Inc., North Creek, N. Y.  
 Large sample of garnet veined by quartz
- Hopkins, L. L., Scotia, N. Y.  
 Specimen of *Gentiana linearis* f. *Blanchardii* Fernald, from New York State House, Dr H. D., Loudonville, N. Y.
- White-footed mouse, Loudonville, N. Y.
- Jameson, Dr Edwin M., Saranac Lake, N. Y.  
 Replica of Doctor Trudeau's tubercule bacilli incubator
- Janic, Joseph, Schenectady, N. Y.  
 Spiny soft-shelled turtle, Rexford, N. Y.  
 Whistling swan, Niskayuna, N. Y.
- Jones, Dr C. Edward, Albany, N. Y.  
 Specimen of *Celtis* from Rensselaer county
- Jones, Z., Albany, N. Y.  
 Specimen of luna moth, Albany, N. Y.
- Jordan, Charles, Rensselaer Heights, N. Y.  
 Beaver, Franklin, N. Y.
- Kellert, Ellis, Schenectady, N. Y.  
 Round worm, Schenectady, N. Y.
- Kelsey, Roy, Albany, N. Y.  
 Star-nosed mole, Selkirk, N. Y.
- King, Alfred, Catskill, N. Y.  
 Hog-nosed snake, Greene county, N. Y.
- Knobloch, Irving W., Red House, N. Y.  
 Specimens of plants from Allegany State Park, N. Y.
- Kurtz, Mrs John, Albany, N. Y.  
 Specimens of ants, Albany, N. Y.
- Labrano, Dorothy J. and Alexander F., Albany, N. Y.  
 Specimens of ichneumon flies, Lake Myosotis, N. Y.
- Lanagan, Mrs Frank R.  
 Specimen of *Hindia inornata* from the Helderbergs near New Salem, N. Y.
- Lawrence, Emmet, Catskill, N. Y.  
 Hog-nosed snake, Greene county, N. Y.
- Lockwood, Louis S., South Colton, N. Y.  
 Skull of great-horned owl, South Colton, N. Y.  
 Skull of beaver, South Colton, N. Y.
- Lord, E. R., Albany, N. Y.  
 Sparrow hawk, Albany, N. Y.
- Lowe, Josiah L., Syracuse, N. Y.  
 7 specimens of lichens from New York State, including cotypes of new species of *Lecidea*
- Luce, Mrs F., Albany, N. Y.  
 Song sparrow, Albany, N. Y.
- Lynch, Eileen D., Saratoga Springs, N. Y.  
 Spider, Saratoga Springs, N. Y.
- Lynch, Dr L. F., Saratoga Springs, N. Y.  
 3 spiders, Saratoga Springs, N. Y.
- Mager, C. E., Bronxville, N. Y.  
 Caterpillars of fall webworm, New York, N. Y.
- McClelland, W. H., Tuckahoe, N. Y.  
 4 polished serpentine specimens, Rye, N. Y.
- McCord, Dr Clinton, Albany, N. Y.  
 Caterpillar of larch lappet moth, Canaan, N. Y.
- McLaren, G., Ballston Spa, N. Y.  
 Piece of British flagship "Confidance"
- McLear, J. H., DeKalb Junction, N. Y.  
 Specimen potash feldspar, DeKalb Junction, N. Y.
- McVaugh, Dr Rogers, Kinderhook, N. Y.  
 Ruffed grouse, Riders Mills, N. Y.  
 254 specimens of plants from Columbia county

- Merkel, Hermann W., Pleasantville, N. Y.  
Specimens of work of hickory gall aphid, Westchester county, N. Y.
- Newell, George C., Albany, N. Y.  
Slug, Albany, N. Y.
- Newland, Dr David H., Menands, N. Y.  
Spearpoint, Menands, N. Y.
- Odell, M. V., Long Lake, N. Y.  
Larvae of ash sawfly, Long Lake, N. Y.
- Page, Clayton L., Oneida, N. Y.  
Specimen of *Muhlenbergia foliosa* from Madison county
- Paladin, Arthur, Albany, N. Y.  
Skull of brown bat, Albany, N. Y.  
Two skulls of black bear from Tupper Lake and Indian Lake, N. Y.  
2 skulls of raccoon from Berlin and Castleton, N. Y.  
Skull of skunk, Loudonville, N. Y.  
Skull of white-tailed deer, Williamsport, Pa.
- Pauly, K. A., Schenectady, N. Y.  
Specimen of *Asterias matutina*, Trenton Falls, N. Y.
- Phelps, Mrs Orra Parker, Gansevoort, N. Y.  
Star-nosed mole, Wilton, N. Y.  
Skull of white-footed mouse, Gansevoort, N. Y.
- Pierson, E. A., Albany, N. Y.  
Caterpillar of Abbott's sphinx moth, Albany, N. Y.
- Plum, Mrs Thomas, Troy, N. Y.  
Specimens of termite work, Troy, N. Y.
- Popp, W. J., Loudonville, N. Y.  
Specimens of springtails, Loudonville, N. Y.
- Pratt, L. W., Glens Falls, N. Y.  
3 lake lampreys, Lake Champlain, N. Y.
- Reutzel, Fred W., Castleton, N. Y.  
Specimen of cecropia moth, Castleton, N. Y.
- Reynolds, K. G., Loudonville, N. Y.  
Specimens of carpenter ants, Loudonville, N. Y.
- Rochester Museum of Arts and Sciences, Rochester, N. Y.  
Map "Indian Episodes of New York"
- Sanderson, W. E., Loudonville, N. Y.  
2 wild turkeys, Loudonville, N. Y.  
Wild turkey, Kosciusko, Miss.  
Screech owl, Loudonville, N. Y.  
Skull of meadowlark, Fort Johnson, N. Y.  
Skull of cottontail rabbit, Loudonville, N. Y.  
Old cooper's adz  
Specimens American dog ticks, Martha's Vineyard, Mass.
- Scherer, Mrs F. R., Menands, N. Y.  
Gray squirrel, Menands, N. Y.
- Schmucker, Robert A., Hudson, N. Y.  
Collection of 738 Indian artifacts from Columbia county, N. Y.
- Shannon, Frank, New Scotland, N. Y.  
Hairy-tailed mole, New Scotland, N. Y.
- Shorey, A. T., Albany, N. Y.  
3 specimens of plants from northern New York
- Shufelt, Mrs John, Northampton, N. Y.  
Gouge, Fulton county, N. Y.
- Slingerland, LeRoy, Albany, N. Y.  
Skull of white-tailed deer, Van Wies Point, N. Y.
- Smith, Jay L., Chester, N. Y.  
31 corals from Bushkill and Stroudsburg, Pa.
- Smith, W. E., Albany, N. Y.  
Caterpillars of maple prominent moth, Jewettville, N. Y.
- Stanford, Waldo P., Jamestown, N. Y.  
25 specimens of plants from Chautauqua county, N. Y.
- Stoner, Dr Dayton, Albany, N. Y.  
2 yellow-bellied sapsuckers, Albany, N. Y.

- Studler, Dorothy, Albany, N. Y.  
 Caterpillar of tiger swallowtail, Albany, N. Y.
- Sweeney, M. D., Albany, N. Y.  
 Specimen of pseudoscorpion, Albany, N. Y.
- Sweeney, R. C., Albany, N. Y.  
 Fresh-water isopod, Hoosic Falls, N. Y.
- Taylor, L. A., Schenectady, N. Y.  
 3 photographs of Old Indian Fort, Oakfield, N. Y.
- Thomas, Wilfred, Catskill, N. Y.  
 Scales  
 Old spectacles and case  
 Sandwich glass cup plate  
 Mariner's Geometry by N. Bowditch, Salem, December 1801  
 Early American blown glass decanter  
 Old seed catalog  
 Wooden butter stamps  
 Wood block for printing date etc.  
 Old iron door key  
 Copper powder flask  
 2 old flutes
- Thorpe, R. E., Elsmere, N. Y.  
 Larvae of black carpet beetles, Elsmere, N. Y.
- Tortorice, Richard, Albany, N. Y.  
 Black widow spider, Albany, N. Y.
- VanEseltine, Dr G. P., Geneva, N. Y.  
 Specimen of *Eleocharis parvula*, Onondaga county
- Visker, H. R., Albany, N. Y.  
 2 bullheads, Albany, N. Y.
- Wheeler, Mrs Sophie, Adamsville, N. Y.  
 Picture of dancing Lebanon Shakers  
 Diplomas and medals of Dr James Hall
- Wheland, Kenneth, Albany, N. Y.  
 Piece of wood from "Royal Savage"  
 Iron spike and fragments of bullets from "Philadelphia"
- Wilhelm, Henry, Saratoga Springs, N. Y.  
 Spider, Saratoga Springs, N. Y.
- Winslow, A. G., Keeseville, N. Y., through Gardiner Bump, New York State  
 Conservation Department, Albany, N. Y.  
 Adirondack cougar, Coonrod pond, Essex county, N. Y. (Collected "about  
 1860")
- Winston, Harry, New York, N. Y.  
 Replica of Jonker Diamond
- Youker, May, St Johnsville, N. Y.  
 One-half Mohawk pottery vessel; brass kettle; sample of charcoal; upper  
 portion of human skull, near St Johnsville, N. Y.
- Young, Peter, Albany, N. Y.  
 Garden spider, Albany, N. Y.
- Zoller, Mrs J., Albany, N. Y.  
 Specimens of cigarette beetles, Albany, N. Y.

### BY EXCHANGE

- Flower, Rousseau H., Ithaca, N. Y.  
 143 crinoids, Ithaca, N. Y.
- Gray Herbarium, Cambridge, Mass.  
 153 botanical specimens
- New York Botanical Garden, through Dr J. K. Small, New York, N. Y.  
 10 specimens of Florida ferns
- Raney, Edward C., New Castle, Pa.  
 10 species of fish from Pennsylvania
- Ritchie, Robert, Saratoga, N. Y.  
 Specimen of *Cryptozoon ruedemanni*, Saratoga, N. Y.
- Stewart, N. H., Lewisburg, Pa.  
 30 species of fish from Pennsylvania

- United States National Museum, Washington, D. C.  
 Specimen of *Dolatocrinus asterias*, Alpena, Mich.  
 6 specimens of *Heteroschisma gracile*, Alpena, Mich.  
 Specimen of *Megistocrinus concavus*, Alpena, Mich.  
 2 specimens of *Gilbertsocrinus intersculptus*, Unadilla Valley, N. Y.  
 3 specimens of *Gilbertsocrinus* cf. *alpenensis*, Lebanon, N. Y.  
 2 specimens of *Nucleocrinus obvatus*, Alpena, Mich.  
 University of Pennsylvania, through Dr John M. Fogg, jr, Philadelphia, Pa.  
 100 specimens of plants from New York State

The following were sent in exchange by the State Museum to:

- Colgate University, Hamilton, N. Y.  
 129 plant specimens  
 State College of Agriculture, Ithaca, N. Y.  
 104 plant specimens  
 Flower, Rousseau H., Ithaca, N. Y.  
 79 specimens of cephalopods  
 Gray Herbarium, Harvard University, Cambridge, Mass.  
 123 plant specimens  
 Johnson, Professor J. Harlan, Golden, Colo.  
 2 specimens of sponge, Genus *Hydnoceras*  
 New York Botanical Garden, New York, N. Y.  
 164 plant specimens  
 United States National Museum, Washington, D. C.  
 69 plant specimens  
 Slab of starfish, Genus *Devonaster*  
 University of Pennsylvania, Philadelphia, Pa.  
 157 plant specimens

#### BY PURCHASE

- Button, H. V., Waterford, N. Y.  
 5-piece pewter communion set  
 Baptismal bowl, 1835-45  
 Enterprise News, St Johnsville, N. Y.  
 Autographed book on "Deep Sea Sounding and Dredging" by Admiral  
 Charles D. Sigsbee, 1880.  
 Proput, F., Albany, N. Y.  
 Powder horn  
 Thomas, Wilfred, Catskill, N. Y.  
 Old quadrant  
 Edison bulb, 1880  
 Old ship quadrant  
 Pewter plate  
 Old sad iron  
 Loaf sugar cutter  
 Harpoon  
 Dutchbrick  
 Ward's Natural Science Establishment, Rochester, N. Y.  
 54 specimens of conodont jaws, Rochester, N. Y.

#### BY MUSEUM STAFF

- Adams, Dr Charles C., Albany, N. Y.  
 Specimen of fish-fly (*Chauliodes*), Center Ossipee, N. H.  
 Chamberlain, K. F., Albany, N. Y.  
 193 specimens of miscellaneous beetles, Cornwall, Conn.  
 74 specimens of miscellaneous insects, East Berne, N. Y.  
 Specimen of elder borer, Albany, N. Y.  
 Specimen of eyed elater, Albany, N. Y.  
 21 specimens of miscellaneous insects, Slingerlands, N. Y.  
 Specimens of four-spotted bean weevil, Albany, N. Y.  
 Caterpillar of Abbott's sphinx moth, Albany, N. Y.

- Clarke, Noah T., Albany, N. Y.  
 2 Indian burials; canine burial; bone awl, South Athens, N. Y.
- Glasgow, Dr R. D., Albany, N. Y.  
 Specimens of eastern tent caterpillars from Clarksville and Keene, N. Y.  
 Specimens of forest tent caterpillars from Albany and Keene, N. Y.  
 Specimens of "wilt disease" of eastern tent caterpillar, Westerlo, N. Y.  
 Specimens of ants, Albany, N. Y.  
 Specimens of elm bark-borers, Albany, N. Y.  
 Specimens of juniper webworm, Ardsley, N. Y.  
 Specimens of parasites of juniper webworm, Ardsley, N. Y.  
 Specimens of the larch case bearer and its work, North Elba, N. Y.  
 Specimens of black flies from North Elba and Lake Placid, N. Y.  
 Specimens of European pine shoot moth, Armonk, N. Y.  
 Specimens of European elm scale, Bronxville, N. Y.
- Glasgow, Dr R. D., Albany, N. Y., and Bishopp, F. C., Washington, D. C.  
 Specimens of Tabanid flies, Jones Beach, L. I., N. Y.
- Glasgow, Dr R. D., Chamberlain, K. F., and Richards, A. G., Albany, N. Y.  
 Several hundred specimens of miscellaneous insects from various points on Long Island
- Gordon, Dr R. B., Columbus, Ohio  
 29 specimens of plants from Allegany State Park, N. Y.
- House, Dr H. D., Albany, N. Y.  
 Specimens of water beetle, Berlin, N. Y.  
 Specimens of leaf beetles, Wemple Station, N. Y.  
 950 botanical specimens
- Newland, Dr D. H., Albany, N. Y.  
 Large specimen brecciated rock from fault zone, Assembly Point, Lake George, N. Y.  
 Siderite, Tyson, Vt.  
 Siderite from Amenia mine  
 Limonite from Burden Mines, West of Bennington, Vt.  
 Limonite, Copake, N. Y.  
 Limonite from Morgan Mine, Halstead, N. Y.  
 Limonite and siderite from Richmond Furnace, Mass.  
 Limonite and siderite, West Stockbridge, Mass.  
 Limonite, siderite and turgite from Amenia Mine  
 Hematite, Plymouth Union, Vt.  
 Garnet, Barton Mines, Inc., Gore Mt., North Creek, N. Y.  
 5 specimens black tourmaline from Three Ponds, Washington County, N. Y.  
 38 specimens rocks and minerals, Lake George, N. Y.  
 5 specimens feldspar from Sly pond, Washington County, N. Y.  
 1 large tourmaline crystal from Sly pond, Fort Ann, N. Y.
- Ruedemann, Dr Rudolf, Albany, N. Y.  
 Specimen of dragon fly, Albany, N. Y.
- Schoonmaker, W. J., Albany, N. Y.  
 Hairy-tailed mole, Stephentown, N. Y.  
 Star-nosed mole, Cherry Plain, N. Y.  
 3 smoky shrews from Best and Stephentown, N. Y.  
 6 short-tailed shrews from Best and Stephentown, N. Y.  
 Red squirrel, Taborton, N. Y.  
 2 white-footed mice, Babcock lake, N. Y.  
 Red-backed mouse, Stephentown Center, N. Y.  
 4 pine mice, Babcock lake, N. Y.  
 4 field mice from Cherry Plain and Stephentown, N. Y.  
 Meadow jumping mouse, Stephentown, N. Y.
- Stoner, Dr Dayton, Albany, N. Y.  
 Nest of eastern phoebe, Voorheesville, N. Y.  
 Bank swallow, Loudonville, N. Y.  
 3 barn swallows, Voorheesville, N. Y.  
 Cliff swallow, Altamont, N. Y.  
 Indigo bunting, Voorheesville, N. Y.

Whitney, A. G., Albany, N. Y.

Specimen of dragon fly, Albany, N. Y.

Specimens of broad-neck Prionus, Albany, N. Y.

Whitney, Mrs E. G., Albany, N. Y.

Specimen of Scarab beetle (*Euphoria*), Sidney, N. Y.

725 botanical specimens

#### BY TRANSFER

New York State Conservation Department, Albany, N. Y.

Collection of fishes from 1935 survey of Delaware and Susquehanna watersheds

#### GIFTS TO INSTITUTIONS

Civilian Conservation Corps Camp, Breakabeen, N. Y.

27 specimens of rocks and minerals

Civilian Conservation Corps Camp, through Charles F. Cabrera, West Haverstraw, N. Y.

22 minerals

Old Bushwick School, through Miss S. Kerper, Brooklyn, N. Y.

25 specimens of rocks and minerals

Shupack, Ben, Thomas Jefferson High School, Brooklyn, N. Y.

A collection of 18 fossils

# A CHRONOLOGICAL SKETCH OF THE HISTORY OF THE NEW YORK STATE MUSEUM

BY MEMBERS OF THE STAFF

"All scientific specimens and collections, works of art, objects of historic interest and similar property appropriate to a general museum, if owned by the State and not placed in other custody by a specific law, shall constitute the State Museum." *Education Law*, Sec. 54.

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## INTRODUCTORY NOTE

BY CHARLES C. ADAMS, *Director*

Rather frequent requests come to the New York State Museum, whose present official name is Division of Science and State Museum, for an account of its history and its antecedents. No adequate story of this kind has been written, and as a preliminary to such a study, the present sketch is presented, in the hope that it will be of service until a comprehensive account is prepared. This sketch represents the outstanding stages in the development of the work in the various fields of activity. A few references to sources of information are added which will materially aid further inquiry. There is some duplication of the accounts, but this will not be a disadvantage to most readers, and will be helpful to others.

On April 15, 1836, the State of New York inaugurated a systematic investigation of its natural resources by the State Geological Survey, which was in fact a natural history and agricultural survey. Later these collections of natural history, and those relating to the Indians and antiquities acquired by the State Cabinet of Natural History under the Regents of the University, became the New York State Museum. The field of work has thus been made to include investigations of the geology, botany, zoology, entomology, Indian archeology, history, industry and art of the State. At the same time exhibits have been prepared, as fully as space and funds have permitted, to portray the nature of these resources and accomplishments of the people of the State, as a permanent public exposition. These exhibition halls are regularly visited, in normal economic times, by about 200,000 visitors each year.

It is to be hoped that before many years the comprehensive history of science in New York State may be written. This is not a problem for a beginner. The qualifications will be difficult to find in any individual. It would be very fortunate if such a person should combine a first-hand working knowledge of some of the sciences, some of the outstanding grasp of an H. G. Wells, a James Harvey Robinson, a Patrick Geddes and a George Sarton, so that his interpretation would properly balance the individualistic and the social values in such a manner that future scientists and the general public could more readily appraise the role of their own science, not merely in its economic aspects but even more so in its higher or social values and significance.

#### GENERAL ADMINISTRATIVE CHRONOLOGY OF THE STATE GEOLOGICAL AND NATURAL HISTORY SURVEY, STATE CABINET OF NATURAL HISTORY AND THE STATE MUSEUM

BY CHRIS A. HARTNAGEL, *Assistant State Geologist*

- 1836 At the beginning of the State Geological and Natural History Survey on April 15, 1836, the scientific staff appointed by Governor Marcy was made up as follows:  
 W. W. Mather, Geologist      Lewis C. Beck, Mineralogist  
 Ebenezer Emmons, Geologist      James E. DeKay, Zoologist  
 Lardner Vanuxem, Geologist      John Torrey, Botanist  
 Timothy A. Conrad, Geologist
- 1837 In 1837 Conrad was made Paleontologist and James Hall, who had been assistant to Emmons, was appointed Geologist.  
 The collections made by the staff of the early survey (1836-42) formed the nucleus of the present State Museum

- collections. In the law creating the survey it was stated that the collections were to be housed in the State Library. This arrangement was only temporary, for by the law of 1840, the old State Hall was designated as the place for the display of the natural history specimens.
- 1843 In 1843 the Governor was authorized to continue the various departments of the Geological Survey in order to insure its ultimate completion and publication of reports.
- 1845 In 1845 the Regents of The University of the State of New York were placed in charge of the State Cabinet of Natural History (State Museum).
- 1847 In 1847 an appropriation was made for preserving and increasing the collections of the State Cabinet and a Curator, J. W. Taylor, was appointed.
- 1848 In 1848 the first report of the Regents on the State Cabinet of Natural History was issued. Annual Reports on the State Cabinet (or State Museum) have continued to the present time.
- 1865 In 1865 Ezekiel Jewett, who for a number of years had been Curator of the State Cabinet resigned, and James Hall, who since the start of the Natural History Survey in 1836, had been engaged in preparing the Fourth Geological District Report and the volumes on Paleontology, was appointed Curator.
- 1870 In 1870 the name of the State Cabinet of Natural History was changed to the New York State Museum of Natural History, and James Hall was appointed Director.
- 1883 In 1883 a law was passed which imposed additional duties on the Regents of the University in providing for the State Museum. By this law they were empowered to appoint the scientific staff of the State Museum and to supervise the publications on Paleontology and other scientific publications of the staff.
- The heads of the staff all reappointed were as follows:  
James Hall, State Geologist and Director of the Museum  
J. A. Lintner, State Entomologist  
C. H. Peck, State Botanist
- 1893 In 1893 the appointment of the heads of the scientific staff of the State Museum was placed with the Governor, the staff remaining as before.

1894 In 1894 F. J. H. Merrill, who had been Assistant Director, under James Hall, became Director of the Museum, while Hall continued his position as State Geologist and Paleontologist until his death in 1898.

Upon the death of Hall, Merrill became Director of the State Museum and State Geologist, and John M. Clarke, State Paleontologist.

1904 In 1904 there was a consolidation of The University of the State of New York and the State Department of Education. Under this arrangement the State Museum was made a Division of the University, and John M. Clarke was made Director, State Geologist and State Paleontologist, positions which he held until his death in 1925.

1926 Jacob Van Deloo, former Secretary of the State Museum, was made Acting Director January 1, 1926.

1926-36 Charles C. Adams became Director May 1, 1926. By vote of the Regents the State Museum became responsible for the educational supervision and policy of the Allegany School of Natural History in the Allegany State Park, which was conducted in cooperation with the Buffalo Society of Natural Sciences. The State Museum initiated a systematic series of scientific and educational surveys of the natural resources of the state parks, and began a series of popular handbooks based largely on such studies.

1927 On January 1, 1927, with the reorganization of the State Government, the scientific reservations which had been acquired by the State Museum, were transferred to the Department of Conservation, and were converted into recreational state parks. These reservations were: Clark Reservation, Chittenango Falls Park, Lester Park or Cryptozoon Ledge, Stark's Knob, and Squaw Island.

*Cf.* 22d Report of the Director, Mus. Bul. 279, p. 19-20. 1929.

1929-30 Alvin G. Whitney became Secretary of the Museum in 1929, and Assistant Director in 1930.

1936 On April 15, 1936, the Division of Science and State Museum, as a direct descendant of the State Geological and Natural History Survey, established April 15, 1836, reached the age of 100 years.

**BRIEF SKETCH OF THE GEOLOGICAL WORK OF THE  
STATE MUSEUM**

By RUDOLF RUEDEMANN, *State Paleontologist*, AND DAVID H. NEWLAND, *State Geologist*

The New York State Museum is an outgrowth of the early geological and natural history surveys, started at first under private auspices to explore the local resources and later organized on a statewide scale and supported as public undertakings. The collections brought together by these surveys constituted the original nucleus of a State Cabinet of Natural History, which in the course of years grew in size and public favor to become the State Museum with its own functions and staff. It is of interest to give a brief record of these surveys.

- 1820 The beginning of organized efforts in the study of natural resources was made in 1820 by Amos Eaton, who undertook in that year a geological and agricultural survey of Albany and Rensselaer counties. This work was financed by Stephen Van Rensselaer, whose name is perpetuated in the Rensselaer Polytechnic Institute, the first engineering school in this country. (Cf. W. M. Smallwood. Amos Eaton, Naturalist. New York History, v. 18, 167-88. 1937)
- 1822 In 1822 Eaton began a survey of the natural resources along the line of the Erie canal, then under construction. These two surveys may be said to have set the pattern, as they supplied likewise the incentive, for many of the public surveys that were inaugurated in this country in the early part of the 19th century.
- 1836 The direct predecessor of the State Museum, so far as its investigative functions are concerned, was the Geological and Natural History Survey of 1836-41, established by an act of the Legislature on recommendation of John A. Dix, then Secretary of State. The final reports of this survey, which included four volumes on geology and one on mineralogy, have become classics in their field, still widely used and frequently cited in reference. The chief accomplishment of the staff of geologists—W. W. Mather, Ebenezer Emmons, Lardner Vanuxem and James Hall, with T. A. Conrad, paleontologist—was the exploration and description of the New York series of rock formations, which from

the time of their work became the recognized standards of comparison for this country, particularly the succession from the Cambrian to the Devonian. The local names like Potsdam, Chazy, Trenton, Chemung, etc., introduced by them to designate certain stratigraphic units have been incorporated into the general science. James Hall on completion of the first survey became State Paleontologist, later State Geologist, serving in those capacities until his death in 1898. His contributions, which embraced no less than 14 quarto volumes on paleontology, won a high place among standards of reference and gained a worldwide circulation.

Of this early Geological Survey, Dr George P. Merrill said:

This led to an organization which has left a more lasting impression upon American geology than any that has followed or had preceded it. As fate ordained, the locality was one of the most favorable that could have been selected for working out the fundamental principles of stratigraphic geology; moreover, those appointed to do the work proved equal to the occasion. The New York survey gave to American geology a nomenclature largely its own; it demonstrated above everything else the value of fossils for purposes of correlation, and incidentally it brought into prominence one man, James Hall, who was destined to become America's greatest paleontologist."

*The First One Hundred Years of American Geology,*  
p. 187. 1924.

- 1845 The collections in geology, botany and zoology, brought together by these surveys were of such educational and popular interest that room was provided (1845) for their display in the old State Hall in Albany. Later a new building known as Geological and Agricultural Hall was erected and the exhibits were given larger space, where they remained until 1912, when they were transferred to the present quarters in the State Education Building.
- 1870 In 1870 the New York State Museum was established by law and was placed in charge of a Director, a position held for many years by James Hall in addition to the offices of State Geologist and State Paleontologist.
- 1898 After Hall's death, which occurred in 1898, the geological work may be said to have taken on a broader scope than previously, since the main interests hitherto had been within the field of paleontology and pure geology. The positions

held by Hall were filled by F. J. H. Merrill who became State Geologist and Director of the Museum, and John M. Clarke, State Paleontologist.

- 1901 Under Merrill investigations of the Precambrian series of rocks in the Adirondacks and the southeastern Highlands were begun for the purpose of compiling the necessary data for a state geological map. Such a map was brought out in 1901, the first really comprehensive and up-to-date effort to show the geological features of the whole area on anything like an adequate scale. A beginning was also made toward a systematic presentation of the State's varied wealth in mineral resources, with the publication of volumes on the clay deposits and clay-working industries and on the limestones and their utilization for building stone, lime and cement. These volumes met with a cordial response from the industrial field and are a source of valuable information today, although they have long been out of print.
- 1904 With the appointment of John M. Clarke to the offices of Director of the State Museum, State Geologist and State Paleontologist, the broadening of efforts along investigative lines was continued, as was the promotion of steps toward organizing the numerous collections to make them representative of present-day requirements.
- 1912 With the removal of the collections into the Education Building it was found necessary to enlarge and improve the exhibits materially and to make them more attractive by the addition of group displays, designed to show the natural habitat or conditions of occurrence of the materials exhibited. Practically all of the groups in the Museum, like the Gilboa group of Devonian trees, the calcite cave, the groups of early marine plants and animals, were assembled at that time. In its collections of fossil life forms and of geological and mineralogical materials, the present State Museum can fairly claim to rank with leading institutions of its kind. Investigations of scientific value carried out under Clarke included 13 monographic reports on mineralogical and paleontological subjects such as Calcites of New York, Graptolites of New York, Devonian Crinoids and Eurypterids of New York, all of which became standard works. In economic geology the publications included reports on iron ores, gypsum, salt, building stones and other resources largely represented in New York.

Substantial progress was made during his administration in the detailed geologic mapping of the State, for which the base used was the topographic quadrangles on the scale of a mile to the inch issued by the United States Geological Survey. This work has been continued down to the present day, with the result that about one-third of the whole State has been so mapped. The death of Doctor Clarke occurred in 1925.

1926-27 After the death of Doctor Clarke the positions of Director of the Museum, State Geologist and State Paleontologist were separated. Doctor Ruedemann became State Paleontologist in 1926, and Doctor Newland became State Geologist in 1927. The principal publications of late years have been in the form of bulletins, of which more than 300 have been issued from 1892 to date. These relate to a variety of subjects embracing general and applied geology, glaciology, mineral resources, paleontology and descriptions to accompany the quadrangle maps now in process of publication. A series of handbooks is also issued to serve as guides to places of popular interest or as introductions to particular fields of natural science.

#### CHRONOLOGICAL SKETCH OF THE BOTANICAL WORK OF THE STATE MUSEUM AND ITS ANTECEDENTS

BY HOMER D. HOUSE, *State Botanist*

The botanical work under the auspices of the Regents of The University of the State of New York and the State Museum includes the following:

- 1831-32 A Catalogue of Plants Growing Spontaneously in the vicinity of North Salem Academy. By Samuel Barnum Mead. 43d Ann. Report of the Regents, p. 89-97; 44th Report, p. 101
- 1833 Catalogue of Indigenous Flowering and Filicoid Plants Growing within Twenty Miles of Bridgewater, Oneida County. By Asa Gray. 46th Ann. Report of the Regents, p. 57-65
- A Catalogue of Plants Growing Spontaneously in the Vicinity of Cortland Academy, Homer, Cortland County. By George W. Bradford. 46th Ann. Report of the Regents, p. 66-71

- 1835 Catalogue of Plants, Indigenous and Cultivated, Found in the Vicinity of Erasmus Hall. By John Barrea Zabriskie. 48th Ann. Report of the Regents, p. 176-81
- 1836 Act of the Legislature April 15, 1836, establishing the Geological and Natural History Survey of New York State
- 1837-38 A Catalogue of Plants Found Growing Chiefly in the Vicinity of Onondaga Academy during the Summers of 1834 and 1835. By J. L. Hendrick. 50th Ann. Report of the Regents, p. 182-86; 51st Report, p. 216-17
- 1837-40 Catalogue of Plants (of New York State). By John Torrey. 4th Ann. Report of the Geological Survey of New York. Assembly Document No. 161, p. 9-10 (ed. 2, p. 11-12), Assembly Document No. 50, p. 111-97. January 24, 1840
- 1839 Dr John Torrey, Botanist, commissioned to write the Flora of New York, which was published in 1843
- 1839-40 A Catalogue of Indigenous Plants Found Growing in the Vicinity of Kinderhook Academy. By W. V. S. Woodworth. 52d Ann. Report of the Regents, p. 253-54; 53d Report, p. 208-10
- 1841 Plants Collected and Examined by the Botanical Class in the Delaware Literary Institute, during the Summer Term of 1840. By M. Platt. 54th Ann. Report of the Regents, p. 227-31
- A Catalogue of Plants Found in the Vicinity of Aurora, Cayuga County. By Alexander Thompson. 54th Ann. Report of the Regents, p. 224-26
- 1842 Catalogue of Plants Found in the County of Oneida. By Peter D. Kneiskern. 55th Ann. Report of the Regents, p. 273-99
- Catalogue of Plants and Their Time of Flowering in and about the City of Rochester for the year 1841. By Rev. Chester Dewey. 55th Ann. Report of the Regents, p. 265-72
- 1843 Flora of New York State. By John Torrey. 2v. quarto. p. 484 and 572. 161 plates
- 1845 Catalogue of Plants Growing without Cultivation in the Vicinity of Seneca and Crooked Lakes in Western New York. By H. P. Sartwell. 58th Ann. Report of the Regents, p. 273-90

- 1846 A Catalogue of the Indigenous, Naturalized and Filicoid Plants of Lewis County. By Franklin B. Hough. 59th Ann. Report of the Regents, p. 249-83
- 1849 Catalogue of Plants of the State of New York of Which Specimens Are Preserved in the Cabinet at Albany. By John Torrey. 2d Ann. Report of the Regents on the Condition of the State Cabinet, p. 39-64. Senate Doc. No. 20
- 1851 Catalogue of Plants Found Growing without Cultivation in the Vicinity of Amenia Seminary, Dutchess County. By A. Winchell, 64th Ann. Report of the Regents, p. 256-79
- 1852 Catalogue of the Forest Trees Growing Wild in the town of Nichols, Tioga County. Robert Howell. 65th Ann. Report of the Regents, p. 392-95
- 1864 Preliminary List of Plants of Buffalo and Its Vicinity. By George W. Clinton. 17th Ann. Report of the Regents on the State Cabinet, p. 24-35
- 1865 Catalogue of Plants Found Growing in Oneida County and Vicinity. By John A. Paine jr. 18th Ann. Report of the Regents on the State Cabinet, p. 53-192
- 1866 List of Plants Described in the State Flora and of Plants Discovered and Collected since the Publication of the Flora. By John Torrey. Cat. of the Cabinet of Natural History of New York, p. 1-61  
 List of Plants for the State Herbarium Collected in the Vicinity of Ludlowville, Tompkins County. By Henry B. Lord. 19th Ann. Report of the Regents on the State Cabinet, Appendix, p. 71  
 List of Mosses of the State of New York. By Dr C. H. Peck. 19th Ann. Report of the Regents on the State Cabinet, p. 42-70
- 1866 Dr Charles Horton Peck (1833-1917) was appointed to carry on botanical investigations for the State and to look after the botanical collections of the State Cabinet
- 1870 The "State Cabinet of Natural History" was designated by act of the Legislature as "The Museum of Scientific and Practical Geology and General Natural History." Dr James Hall was made the first Director  
 Report of Botanist (for 1867). By Dr C. H. Peck. 21st Ann. Report of the Regents on the Cabinet of Natural History, p. 23-24

This constitutes the first report by Doctor Peck, published yearly to and including the Report for 1912. Issued with Museum Reports 21 to 55, of which they form a part. Reports 21-24, 29, 31-41 were not published separately from the Museum reports. All others were reprinted separately and some of them repaged

- 1889 Boleti of the United States. By Dr C. H. Peck. New York State Museum Bul., 8:71-166
- 1899 Plants of North Elba. By Dr C. H. Peck. New York State Museum Bul., 28:67-266
- 1900 Report of the State Botanist on Edible Fungi of New York. By Dr C. H. Peck. New York State Museum Memoir, 4:129-234, plates 44-68
- 1906 Stewart H. Burnham (a Temporary Assistant during 1904 and 1905) appointed Assistant State Botanist (resigned 1912)
- 1909 List of species and varieties of fungi described by Dr C. H. Peck. New York State Museum Bul., 131:59-190
- 1913 Dr Homer D. House appointed Assistant (botany)
- 1915 Report of the State Botanist for 1913. By Homer D. House. New York State Museum Bul. 176:1-77. Doctor House appointed Botanist.

With the exception of 1922, these annual reports were published annually as Museum Bulletins to and including the report for 1924. The report for 1922 and for 1925 to date are mainly administrative reports and are included in the Annual Reports of the Director of the State Museum

- 1916 Installation of the Charles H. Peck Memorial collection of mushroom models in wax by Henri Marchand. Museum Bul., 197:9-11. 1918. Science II. 46:204. 1917. 56 groups represented, of which 8 represent poisonous species
- 1917 Death of Dr C. H. Peck, State Botanist since January 1, 1867.
- 1918 Vegetation of the Eastern end of Oneida Lake. By Homer D. House. New York State Museum Bul., 197:61-110 (Supplementary account. *Ibid.*, 266:28-40. 1925)
- 1919 Wild Flowers of New York published in 2 vols., Memoir 15, New York State Museum, 362 p. and 264 colored plates. By Homer D. House.
- 1924 Annotated List of the Ferns and Flowering Plants of New York State. By Dr Homer D. House. New York State Museum Bul., 254:1-759

- 1925 Neil Hotchkiss appointed Assistant State Botanist
- 1927 Flora of the Allegany State Park Region. By Homer D. House and William P. Alexander. New York State Museum Handbook, 2: 1-225. figs. 1-33 and map
- 1929 Mrs Elsie G. Whitney appointed Assistant State Botanist to succeed Neil Hotchkiss, resigned.  
The Vegetation of the Allegany State Park. By Norman Taylor. New York State Museum Handbook, 5: 1-26. figs. 1-25
- 1932 A Botanical Survey of the Tug Hill Plateau (Lewis County). By Neil Hotchkiss. New York State Museum Bul., 287: 1-123. figs 1-15. Dr H. D. House appointed State Botanist July 1, 1932.
- 1935 Publication of Louis C. C. Kreiger's New York State Museum Handbook 11, A Popular Guide to the Higher Fungi (Mushrooms) of New York State. 538p. 126 figs., 32 colored plates

#### SKETCH OF THE ENTOMOLOGICAL WORK OF THE STATE MUSEUM AND ITS ANTECEDENTS

By R. D. GLASGOW, *State Entomologist*, AND K. F. CHAMBERLAIN, *Assistant State Entomologist*

- 1836 The geological and natural history survey of New York provided for in 1836, was directed by law to ". . . furnish a full and scientific description of its rocks, soils and minerals, and of its botanical and zoological productions . . ." This last appears to have been interpreted liberally concerning the insects of the State.
- 1840 The trustees of the new State Hall were directed by law ". . . to fit up and prepare rooms in the old State Hall . . . for a State Museum, in which to display . . . the various specimens . . . which may be collected and prepared by the zoological" (including entomological) "corps in the survey of the State."
- 1841 The old (and languishing) State Agricultural Society was reorganized in 1841, and "for the encouragement of Agriculture" was provided with an appropriation of \$8000 annually for five years, of which \$700 each year was to be allotted to the State Society and the remainder to the affiliated County Agricultural Societies.

To initiate an agricultural survey of New York, the State Agricultural Society made arrangements to have Asa Fitch M.D., then corresponding secretary of the Washington County Society, make an agricultural survey of Washington county. About this time Fitch began publishing significant papers on insects of importance to agriculture, some prepared at the request of Ebenezer Emmons of the State Geological and Natural History Survey for publication in his *Quarterly Journal of Agriculture and Science*.

The State Agricultural Society seems also to have contemplated the establishment of a State Agricultural Museum for which exhibit materials "in every department of the Natural Sciences" were solicited. Such a project would have taken over or duplicated the State Cabinet of Natural History of the State Geological and Natural History Survey. However:

- 1843 By law, the State Agricultural Society was granted quarters in the old State Hall, which then housed the State Geological and Natural History Survey.
- 1843 Ebenezer Emmons M. D., upon completion of his services as Geologist in Chief, Second District, New York State Geological Survey, was appointed by the Legislature to make an agricultural survey of the State.
- 1843-54 The results of this agricultural survey by Emmons were published in five volumes as part five of the series on the Natural History of New York, the title in other volumes of the series being supplemented by the word "Geology," in this case by the word "Agriculture."

Volume 5 of the Natural History of New York, Agriculture by Emmons, published in 1854, is devoted entirely to "Descriptions of the More Common and Injurious Species of Insects." With its hundreds of excellent illustrations largely in color, this volume was probably one of the most important among the early American publications on entomology in the stimulus it gave to the more general study of insects.

In his acknowledgements, Doctor Emmons writes, ". . . and have also been very much assisted by our eminent entomologist, Dr Asa Fitch of Salem, Washington County, New York." See 1847.

- 1845 The Regents of the University by law were authorized and directed ". . . to make suitable provision for the safe keep-

ing of the Cabinets of Natural History now deposited in the old State Hall, and to employ a person to take charge of the same."

- 1845 The executive committee of the State Agricultural Society was given full right at any and all times to use materials deposited in the State Cabinet of Natural History, subject to the direction and regulations of the Regents of the University, probably to facilitate the preparation of Doctor Emmons' report. See 1843-54.
- 1847 Asa Fitch M. D., then president of the Washington County Agricultural Society, was employed to collect and name specimens of New York insects for the State Cabinet of Natural History. These specimens were probably for use in the preparation of Doctor Emmons' report. See 1843-54.
- 1849-51 Doctor Fitch published a Catalog of the Insects in the State Cabinet of Natural History in the Second Annual Report (for 1849) of that institution, and a revision of this catalog in the Fourth Annual Report. In 1851 Fitch submitted a report to the Regents on Homoptera of New York, including one new species. Types of this Fitch species and other specimens collected and named by him are still in the insect collections of the State Museum.
- 1854 By act of the Legislature making a special appropriation for the purpose, Asa Fitch M. D., was appointed Entomologist of the State Agricultural Society, and directed to make an examination of the insects of the State, especially those injurious to vegetation. In this appointment, Doctor Fitch was the first entomologist to be officially so commissioned by any State.
- 1854-73 Doctor Fitch continued to serve as official entomologist from 1854 until incapacitated by ill health in 1873. During this time, in addition to many miscellaneous and special publications, he published 14 official annual reports on The Noxious, Beneficial and Other Insects of the State of New York.
- 1868 James Albert Lintner was appointed Zoological Assistant on the staff of the State Cabinet of Natural History.
- 1870 The State Cabinet of Natural History by act of the Legislature became The New York State Museum of Natural History, to be located ". . . at the capital of the State," and to be "under the care and custody of the Regents of the University."

- 1873 Asa Fitch resigned from his position as State Entomologist on account of ill health.
- 1874 J. A. Lintner was placed in charge of the entomological work of the State Museum.
- 1879 Dr Asa Fitch died at Salem, Washington county N. Y., on April 8, 1879.
- 1880 In accordance with a provision by the Legislature for ". . . an entomologist, to be appointed by the Governor, in place of Asa Fitch, deceased," J. A. Lintner was appointed Entomologist by Governor Cornell.
- 1881 J. A. Lintner was appointed State Entomologist in accordance with an act of the Legislature providing that "There shall be appointed by the Governor, a State Entomologist who shall be charged with the study of insects injurious to Agriculture, and methods of controlling and preventing their depredations."
- 1881-98 Lintner continued to serve as State Entomologist until his death on May 5, 1898. In addition to four numbers of "Entomological Contributions", he published 13 official reports as Entomologist, and many general contributions which appeared chiefly in agricultural and horticultural periodicals.
- 1883 An act of the Legislature ". . . to regulate the State Museum of Natural History" specifically named the State Entomologist as a member of ". . . the scientific staff of the Museum."
- So, while Lintner's first two reports were addressed "To the Legislature of the State of New York," all of his subsequent reports were addressed "To the Regents of The University of the State of New York."
- 1884 J. A. Lintner received the honorary degree of doctor of philosophy, which was conferred upon him by the Regents of the University of the State of New York, in recognition of his valuable services.
- 1895 Ephraim Porter Felt D.Sc. was appointed Entomological Assistant to Doctor Lintner in September 1895.
- 1898 Dr J. A. Lintner died at Rome, Italy, on May 5, 1898.
- 1898 Dr E. P. Felt was appointed State Entomologist to succeed Dr J. A. Lintner, deceased.
- 1898-1928 Doctor Felt continued to serve as State Entomologist from 1898 until his retirement on pension on March 31, 1928.

During his 33 years of distinguished service, Doctor Felt published 22 official reports prior to the discontinuance of such reports from officers of the Museum staff other than the Director, in 1921. In addition to his official reports as State Entomologist, Doctor Felt also published or directed the preparation of numerous contributions of monographic character, as well as many minor contributions.

- 1899 N. Y. S. Mus. Bul. 24, Memorial on the Life and Work of Joseph Albert Lintner Ph.D., by E. P. Felt.
- 1900-34 In 1900 Doctor Felt made provision for a series of studies of aquatic insects of New York.  
 These studies led to the following publications:  
 N. Y. S. Mus. Bul. 68, Aquatic Insects of New York, 1903, by Needham, McGillwray, Johannsen and Davis  
 N. Y. S. Mus. Bul. 79, Mosquitoes of New York, 1904, by Felt  
 N. Y. S. Mus. Bul. 86, May Flies and Midges of New York, 1905, by Needham, Morton and Johannsen  
 N. Y. S. Mus. Bul. 292, The Caddis Flies or Trichoptera of New York State, 1934, by Betten
- 1901 The library and insect collections of J. A. Lintner were purchased by the State Museum.
- 1901 The office and insect collections of the State Entomologist were removed from the Capitol to the Geological and Agricultural Hall.
- 1901 An entomological exhibit for the Pan-American Exposition was prepared under the direction of Doctor Felt. This exhibit was awarded one gold medal and three silver medals.
- 1905-21 Doctor Felt's studies of insects affecting woodland and ornamental trees and shrubs have resulted in several of his most notable contributions.  
 N. Y. S. Mus. Memoir 8, Insects Affecting Park and Woodland Trees, v. 1, 1905, v. 2, 1906, by Felt  
 N. Y. S. Mus. Buls. 165, 175, 180, 186, 198, 202, 231-32, A Study of Gall Midges, Parts 1 to 7, 1913 to 1921, by Felt  
 N. Y. S. Mus. Bul. 200, A Key to American Insect Galls, 1918, by Felt
- 1907 The W. W. Hill collection of Lepidoptera was given to the State Museum.

- 1912-13 The office and collections of the State Entomologist were removed from its quarters in Geology Hall to the new quarters of the State Museum in the State Education Building.
- 1914-16 Preparation of the entomological exhibits of the State Museum was begun in 1914, and finished in 1916.
- 1926 Kenyon Field Chamberlain was appointed Technical Assistant to Doctor Felt.
- 1928 Dr E. P. Felt retired on pension, March 31, 1928.
- 1928 Robert Douglas Glasgow Ph.D. was appointed State Entomologist to succeed Dr E. P. Felt, retired.
- 1929 The insect collection of Professor George H. Hudson was given to the State Museum.
- 1932 K. F. Chamberlain was made Assistant State Entomologist.

In recent years the entomologists of the State Museum have given much of their time to cooperative survey investigations undertaken jointly with administrative officers of other state departments who are concerned with emergency insect problems that often require the prompt issuance of new administrative rulings or the formulation of new regulatory legislation and the like.

With its scientific and technical staff, its library facilities, its reference collections and its location at the State Capital, the State Museum is the only agency that is in a position to provide adequate emergency service of this character for administrative departments located at Albany that require such service.

Frequent additions to our already long list of introduced insect pests, and other factors which contribute to the progressively increasing complexity of our insect pest problems from the standpoint of regulatory requirements have made this service an ever-increasing burden, and its provision an administrative problem that should have early and careful study.

## HISTORICAL OUTLINE OF THE ZOOLOGICAL WORK OF THE STATE MUSEUM

BY DAYTON STONER, *State Zoologist*

- 1842-44 James E. DeKay: Natural History of New York, Zoology of New York; or The New York Fauna, etc. 5 vol..

- 1850 Acquisition by the State Cabinet of Natural History of the De Rahm collection containing 36 specimens of mammals and 310 specimens of mounted birds. (See 4th Ann. Rep't, p. 28 and 41, 1851)
- 1854 Spencer F. Baird: On the Serpents of New York with a Notice of a Species not hitherto included in the Fauna of the State. (See 7th Ann. Rep't, Appendix G, p. 95-124, 1854)
- 1858 Acquisition by the State Cabinet of Natural History from Philip P. Carpenter, of a collection of Mazatlan Mollusca; being the first duplicate of the Frederick Reigen collection of Mazatlan Mollusca in the British Museum. It consisted of 421 species represented by 6584 specimens. (See 13th, 14th and 27th Reports by the Regents on the State Cabinet of Natural History and the New York State Museum of Natural History, p. 21-36; 1860, p. 91; 1861, and p. 14, 1875, respectively).
- 1863 Acquisition by the State Cabinet of Natural History of the Gould collection of Mollusca. It consisted of 6000 species and about 60,000 specimens. The "Gould Types"—a part of this collection—numbered 362 species and 2863 examples. (See 27th Ann. Rep't, p. 47-75, 1875)
- 1872 Dr James W. Hall was appointed to have charge of Osteology and Rock Sections, and in charge of Zoological collections.
- 1873 Acquisition of the Museum's present Bison group and Bison skeleton. (See 27th Ann. Rep't, p. 24, 1875)
- 1879 H. E. Webster: Annelida Chaetopoda of New Jersey. In 32d Annual Report of the State Museum of Natural History, p. 101-28, 1879. [Reprinted in 39th Rep't, p. 128-164, 1886.]
- 1887 William B. Marshall, Assistant, appointed April 11, 1887.
- 1892 William B. Marshall: Preliminary List of New York Unionidae. N. Y. State Mus. Bul., 1, no. 1, 17p.
- 1893 Participated in World's Columbian Exposition, Chicago, Ill. For list of animals exhibited see Report of the Director of the State Museum for 1893, p. 41-75, 1894.
- 1898-1911 Acquisition by the State Museum [exact date impossible to determine] of E. Thompson Seton's original wash drawings prepared originally for Frank M. Chapman's "Bird Life" published in 1897.

- 1899 Marcus S. Farr appointed Assistant in Zoology, June 20, 1899.
- 1899 Gerrit S. Miller jr: Preliminary List of the Mammals of New York. N. Y. State Mus. Bul., 29: 272-390
- 1900 Gerrit S. Miller jr: Key to the Land Mammals of North-eastern North America. N. Y. State Mus. Bul., 38: p. 61-160
- 1901 Dr Frederick C. Paulmier appointed Assistant in Zoology, January 2, 1901.
- 1901 Acquisition of collection of more than 275 mounted specimens representing some 140 varieties of domestic poultry, formerly property of the New York State Agricultural Society. Transfer made by New York State Fair Commission.
- 1901 James L. Kellogg: Clam and Scallop Industries of New York State. N. Y. State Mus. Bul., 43: p. 605-29
- 1902 Edwin C. Eckel and Frederick C. Paulmier: Catalogue of New York Reptiles and Batrachians. N. Y. State Mus. Bul., 51: p. 355-414
- 1903 Tarleton H. Bean: Catalogue of the Fishes of New York. N. Y. State Mus. Bul., 60. 784p.
- 1903 James L. Kellogg: Feeding Habits and Growth of Venus Mercenaria. N. Y. State Mus. Bul., 71. 27p.
- 1905 Elizabeth J. Letson: Check List of the Mollusca of New York. N. Y. State Mus. Bul., 88. 112p.
- 1905 Frederick C. Paulmier: Higher Crustacea of New York City. N. Y. State Mus. Bul., 91: p. 117-89
- 1906 George Halcott Chadwick, appointed Zoologist May 1, 1906.
- 1908 Frank H. Ward appointed Zoologist, February 1, 1908.
- 1908 Acquisition by the State Museum of the Shufeldt collection of bird skeletons. (See 5th Report of Director, p. 45-46 and p. 105-10, 1909)
- 1909 R. W. Shufeldt: Osteology of Birds. N. Y. State Mus. Bul., 130. 381p.
- 1910 Willard G. Van Name appointed Zoologist September 1, 1910.
- 1910-20 Acquisition of nine of the Museum's outstanding habitat groups: Black Bear, 1910; Moose, Opossum and Cougar, 1911; Canada Lynx and Virginia Deer, 1915; Woodchuck, 1916; Timber Wolf, 1917; Skunk, 1920.
- 1910 Elon H. Eaton: Birds of New York. N. Y. State Mus. Memoir, 12, pt 1: Water Birds and Game Birds, 501p. Illustrated by Louis Agassiz Fuertes.

- 1914 Elon H. Eaton: Birds of New York. N. Y. State Mus. Memoir 12, pt 2: Land Birds, 719p. Illustrated by Louis Agassiz Fuertes.
- 1915 Acquisition by the State Museum of L. A. Fuertes' 120 original colored plates prepared for Eaton's Birds of New York. Donated by Mrs Russell Sage. (See 69th Ann. Rep't, p. 13, 1916)
- 1916 Dr Sherman C. Bishop became Zoologist, May 8, 1916.
- 1917 Acquisition by the State Museum of the Benjamin W. Arnold collection of birds' eggs, nests etc. Fifteen thousand eggs of about 1000 forms of North American birds and about 400 exotic forms are in the collection. (See 71st Ann. Rept, p. 20-21, 1919)
- 1924 Sherman C. Bishop: A Revision of the Pisauridae of the United States. N. Y. State Mus. Bul., 252. 140p. An outgrowth of extensive collections of New York spiders collected for the State Museum, by Doctor Bishop.
- 1925 Completion of Dr H. A. Pilsbry's illustrated Monograph on the Land and Fresh Water Mollusca of New York. MS.
- 1926-36 Acquisition by the State Museum of extensive collection of New York State fishes as the result of a statewide biological survey by the State Conservation Department.
- 1927 Inception of detailed life history and ecological studies of birds and mammals as supplementary to the largely taxonomic and distributional investigations which previously had prevailed.
- 1927 Inception of new Handbook series at the State Museum; the first one devoted to zoology was by Sherman C. Bishop: The Amphibians and Reptiles of Allegany State Park. N. Y. State Mus. Handbook, 3, 141p.
- 1928 Resignation of Dr Sherman C. Bishop, August 31, 1928. Doctor Bishop built up an extensive collection on the life history of reptiles and amphibians of the State.
- 1928 William T. Shaw: The Spring and Summer Activities of the Dusky Skunk in Captivity. N. Y. State Mus. Handbook, 4, 92p.
- 1929 Aretas A. Saunders: Bird Song. N. Y. State Mus. Handbook, 7, 202p. Printed for the blind in Braille by the Congressional Library in 1932.

- 1932 Dr Dayton Stoner appointed Zoologist, October 17, 1932.
- 1933 Inception of investigations relating to detailed life history, migration, homing, growth and temperature in certain species of swallows, with positive identification of individuals made possible through banding.

### CHRONOLOGICAL SKETCH OF THE ARCHEOLOGICAL WORK OF THE STATE MUSEUM

BY NOAH T. CLARKE, *State Archeologist*

- 1836 The Natural History Survey of the State of New York began in this year and developed into the New York State Cabinet of Natural History in 1845. In 1843 the Regents of the University began the formation of a "Historical and Antiquarian Collection." Up to this period there had been no collections of archeological or ethnological materials.
- 1847 The nucleus of an archeological section was started when a circular was issued to "our fellow citizens, asking their aid, in furnishing the relics of the ancient masters of the soil." This plea resulted in the donation of several private collections, including that of Lewis H. Morgan, who had collected in western New York.
- 1848 In speaking of the establishment of the "Indian Cabinet," Mr Morgan wrote the Board of Regents that he would not "only willingly contribute what little I have, to promote the object, but will aid, so far as I may be able, in other ways."
- 1849 Mr Morgan was commissioned by the Regents to make purchases for the State from Indians in western New York and others. Thus, the "Indian Cabinet" was given the necessary impetus by his efforts, and a project, never before attempted by any other state, was established; the results being published in the Second Annual Report of the Regents of the University, p. 71-79.
- 1850 A Report on Ancient Remains of Art, in Jefferson and St Lawrence Counties was written by Franklin B. Hough and the collection of E. G. Squire purchased for \$50.
- 1851 A report to the Regents by Lewis H. Morgan on the Fabrics, Inventions, Implements and Utensils of the Iroquois.
- 1852-53 Morgan's private collection reported, and articles requested to be made by the Indians of western New York were listed.

- 1859 A paper on Ancient Monuments in Western New York by T. Apoleon Cheney, appeared in the 13th Report of the State Cabinet of Natural History.
- 1863 The original manuscript of the Rev. James Bruyas S. J. on Radical Words of the Mohawk Language with Their Derivatives was printed in the 16th Report of the State Cabinet of Natural History.
- 1868 The cabinet now contained about 3000 specimens. Morgan's paper on The Stone and Bone Implements of the Arickarees appeared in the 21st Annual Report of the State Cabinet.
- 1870 Celebrated fraud, the "Pompey Stone," deposited by Albany Institute.
- 1871 Purchase of Jephtha R. Simms collection.
- 1877 Donation of F. E. Aspinwall collection. Adelbert G. Richmond, who later became Honorary Curator in Archeology, donated his collection with S. L. Frey, both of Canajoharie, N. Y.
- 1880 The Aboriginal Work on Bluff Point, Yates County, N. Y. by S. Hart Wright was published in the 34th Annual Report on the New York State Museum of Natural History.
- 1889 State Museum of Natural History became part of The University of the State of New York.
- 1896 The Legislature passed an act providing for an Indian Section of the State Museum, with an appropriation of \$5000 to make and arrange a collection. This responsibility was placed on Adelbert G. Richmond, of Canajoharie, by appointing him Honorary Curator in Archeology to serve without salary.
- 1897 Legislature granted \$2000 to purchase collections. With the assistance of Mrs Harriet Maxwell Converse numerous important additions resulted. The manuscripts of the Rev. William M. Beauchamp on Aboriginal Chipped Stone Implements of New York and Polished Stone Articles Used by the New York Aborigines were purchased and published as Museum Bulletins 16 and 18, respectively.
- 1898 Harriet Maxwell Converse Collection consisting mostly of wooden masks, donated by her. Legislature appropriated \$2000 additional. Honorary Curator in Archeology, Adelbert G. Richmond, died. Rev. William M. Beauchamp is given title of Writer of Bulletins on Archeology and his Earthen-

- ware of the New York Aborigines is issued as Museum Bulletin 22.
- 1900 The Iroquois Silver Brooches, by Harriet Maxwell Converse, was included in the 54th Annual Report of the State Museum. Aboriginal Occupation of New York, by William M. Beauchamp was issued as State Museum Bulletin 32.
- 1901 The award of "Honorable Mention" was conferred on the State Museum at the Pan-American Exposition for its exhibit of Ethnological and Archeological Collections. Wampum and Shell Articles Used by the New York Indians, by William M. Beauchamp, was issued as Museum Bulletin 41.
- 1902 Horn and Bone Implements of the New York Indians and Metallic Implements of the New York Indians, by William M. Beauchamp, were issued as Museum Bulletins 50 and 55 respectively.
- 1903 Metallic Ornaments of the New York Indians, by William M. Beauchamp, was issued as Museum Bulletin 73.
- 1904 William M. Beauchamp was given the honorary title of Archeologist, State Museum. Arthur C. Parker was engaged as a Temporary Assistant. At this time there was created a Division of Science of the Education Department when the Department of Public Instruction was combined with The University of the State of New York.
- 1905 The following, written by William M. Beauchamp, were issued as State Museum Bulletins: No. 78, History of the New York Iroquois; No. 87, Perch Lake Mounds; with Notes on Other New York Mounds and Some Accounts of Indian Trails; No. 89, Aboriginal Use of Wood in New York.
- 1906 Arthur C. Parker was appointed to the official position of Archeologist, State Museum. Much material was obtained from Indian reservations in the State and through field work in Chautauqua county. The Joseph E. Mattern Collection, mostly from Monroe county, and the R. W. Amidon Collection from St Lawrence county, were acquired.
- 1907 Custody of the famous wampum belts of the Iroquois Confederacy was transferred to the State Museum. These belts are the finest of their kind and the most valuable in existence.
- The continuation of field operations in Chautauqua county was rewarded with large amounts of artifacts.

The following, written by William M. Beauchamp, were issued as State Museum Bulletins: No. 108, Aboriginal Place Names of New York; No. 113, Civil, Religious and Mourning Councils and Ceremonies of Adoption of the New York Indians; No. 117, written by Arthur C. Parker, on Excavations in an Erie Indian Village and Burial Site at Ripley, Chautauqua County, N. Y.

- 1908 Iroquois Myths and Legends, by Harriet Maxwell Converse and Arthur C. Parker, was issued as State Museum Bulletin 125. Receipt of a gift from Mrs Frederick F. Thompson of Canandaigua, N. Y., to build the series of six Iroquois Indian groups. These are still the finest series of ethnological habitat groups of their kind. Highly successful excavations carried on near Irving, N. Y.
- 1909 Extensive Minsi Indian village site excavated near Port Jervis, N. Y., by the assistants in archeology, E. R. Burmaster and N. T. Clarke.
- 1910 Field excavations conducted in Monroe, Chautauqua, Broome, Livingston, Jefferson and Yates counties. Iroquois Uses of Maize and Other Food Plants, by A. C. Parker, issued as State Museum Bulletin 144.
- 1911 Great portion of Archeological and Ethnological Collections destroyed by the State Capitol fire on March 29th. Collections were temporarily on exhibit in the corridors on the fourth floor at the head of the western staircase. The A. W. Holden Collection was acquired.
- 1912 Moving operations to new Museum quarters in the State Education Building commenced. The O. C. Auringer Collection donated by gift of Dr Albert Vander Veer.
- 1913 Exhibition cases, except those for the Indian Groups, installed. The following private collections were purchased: R. D. Loveland, Watertown; Charles P. Oatman, Liverpool; Alva S. Reed, Livonia; Ward E. Bryan, Elmira; R. E. Van Valkenburg, Mount Upton; C. A. Holmes, New Berlin; Raymond G. Dann, Fairport; Frederick H. Crofoot, Sonyea. Noah T. Clarke was appointed Assistant Curator of Archeology and Ethnology. The Code of Handsome Lake, by Arthur C. Parker, was issued as Museum Bulletin 163.
- 1914 Construction of Indian Group cases started. Private collections were purchased from L. D. Shoemaker, Elmira; Dwinel F. Thompson, Troy; Otis M. Bigelow, Baldwinsville.

- 1915 Indian Group cases completed and Groups installed; also the major portion of other cases filled with collections.
- 1916 Formation of the New York State Archeological Association. The Constitution of the Five Nations, by Arthur C. Parker issued as Museum Bulletin 184.
- 1917 Installation of Seneca Bark Lodge. Completion of murals for entrances to Indian Group Hall and conventional decoration of walls of this hall by David C. Lithgow, artist of the groups.
- 1918 Purchase of the Alvan H. Dewey collection through the gift of Mrs Frederick F. Thompson.
- 1920 The Archeological History of New York, by Arthur C. Parker, was issued as State Museum Bulletins 235-38.
- 1921 Survey and excavation of Flint Mine Hill, near Coxsackie, N. Y.
- 1922 Gift by Mrs John Boyd Thacher of the original contract of the first purchase of land near Albany from Indians in 1630. Excavations conducted at Vine Valley, Yates county.
- 1923 Legislative bill passed into law making it a misdemeanor to make and sell fraudulent archeological artifacts. Fundamental Factors in Seneca Folk Lore, by Arthur C. Parker, published in the Report of the Director for 1923.
- 1925 Arthur C. Parker's resignation as Archeologist became effective January 1st. Noah T. Clarke was appointed to this position on March 1st. Rev. William M. Beauchamp died December 13th.
- Archeological reconnaissance at Chittenango Falls, Jamesville, Cazenovia, Pompey and Manlius. Excavations carried on near Fort Plain.
- 1927 Gift of four Iroquois wampum belts by Emma Treadwell Thacher. The Thacher Wampum Belts in the New York State Museum, by Noah T. Clarke, published in the 22d Annual Report of the Director, Museum Bulletin 279.
- 1928 Gift of the Rev. William R. Blackie Collection.
- 1929 Survey of privately owned collections in the State and survey of storage and study material in Museum was started.
- 1931 The Wampum Belt Collection of the New York State Museum, by Noah T. Clarke, published in the 24th Annual Report of the Director, Museum Bulletin 288.
- 1932 Gift of Fred C. Gabriel Collection from Seneca Lake.

- 1933 Position of "Archeologist" changed by statute to that of State Archeologist.
- 1934 Gift of Kenneth H. Mynter Collection from Columbia county.
- 1937 The Indian Groups of the New York State Museum and a Description of the Technic, by Noah T. Clarke, and History of the Indian Groups with a Description of the Technic, by David C. Lithgow, were published in the 30th Report of the Director, Museum Bulletin 310.

Much of the time in the past few years has been devoted to the cataloging and care of acquired collections in the Museum and less effort spent on the acquisition of new materials through excavation.

### SKETCH OF THE HISTORY AND ART COLLECTIONS OF THE STATE MUSEUM

BY CHRIS A. HARTNAGEL, *Assistant State Geologist*, AND CHARLES C. ADAMS, *Director*

#### Chronology

- 1847 Regents of the University began the formation of a "Historical and Antiquarian Collection."
- 1849 Second Annual Report of the Regents of the University lists additions to the historical collection, p. 71-79.
- 1891 Received from the Albany Institute samples of soil collected by the first agricultural and geological survey in America—the Van Rensselaer survey of 1818. These samples with original vials and labels are now on exhibition in the geological hall of the State Museum.
- 1901 Received November 21, 1901, from New York State Fair Commission, a collection of agricultural implements and materials formerly belonging to the New York State Agricultural Society. The collection has been cared for by the State Museum for more than 35 years.
- 1906 Issued a descriptive account with illustrations of the early pottery and glass utensils manufactured in the State. (Second Report of Director of Science Division 1905, State Museum.)
- 1908 At the regular meeting of the Board of Regents on March 12, 1908, a State Historical Museum program was made a part of the duties of the State Museum.

- Printed circular April 8, 1908, from the State Museum publicly announcing the Regents policy in establishing a State Historical Museum as a part of the New York State Museum. Reprinted on pages 113-17.
- 1909 Issued a printed comprehensive plan for a State Historical Museum. (See paper by Dr John M. Clarke, entitled, A State Historical Museum, p. 1-12, 1909.) The plan included exhibition groups as follows:
- 1 *Aborigines* (State Museum Indian Groups). Groups completed at no cost to the State.
  - 2 *Dutch culture*. Living room and kitchen equipped with utensils and materials appropriate to the period.
  - 3 *German culture*, of the Hudson, Schoharie and Mohawk valleys.
  - 4 *Huguenot Settlements*, of Ulster county and the lower Hudson.
  - 5 *English Colonial Period*. Rooms equipped with furnishings.
  - 6 *Frontier Life*, of central-western New York.
- 1920 Issued, October 1, 1920, 1000 printed circulars which were sent to farmers and residents of the State asking them to donate agricultural implements to the State Museum. See page 118, where the circular is reprinted.
- 1924 Campaign conducted during the spring and summer by the State Museum resulted in collection of 64 old agricultural implements, including an Ambler mower built previous to 1835.
- 1926 Collected from Ambler farm near Nassau, fully equipped cheese press, grain cradles and other old farm implements.
- 1927 Shaker Collection. Systematic efforts were begun to make an industrial collection illustrating all phases of Shaker life and industries. Photographic survey was made of the Watervliet Family buildings. Extensive collections of objects were made at Watervliet, N. Y., Mount Lebanon, N. Y., and Hancock, Mass.
- 1928 Rear Admiral William P. Potter, Sarah W. Potter and Catharine E. B. Potter Collection donated by Catharine E. B. Potter.
- 1928-36 Temporary Curator of History, William L. Lassiter, devoted mainly July and August each summer to the care, cataloging and storage of the historic materials.

- 1929 Admiral Charles D. Sigsbee Collection donated by Mrs Nellie G. Milligan.
- 1930 Dr James N. Vander Veer began actively to build up the medical history collection.
- 1933 Publication of Dr E. D. Andrews' Community Industries of the Shakers, Museum Handbook 15.
- 1933 Irving Photographic Historic Collection, contains daguerreotypes, negatives, photographs, cameras and other equipment.
- 1936 The James Hall Collection donated by Mrs P. M. Wheeler. A valuable collection of medals, diplomas and other memorabilia.

### Historical Collection

Perhaps the earliest reference to antiquarian and historical collection as related to the State Museum is contained in the (First) Annual Report of the Regents of the University on the condition of the State Cabinet of Natural History for 1847 transmitted in 1848. On page 6 of this report is the following statement, "Mr John J. Jenkins of North Salem, Westchester County, has also presented his map of that town to the Antiquarian and Historical Collection which the Regents are endeavoring to form." As far as we are aware no change in the attitude of the State Board of Regents has taken place since that time and during the past 80 years the State Museum has received historical material nearly every year. In 1853 the Board of Regents directed the publication of a Catalog of the State Cabinet of Natural History of the State of New York and of the Historical and Antiquarian Collection Annexed Thereto (p.49-56). This catalog was published as a separate paper in addition to its being contained in the Sixth Annual Report of the Regents of the University, 1853.

The New York State Agricultural Society in the early years of its history had a museum and in 1859 it issued a "Catalogue of Museum, New York State Agricultural Society." In November 1901 the New York State Fair Commission transferred to the State Museum certain articles listed in the catalog of the New York State Agricultural Society of 1859 together with some articles which had been received by the State Agricultural Society after the publication of the catalog in 1859. Many articles contained in the printed catalog of the Agricultural Society of 1859 were not turned over to the Museum. It is assumed that much of the listed material printed in the 1859 catalog was either lost or disposed of on account of lack of room. In 1925 a number of articles, belonging to the

State Museum some of which were received from the State Fair Commission in 1901, were lent to the Department of Farms and Markets for exhibition at the New York State Fair at Syracuse. All articles were lent with the approval of the Administration Division and after the fair all articles were returned to the Museum.

In January 1926 the New York State Agricultural Society was offered as a gift from the city of Albany through Mayor Hackett the old James Hall "mansion" located in Lincoln Park, Albany. According to the newspaper account the gift was accepted by E. R. Eastman, president of the New York State Agricultural Society, but the proposed plan was not carried out. The relics exhibited at the State Fair in 1925 are said to have attracted thousands of persons to the booth where they were displayed. An effort was made to have a permanent exhibit made at Syracuse and this was accomplished by the erection of a museum building on the State Fair grounds.

In New York State Bulletin 219-20 is the following statement: "The broad scope of the State Museum was clearly and succinctly defined in the Education Law (as amended in 1910) under article 3, which related to the objects and functions of the University. Section 54 of that law reads as follows: 'All scientific specimens and collections, works of art, objects of historic interest and similar property appropriate to a general museum, if owned by the State and not placed in other custody by a specific law, shall constitute the State Museum.'"

The art materials are mainly industrial, but also include furniture, pottery, glass, textiles, pewter, silver, and a few drawings, engravings and paintings. This part of the collection is in the greatest need of expansion.

### Report of the Committee on State Science Work and State Museum

*(Journal of a Meeting of the Board of Regents of The University of the State of New York, March 12, 1908 p. 443-447.)*

Regent Smith, as chairman of the committee on State science work and State Museum presented the following report upon the establishment of a State historical museum.

#### A STATE HISTORICAL MUSEUM

Section 22 of the University law as amended to 1904 reads in part as follows:

**State museum: how constituted.** All scientific specimens and collections, works of art, objects of historic interest and similar

property appropriate to a general museum, if owned by the State and not placed in other custody by a specific law, shall constitute the State Museum.

The State of New York has made provision for the acquisition and preservation of historical records but these only in the form of documents, written or printed, of which the State Library has now become a vast treasure-house. The Bureau of Military Statistics pertaining to the Department of the Adjutant General has brought together by voluntary cooperation an extensive store of military relics, in very large part memorials of the Civil War; the State Historian is authorized to "collect, collate, compile, edit and prepare for publication all official records, memoranda and data relative to the Colonial Wars, War of the Revolution, War of Eighteen Hundred and Twelve, Mexican War, and War of the Rebellion, together with all official records, memoranda and statistics affecting the relations between this commonwealth and foreign powers, between this State and other states and between this State and the United States." He is not empowered to acquire other historical materials than the data above referred to, nor has he authority of law or appropriations to acquire historical "objects" as distinguished from records, memoranda and data. There is thus no department of the State which has adequate authority, breadth of scope and available funds for acquiring and conserving "objects" of historical importance, in distinction from historical "documents," except the Education Department through the agency of the State Museum.

#### *Importance of a State Historical Museum*

Throughout the history of the commonwealth no systematic effort has ever been made on the part of the State to conserve the relics of its history. In the early career of the State Museum a good many objects pertaining to the early culture of the community came into its possession, but in the development of the museum, materials regarded as of more purely scientific character were considered as the proper field of the institution and its activities in acquisition were restricted to that scope. The sphere of its functions is now widened by the University law above cited.

The State has shown an appreciative spirit and most laudable activity in the acquisition or protection of places with historic associations. With or without volunteer private cooperation it has taken over historic property, marked with commemorative monuments sites of momentous and critical events in its history, raised

imposing memorials on its battlefields and statues to some of its distinguished sons. The spirit which has inspired these results has been born and nursed into expression by a multitude of patriotic societies, some of general, others of more local scope. But further than this in the conservation of its historical materials the State has not gone. It has left wholly to local civic associations the conservation of the relics of its history. There is scarcely an intelligent community in the State which has not an historical society engaged not merely in retelling the often half remembered story of local events but in conserving the materials associated with the early stages of its progress and the personal careers of its distinguished citizens.

It would be impossible to estimate the value of the collections of these societies to the student of New York history and the edification, satisfaction and pride with which these are contemplated by the citizens of this State. But these results have been achieved alone by private organizations moved by the same proper spirit which may justly require of the State that it conserve the monuments of its own cultures.

If there is ever to be a State Historical Museum certainly it is time to inaugurate it and if the effort is made it should be made persistently, with a clearly defined purpose in view. Time is passing. New York has behind it 300 years of successive and varied cultures and back of that the cultures of the aborigines. It is no longer easy to acquire the relics of these cultures. In another generation they will all have passed into the possession of public or private museums.

It is with the relics of the different settlements rather than with its critical events that an historical museum should concern itself. Such collections of historical objects should depict in the truest and most realistic fashion the modes and means of living in each successive phase of culture, should reproduce by proper association a faithful picture of domestic life and habitudes. The educational value of such demonstrative collections would be of high quality and an essential supplement to the training of the schools.

New York need not, because of its relative youth, invite the difficulties which have confronted other countries with longer histories, in the formation of historical museums. The making of such collections has always been too long deferred. But New York may well follow the example and hope for the results which other nations have achieved in this direction, for in all the countries of Europe are no collections of whatever character of so general

interest and instructiveness to the public as the historical museums such as those of Amsterdam, Hamburg, Berlin, Nuremberg, Zurich and Basel.

*Plan for a State Historical Museum*

There is a vast difference between a miscellaneous assortment of historical objects, each out of its proper association with only its individual story to tell or its personal associations to invite attention, and an historical museum scientifically arranged with its objects all brought into their proper historic perspective. There are thousands of valuable historic relics in local collections of the State, which must by the very nature of the conditions under which they are brought together be left to tell their story as best they can by themselves. There is but one method however in which such objects can be made adequately to present their full significance and that is the method of proper association. As an outline of what a State historical collection might be the following suggestions are made.

In general, first, a portrayal of the successive or contemporaneous cultures in this State by a reproduction of the mode of life and dress in the various phases of our civilization. For such purposes a series of rooms assigned to the various cultures would display:

1 The domestic life of the aborigines: an Indian lodge appropriately equipped with the daily utensils of the aborigines, the squaw at the handmill, the potter molding clay vessels and pipes, the brooch maker and the arrow maker with their equipment. It would be vastly to the credit of a state like New York, the home of the Iroquois Confederacy the earliest and mightiest of all aboriginal leagues, the seat of momentous events in Indian and frontier history, the founder and supporter of the State Museum which is the possessor of priceless and unexampled collections of Iroquois culture relics and the official custodian of the archives of the Six Nations, to go still further into the realistic portrayal of Indian life and customs by the reproduction of certain important ceremonials and councils of which there remain today but stories on printed pages. New York could afford to keep this romantic period of its history before the eye and transmit it in reasonable fullness and force to posterity.

2 The domestic life of the Dutch culture, represented by one or two rooms, say a living room and kitchen equipped with the utensils and materials appropriate to the period of the Dutch settlement.

3 Some portrayal of the German culture of the upper Hudson, Schoharie and Mohawk valleys—a culture which though transient left a recognizable impress on the community; and of

4 The Huguenot settlements in Ulster county.

5 Rooms equipped with the furnishings of the English colonial revolutionary period before the invasion of the French influence.

6 An adequate representation of life on the frontier of central western New York before the extinction of the Indian land titles and the Massachusetts claims.

Such a carefully coordinated collection would naturally be supplemented by other materials which could not be placed in such associations but would help to complete the portrayal of past cultures.

In the geological department of the State Museum an earnest effort is being made to bring together materials which will demonstrate the historical development and present working of such industries as depend upon the natural mineral resources of the State. In this undertaking a willing and appreciative cooperation with the producers of the State has been elicited. With the very best reason the State Museum may hope for an equally zealous cooperation of the citizens in the formation of an historical collection.

There are still to be had from the descendants of the older families of this State many historical relics; few are treasured, more are not. Some are merely harbored for their associations, many are lying in garrets and barns. An appeal to the patriotic instinct coupled with an assurance that such relics if placed in the State's custody will not only never be deprived of their personal associations, but be placed in their proper surroundings, should not fail to be effective.

It is submitted that such an historical collection as is here outlined for New York should exist and that the acquisition of such materials by the State should not be delayed. There is no historical collection in America arranged on such a basis as here suggested.

Respectfully submitted

T. GUILFORD SMITH  
DANIEL BEACH  
LUCIAN L. SHEDDEN

On motion of Regent Vander Veer,

*Voted*, That the report of the committee be adopted and that the Commissioner of Education be authorized to direct the establishment of such a State Historical Museum through the Director of the State Museum.

## A Collection of Agricultural Implements

[BY DR JOHN M. CLARKE]

It is the desire of the State Museum to bring together for preservation and eventual exhibition, the implements used in the early days of this State in farming operations of all kinds. For this purpose the present appeal is sent out among the farming communities that any such implements used *prior* to 1850 be turned over to the State Museum. In the older communities and among the long-cultivated farms there are still some of these ancient implements which are bound to be destroyed if they are not rescued soon. No attempt has before been made to preserve and bring together these historical evidences of our agricultural development, and the preservation of these things must be attended to without delay if they are to be saved at all.

Just one hundred years have passed since the inauguration of the first Agricultural and Geological Survey in New York State under the patronage of the Honorable Stephen Van Rensselaer. One of the results of this survey and the later formed Natural History Survey was the collection of objects of scientific and historical interest which formed the nucleus of the present State Museum. The soil samples, with original labels still intact, collected by the Van Rensselaer Survey a hundred years ago, are still in the possession of the State Museum.

Among such historical material already in the Museum is a goodly number of agricultural and household implements used in the early days of the republic and in colonial times and much of interest that is still later. The collection is, however, far from complete or representative. Our attention has frequently been called to the fact that through lack of storage room, carelessness, or want of appreciation of their proper scientific value, many such objects have been lost or destroyed, but examples still remain and their owners should be willing to have them placed where they could be kept intact and serve as objects of interest to present and future generations.

Will you not cooperate with the State Museum in this undertaking? No such collection has been made in this country and the educational interest of an assemblage like this is considerable. If you know or can learn of the location of such objects will you not advise us? If you can acquire any for the State Museum it would be a genuine service.

Look about among the old traps in your barns, woodsheds and garrets and see if there is not something of this kind that you would like to have in the State Museum. The Museum will pay transportation and any necessary cost of packing, and every donor's name will be preserved with the article sent. At the present time the State Museum is not in position to care for pieces larger than 3 feet in shortest diameter unless larger pieces than this can be taken apart and put together again. Address: *Director, State Museum, Albany, N. Y.*

October 1, 1920.

### Summary Remarks

The preceding record reveals, very clearly, and that of the Archeological Section as well, that for more than three-quarters of a century there has been a definite recognition of the broad field of history as falling within the province of the State Museum. In spite of the relative neglect of other aspects, Indian ethnology and archeology have received the most attention, as the work of Lewis H. Morgan, William M. Beauchamp, Arthur C. Parker and David C. Lithgow attest.

Industrial objects, however, such as agricultural materials and other products of the industrial arts, have been accumulating and warrant adequate recognition, support and a modern development.

The vote of the Regents in 1908, instructing the Director, through the Commissioner of Education, to develop the Historical Collections was merely a further confirmation and emphasis of a long-established policy, but one for which no adequate funds or personnel have ever been provided.

The neglect of the fine arts is even more surprising when one reflects upon the important work which the artists of this State have played in the leadership of art in America, and particularly in view of the fact that New York City is the outstanding art center in America. Private initiative alone has cultivated the recognition of the creative work of these artists, and it would be fortunate if the artists of this State and those with an appreciation of this phase would initiate an active movement for the development in the State Museum of a representative collection and exhibits of painting, sculpture, graphic arts, and their applications to all the arts of modern life.

The influence of such a collection and exhibit of the fine arts on the schools would no doubt be salutary, stimulate a proper development of school museums help to bring the fine arts more

generally to the people and assist in overcoming the old belief that the fine arts are only for the more privileged, and are not intended for the general public.

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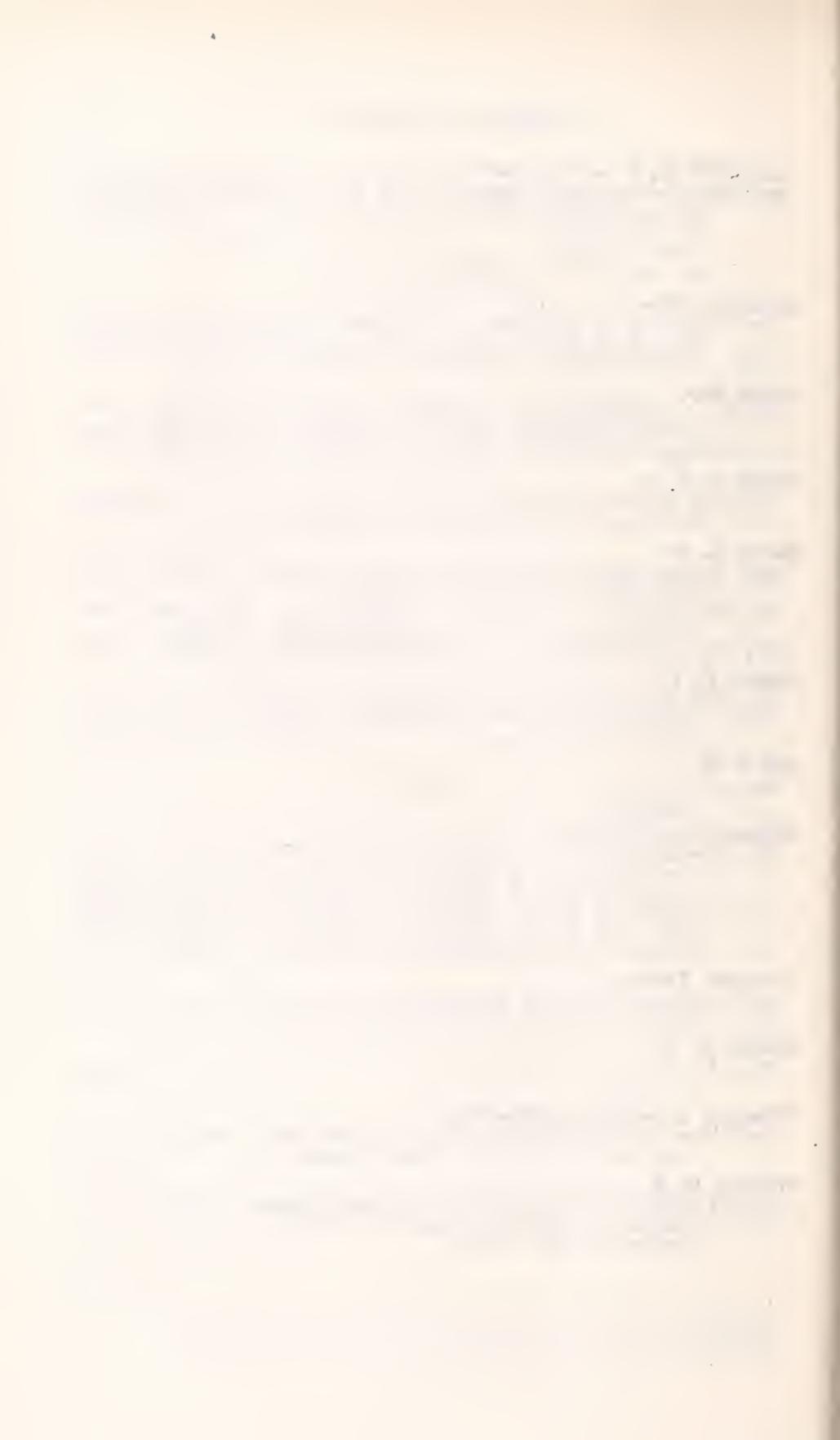
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# HISTORIC WAR VESSELS IN LAKE CHAMPLAIN AND LAKE GEORGE

BY DOROTHY U. SMITH, *Assistant Attorney-General, New York  
State Department of Law*

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Private citizens have recovered from the waters of Lake Champlain at least three of the vessels of the fleet commanded by Benedict Arnold which took part in the battle of Valcour island October 11, 1776, and the continuation of that battle near Crown Point October 13, 1776.

The salvaged boats exemplify old types of naval architecture. The "Revenge," which appears to have been the first vessel recovered, is a schooner, or fore and aft rigged vessel. Since 1909 it has been kept on the lake shore near Fort Ticonderoga by a private citizen. The "Royal Savage," the American flag ship, a schooner said to have been captured from the British, was recovered in 1934 off the southwest point of Valcour Island by Lorenzo F. Hagglund, of Port Washington, N. Y. The following year Mr Hagglund and J. Ruppert Schalk, of New York City, raised the gondola "Philadelphia," a smaller type of boat. It is in a very good state of preservation. In addition to boats of the types recovered, the fleet of 16 vessels, manned by more than eight hundred patriots, also included a sloop, or vessel having one mast and a fore and aft rig, and several galleys which are defined as "large, low, usually one-decked vessels propelled by both oars and sails."

In February 1936 Dr Charles C. Adams, Director of the State Museum, wrote to the Superintendent of State Police asking that the Police prevent interference with the sunken war vessels in Lake Champlain and Lake George. In so doing the Director referred to section 54 of the Education Law, which provides:

**State museum; how constituted.** All scientific specimens and collections, works of art, objects of historic interest and similar property appropriate to a general museum, if owned by the state and not placed in other custody by a specific law, shall constitute the state museum, . . .

The State Police sent Doctor Adams' letter to the Attorney-General and asked his advice. A study of the history of the fleet was a result.

### CONSTRUCTION OF THE FLEET

There is a rather complete documentary history of the fleet. With the exception of the "Royal Savage," said to have been seized by Montgomery at St John's, the schooner "Liberty," captured from the British by Herrick or Oswald at Skenesborough, and the sloop "Enterprise" captured by Arnold at St John's, it appears to have been built by the Continental Congress.

The Journal of Congress for Wednesday July 3, 1776, reads:

RESOLVED, that the Marine Committee be empowered to contract with shipwrights to go to Lake Champlain on the following terms:

to allow each man at the rate of \$34.00, and  $\frac{2}{3}$  per month; one month's pay to be advanced, upon their giving security, if required;

each man to be allowed one ration and one-half and one and one-half pint of rum a day;

their tools and arms to be valued;

two-thirds of their wages to be paid monthly to whomever they shall leave the power of receiving it;

their pay to commence the day they sign articles and continue until they are discharged, with an allowance of one day's pay for every twenty miles between the place where discharged and their respective homes.

These minutes probably refer to the building of the fleet at Skenesborough, now Whitehall, N. Y., under Arnold's supervision during the summer of 1776. (Arnold's Life of Benedict Arnold, p. 107-108; Seller's Life of Arnold, p. 112 *et seq.*, Sherwin's Life of Arnold, p. 108.)

Volume I of Series 5 of the American Archives for 1776, contains, in page 511, a letter dated July 22, 1776, from Major General Horatio Gates, at Ticonderoga to Major General Philip Schuyler, who was then in command of the army of the Northern Department. At page 512 General Gates wrote:

. . . General Arnold sets off today for Skenesborough, if possible to expedite the building of the gondolas. I hope we shall not be too late with our fleet. Four gondolas are all that are built, and it will take a fortnight to finish those that are upon the stocks. This I am assured of by an officer who left Skenesborough yesterday; he is an intelligent young man, is well versed in maritime affairs, and is to command one of the gondolas. The corps of carpenters which you tell me are ordered to Skenesborough, will arrive late; but that, if the enemy move slow, may answer. . .

At page 603 of the same volume is set forth a letter from Colonel Matthew Ogden to Major Aaron Burr, dated at Ticonderoga July 26, 1776, in which he says: "General Arnold will command the water-craft on the lake in person."

On July 29, 1776, General Gates wrote from Ticonderoga a letter to John Hancock, President of Congress, which appears to have been read in Congress August 8, 1776. It says:

... General Arnold (who is perfectly skilled in maritime affairs) has most nobly undertaken to command our fleet upon the Lake. With infinite satisfaction, I have committed the whole of that department to his care, convinced he will thereby add to that brilliant reputation he has so deservedly acquired. . .

From this it appears that General Gates may have appointed Arnold to command the fleet without consulting Congress. General Schuyler replied to General Gates August 3, 1776, that he was extremely happy "that General Arnold had undertaken to command the fleet" (same volume, page 747). That General Washington was also pleased, appears from a letter to General Gates dated August 14, 1776, which is set forth at page 952 of the same volume of the Archives. General Washington wrote:

... I am glad to hear the vessels for the Lakes are going on with such industry. Maintaining the superiority over the water is certainly of infinite importance. I trust neither courage nor activity will be wanting in those to whom the business is committed. If assigned to General Arnold, none will doubt of his exertions. . .

At page 680, of volume 1, series 5 of the American Archives, General Arnold's letter from Ticonderoga July 30, 1776, to General Schuyler is set forth. He reports the progress of the shipbuilding and the arrival of two companies of carpenters, one from Connecticut, the other from Philadelphia. He says:

... With the approbation of General Gates, I sent to Connecticut for three hundred seamen. The express had orders to call on you (if returned) and take your instructions in the matter. As it was uncertain if you were returned, I wrote Captain Varick, desiring him to give the express a warrant on the Paymaster-General for one thousand pounds, to pay the bounty of the seamen. As the treasury was empty, he has proceeded on to General Washington. We are informed, that of the four regiments coming from Boston, there is a very considerable number of seamen, who are daily expected.

At page 682 of the same volume is set forth an extract of an unsigned letter from Ticonderoga dated July 30, 1776. It reads in part:

... A number of ship-carpenters from Philadelphia have arrived at Skenesborough, where they are building galleys, so that in a short

time we shall have a strong force on the Lake. Some companies of Militia from New-England have also arrived there. . .

Further evidence that the fleet was provided by the united effort of the Colonies appears at page 744 of the same volume of the Archives. There is a letter dated at Albany, August 3, 1776, from Captain Richard Varick, who was secretary to Major General Schuyler, to General Washington. It reads:

MAY IT PLEASE YOUR EXCELLENCY: Agreeable to General Schuyler's orders, I do myself the honour to enclose you three lists of articles wanted for the publick service on Lake-Champlain, contained in the paper marked A; and do also enclose your Excellency another paper, marked B, containing a true account of such articles of these lists as cannot possibly be procured at this place.

An express is sent from this place to Connecticut, with instructions to purchase the sailcloth and cordage, which General Arnold says is to be had in that Colony; and an express is also sent to the forges and furnaces at Livingston's Manor and Salisbury, to procure the swivels and grape, double-headed and chain shot, if to be had there. None of the other articles are to be had nearer than New-York. And I am directed by the General to request your Excellency, in his name, to order the several articles which are wanting to be sent up with all possible despatch to this place. With the assistance of the publick Store-Keeper, I have procured from the proprietors of vessels, and the merchants of this place and Schenectady, all the anchors, cables, and cordage, that was to be had from them for which I have made a full allowance.

I am, with respect and esteem, your Excellency's most obedient and very humble servant,

RICHD. VARICK,  
*Secretary to Major-General Schuyler*

To His Excellency General Washington, &c. &c.

P. S. The articles in B, marked with the letter C, are sent for to Connecticut, but not certain of being procured there.

R. V.

Long lists of articles were attached. The list marked "A" was subdivided into three parts entitled respectively:

- No. 1 List of Articles wanted for the Gondolas, Armed Vessels, and Batteaus, viz:
- No. 2 Articles wanted immediately for the Vessels and Gondolas on Lake Champlain, July 20, 1776.
- No. 3 List of Articles wanted for the Vessels on the Lake Champlain, July 24, 1776, viz:

List "B" was also subdivided into three parts:

- No. 1 Return of Articles wanted for the Publick Service on Lake Champlain, which cannot be procured at Albany, or at any place between this and New-York, except as per N. B. at the bottom.

- No. 2 General Arnold's first Requisition. Articles wanted immediately for the Vessels and Gondolas on Lake Champlain, July 20, 1776.
- No. 3 General Arnold's second Requisition. A list of Articles wanted for the Vessels on Lake Champlain, July 24, 1776.

On August 5, 1776, Captain Varick again wrote Washington and inclosed a copy of a letter from General Arnold to General Schuyler with the copy of a return of ordnance and ordnance stores wanted for the public service. The letter is printed at page 772 of volume 1 of series 5 of the American Archives, and reads:

. . . Of the many articles wanted, handspikes, round shot, rammers, sponges, worms, priming-horns, priming-wires, and tube-boxes, are the only ones that can possibly be procured or made at or near this place; and no copper, lead, or tin, is to be had between this place and New-York. I must therefore request your Excellency, in General Schuyler's name, to order the several articles which are wanted and not to be procured here to be sent to this place without the least delay.

In mine of the 3d, by the express, I forgot to inform your Excellency that I had sent for the anchors to Colonel Robert Livingston.

On August 7, 1776, Major General Horatio Gates issued "Orders and Instructions for the Hon. Benedict Arnold, Esq., Brigadier-General in the Army of the United States of America." These are set forth at page 826 of volume 1 of series 5 of the American Archives, and provide:

. . . It is a defensive war we are carrying on, therefore no wanton risk or unnecessary display of the power of the fleet is at any time to influence your conduct. Should the enemy come up the Lake, and attempt to force their way through the pass you are stationed to defend, in that case you will act with such cool, determined valour, as will give them reason to repent their temerity. But if, contrary to my hope and expectation, their fleet should have so increased as to force an entrance into the upper part of the Lake, then, after you shall have discovered the insufficiency of every effort to retard their progress, you will, in the best manner you can, retire with your squadron to Ticonderoga, . . .

As the most honourable the Congress of the United States rest a great dependance on your wise and prudent conduct in the management of this fleet, you will on no account detach yourself from it, upon the lesser services above mentioned. A resolute but judicious defence of the northern entrance into this side of the Continent, is the momentous part which is committed to your courage and abilities. I doubt not you will secure it from further invasion. . .

## ACCOUNTS OF THE BATTLE OF VALCOUR ISLAND

On October 12, 1776, Brigadier General Arnold wrote to Major General Gates a report of the first engagement between an American and a British fleet. It had taken place at Valcour Island on October 11th. His letter was written at Schuyler's Island, Lake Champlain. It is reported at page 1038, series 5, volume 2 of the American Archives.

*Schuyler's Island,*  
*October 12, 1776.*

DEAR GENERAL:

Yesterday morning, at eight o'clock the enemy's fleet, consisting of one ship mounting sixteen guns, one snow mounting the same number, one schooner of fourteen guns, two of twelve, two sloops, a bomb-ketch, and a large vessel (that did not come up,) with fifteen or twenty flat-bottomed boats or gondolas, carrying one twelve or eighteen-pounder in their bows, appeared off Cumberland Head. We immediately prepared to receive them. The galleys, and Royal Savage were ordered under way: the rest of our fleet lay at an anchor. At eleven o'clock they ran under the lee of Valcour, and began the attack. The schooner, by some bad management, fell to leeward, and was first attacked; one of her masts was wounded, and her rigging shot away. The captain thought prudent to run her on the point of Valcour, where all the men were saved. They boarded her, and at night set fire to her. At half-past twelve the engagement became general, and very warm. Some of the enemy's ships and all their gondolas beat and rowed up within musket-shot of us. They continued a very hot fire with round and grape-shot until five o'clock, when they thought proper to retire to about six or seven hundred yards distance, and continued the fire till dark.

The Congress and Washington have suffered greatly; the latter lost her First Lieutenant killed, Captain and Master wounded. The New-York lost all her officers except the Captain. The Philadelphia was hulled in so many places that she sunk about one hour after the engagement was over. The whole killed and wounded amounted to about sixty. The enemy landed a large number of Indians on the island and each shore, who keep an incessant fire on us, but do little damage. The enemy had, to appearance, upwards of one thousand men in batteaus prepared for boarding. We suffered much for want of seamen and gunners. I was obliged myself to point most of the guns on board the Congress which I believe did good execution. The Congress received seven shot between wind and water; was hulled a dozen times; had her mainmast wounded in two places, and her yard in one. The Washington was hulled a number of times; her mainmast shot through, and must have a new one. Both vessels are very leaky, and want repairing.

On consulting with General Waterbury and Colonel Wigglesworth, it was thought prudent to return to Crown-Point, every vessel's ammunition being nearly three-fourths spent, and the enemy greatly superior to us, in ships and men. At seven o'clock, Colonel

Wigglesworth, in the Trumbull, got under way; the gondolas and small vessels followed; and the Congress and Washington brought up the rear. The enemy did not attempt to molest us. Most of the fleet is this minute come to an anchor. The wind is small to the southward. The enemy's fleet is under way to leeward, and beating up. As soon as our leaks are stopped, the whole fleet will make the utmost despatch to Crown-Point where I beg you will send ammunition, and your further order for us. On the whole, I think we have had a very fortunate escape, and have great reason to return our humble and hearty thanks to Almighty God for preserving and delivering so many of us from our more than savage enemies.

I am, dear General, your affectionate, humble servant,

B. ARNOLD.

P. S. I had not moved on board the Congress when the enemy appeared, and lost all my papers and most of my clothes on board the schooner. I wish a dozen batteaus, well manned, could be sent immediately, to tow up the vessels in case of a southerly wind.

I cannot, in justice to the officers in the fleet, omit mentioning their spirited conduct during the action.

B. A.

This letter General Gates sent to General Schuyler, in whose absence Captain Varick forwarded it to General George Washington.

On page 1039 of the same volume Captain Varick's list of the armed vessels in Lake Champlain is set forth:

A List of Armed Vessels in Lake Champlain

Names of Vessels and Commanders		No. of Guns	Size of Guns	No. of swiv- els	No. of Men
Sloop Enterprise.....	Dickenson.	12	4 lbs.....	10	50
Schooner Royal Savage.	Hawley...	12	4 6-lbs, 8 4-lbs...	10	50
Schooner Revenge.....	Seaman...	8	4 4-lbs 4 2-lbs...	10	35
Schooner Liberty.....	Premier...	8	2 4-lbs 4 2-lbs...	8	35
Gondola New-Haven...	Mansfield..	3	1 12-lbs 6 2-lbs...	8	45
Gondola Providence....	Simonds...	3	Ditto.....	8	45
Gondola Boston.....	Sumner...	3	Ditto.....	8	45
Gondola Spitfire.....	Ulmer.....	3	Ditto.....	8	45
Gondola Philadelphia...	Rice.....	3	Ditto.....	8	45
Gondola Connecticut...	Grant.....	3	Ditto.....	8	45
Gondola Jersey.....	Grimes....	3	Ditto.....	8	45
Gondola New-York.....	Reed.....	3	Ditto.....	8	45
Galley Lee.....	Daviss....	6	1 12-lbs 1 9-lbs 4 4-lbs.....	10	86
Galley Trumbull.....	Warner....	8	1 18, 1 12, 2 9, 4 6-lbs.....	16	80
Galley Congress.....	Arnold....	8	2 8-lbs, 2 12-lbs, 4 6-lbs.....	16	80
Galley Washington.....	Thatcher..	8	1 18, 1 12, 2 9, 4 4-lbs.....	16	80
*Galley.....	Chapple...	8	2 18-lbs, 2 12-lbs, 4 6-lbs.....	16	80

\* This galley was fitting at Tionderoga on the 12th, and will not be ready till next Saturday.

The above is a true copy taken from Colonel Trumbull's return on the 12th instant, by

RICH'D VARICK.

On October 15, 1776, Arnold, at Ticonderoga, wrote to Major General Schuyler his report of the continuation of the battle on October 13, 1776. It is set forth at page 1079 of volume 2, series 5 of the American Archives:

*List of the Enemy's Fleet on Lake Champlain*

I ship .....	18	12	pounders
I schooner .....	14	6	"
I do .....	12	6	"
I rideaux .....	6	24	} brass
		12	
	4	8	8-inch howitz

Twenty-eight gondolas, with one gun each, 12, 18, and 24-pounders, and one eight-inch howitz.

Two gondolas, three guns each, 12-pounders.

N.B. Two of the above gondolas sunk by our fleet the first day, and one blown up with sixty men.

*Ticonderoga, October 15, 1776.*

DEAR GENERAL:

I make no doubt before this you have received a copy of my letter to General Gates of the 12th instant, dated at Schuyler's Island, advising of an action between our fleet and the enemy the preceding day in which we lost a schooner and a gondola. We remained no longer at Schuyler's Island than to stop our leaks, and mend the sails of the Washington. At two o'clock, P. M., the 12th, weighed anchor with a fresh breeze to the southward. The enemy's fleet at the same time got under way; our gondola made very little way ahead. In the evening the wind moderated and we made such progress that at six o'clock next morning we were about off Willsborough, twenty-eight miles from Crown-Point. The enemy's fleet were very little way above Schuyler's Island; the wind breezed up to the southward, so that we gained very little by beating or rowing, at the same time the enemy took a fresh breeze from the northeast, and by the time we had reached Split-Rock, were alongside of us. The Washington and Congress were in the rear, the rest of our fleet were ahead except two gondolas sunk at Schuyler's Island. The Washington galley was in such a shattered condition, and had so many men killed and wounded, she struck to the enemy after receiving a few broadsides. We were then attacked in the Congress galley by a ship mounting twelve eighteen-pounders, a schooner of fourteen sixes, and one of twelve sixes, two under

our stern, and one on our broadside, within musket-shot. They kept up an incessant fire on us for about five glasses, with round and grape-shot, which we returned as briskly. The sails, rigging, and hull of the Congress were shattered and torn in pieces, the First Lieutenant and three men killed, when, to prevent her falling into the enemy's hands, who had seven sails around me, I ran her ashore in a small creek ten miles from Crown-Point, on the east side, when, after saving our small-arms, I set her on fire with four gondolas, with whose crews I reached Crown-Point through the woods that evening, and very luckily escaped the savages, who way-laid the road in two hours after we passed. At four o'clock yesterday morning I reached this place, exceedingly fatigued and unwell, having been without sleep or refreshment for near three days.

Of our whole fleet we have saved only two galleys, two small schooners, one gondola, and one sloop. General Waterbury, with one hundred and ten prisoners, were returned by Carleton last night. On board of the Congress we had twenty-odd men killed and wounded. Our whole loss amounts to eighty-odd.

The enemy's fleet were last night, three miles below Crown-Point; their army is doubtless at their heels. We are busily employed in completing our lines, redoubts, which I am sorry to say are not so forward as I could wish. We have very few heavy cannon, but are mounting every piece we have. It is the opinion of Generals Gates and St. Clair that eight or ten thousand Militia should be immediately sent to our assistance, if they can be spared from below. I am of opinion the enemy will attack us with their fleet and army at the same time. The former is very formidable, a list of which I am favoured with by General Waterbury, and have enclosed. The season is so far advanced, our people are daily growing more healthy.

We have about nine thousand effectives, and if properly supported, make no doubt of stopping the career of the enemy. All your letters to me of late have miscarried. I am extremely sorry to hear by General Gates you are unwell. I have sent you by General Waterbury a small box containing all my publick and private papers and accounts, with a considerable sum of hard and paper money, which beg the favour of your taking care of.

I am, dear General, your most affectionate, humble servant.

B. ARNOLD.

To Hon. Major-General Schuyler.

At the same time General Gates, who was also at Ticonderoga, sent a short note to General Schuyler. He said:

*Ticonderoga, October 15, 1776*

DEAR GENERAL:

You will herewith receive General Arnold's account of the defeat and almost total ruin of our fleet yesterday morning. It has pleased Providence to preserve General Arnold. Few men have ever met with so many hairbreadth escapes in so short a space of time.

Except the capture of General Waterbury and those with him, I do not think we shall lose a great many men. Upwards of two hundred, with their officers, escaped with General Arnold.

The ammunition, &c., I so long wrote for is much wanted here. I am distressed to the last degree till it arrives. This moment your favour from Saratoga of yesterday afternoon is put in my hands. Part of the lead, about three tons, is arrived, and you make me happy in acquainting me the other, &c., are so near at hand. The guard you mention, and the wise caution you give, shall be carefully attended to.

I am, in haste, your faithful and affectionate humble servant.

HO. GATES.

P. S. I beg you will send me all the spades you can collect, as fast as possible.

A British report of the engagement is available in a letter from Sir Guy Carleton, governor of Quebec, to Lord George Germain, British secretary of state for the American colonies (American Archives of 1776, v. II, series 5, p. 1040:

*On board the Maria, off Crown Point,  
October 14, 1776.*

MY LORD:

The Rebel fleet upon Lake Champlain has been entirely defeated in two actions, the first on the 11th instant, between the Island of Valcourt and the main, and the second on the 13th, within a few leagues of Crown-Point.

We have taken Mr. Waterbury, the second in command, one of their Brigadier-Generals, with two of their vessels and ten others have been burnt and destroyed; only three of fifteen sail, a list of which I transmit, having escaped. For further particulars I refer your Lordship to Lieutenant Dacres, who will be the bearer of this letter, and had a share in both actions, particularly the first, where his gallant behaviour in the Carleton schooner, which he commanded, distinguished him so much as to merit great commendation; and I beg to recommend him to your Lordship's notice and favour. At the same time I cannot omit taking notice to your Lordship of the good service done in the first action by the spirited conduct of a number of officers and men of the corps of Artillery, who served the gun-boats, which, together with the Carleton, sustained for many hours the whole fire of the enemy's fleet, the rest of our vessels not being able to work up near enough to join effectually in the engagement. The Rebels, upon the news reaching them of the defeat of their naval force, set fire to all the buildings and houses in and near Crown-Point, and retired to Ticonderoga.

The season is so far advanced that I cannot yet pretend to inform your Lordship whether any thing further can be done this year.

I am, &c.

GUY CARLETON.

LIST OF THE REBELS' VESSELS ON LAKE CHAMPLAIN, BEFORE  
THEIR DEFEAT.

*Schooners*

*Royal Savage*, eight six-pounders and four four-pounders. Went on shore, was set fire to, and blown up.

*Revenge*, four six-pounders, and four four-pounders. Escaped.

A sloop, ten four-pounders. Escaped.

*Row-Galleys*

*Congress*, two eighteen-pounders in the bow, two twelve and two two-pounders in the stern, and six six-pounders in the sides. Blew up.

*Washington*, same force. Taken.

*Trumbull*, same force. Escaped.

*The Lee*, a cutter, one nine-pounder in the bow, one twelve-pounder in the stern, and four six-pounders in sides. Run into a bay, and not known whether destroyed.

*Gondolas*

*Boston*, one eighteen-pounder in the bow, two twelve-pounders in the sides. Sunk.

*Jersey*, Ditto. Taken.

One, name unknown, same force. Run on shore.

Five, ditto, ditto. Blown up.

*Other Vessels not in the Action*

A schooner, eight four-pounders. Sent from their fleet for provisions.

A galley, said to be of greater force than those mentioned above, fitting out at Ticonderoga.

G. C.

According to Arnold's own reports, he saved only "two galleys, two small schooners, one gondola, and one sloop." He does not specify which were saved.

The schooner "Royal Savage" was grounded on the point of Valcour island October 11th and at night the Americans set fire to her. In the first day's engagement the gondola "Philadelphia" was hulled so that she sank about one hour after the engagement was over. The "Washington" surrendered. The "Congress" was shattered and to prevent her from falling into the

enemy's hands she was run ashore in a small creek two miles from Crown Point on the east side on October 13th, and with four gondolas was set on fire by the Americans.

Of the six boats reported by Arnold as saved, the sloop must have been the "Enterprise"; the schooners, the "Revenge" and the "Liberty." His narrative does not fix which were the two galleys saved and which the gondola.

The account of the battle of Valcour island given in the history of the "Campaign for Conquest of Canada in 1776" by Charles Henry Jones describes the burning of the "Congress" and four gondolas at Button Mould Point on the east side of the lake, a short distance above the mouth of Otter creek. There Arnold landed with two hundred men and set off by a bridle path through the woods for Crown Point ten miles distant.

It was after dark when they arrived opposite Crown Point, at a place called Chimney Point, from the bare chimneys which stood there for many years after the French had burned the settlement on their retreat in 1759. The *Trumbull*, *Revenge*, *Liberty*, *Enterprise*, and a *gondola*, comprising the sole remnant of the American fleet, were then at anchor there, where the lake is less than three-quarters of a mile wide. On these vessels they crossed to Crown Point. (page 170)

Jones records that at Crown Point Arnold joined Lieutenant Colonel Hartley and the Sixth Pennsylvania Regiment, and with his own party and what remained of the fleet, retreated to Ticonderoga. The British troops occupied Crown Point, but no battle was had, and the last of the British abandoned Crown Point November 4th.

Peter S. Palmer, in his history of Lake Champlain, reports that the "Royal Savage" was damaged severely in battle October 11th, was grounded near the southwest point of Valcour island and was abandoned, and that night the British boarded the schooner and set fire to it. He says in his book which was published in 1866:

The hull of the schooner lies on the spot where she was sunk and her upper timbers can yet be seen during low water in the lake. Arnold's papers were on board the schooner and were lost. (page 126)

Palmer says that the "Philadelphia" sank after the engagement of October 11th, and that two of the British gunboats were sunk and one blown up with a number of men on board. He says that Arnold, at Schuyler's island, October 12th, found two of his

gondolas too badly injured to repair and sank them near the island. On the 13th the "Washington" struck and when Arnold was within ten miles of Crown Point, he ran the "Congress" and four gondolas into a small bay in Pantou on the east side of the lake and having removed the small arms, burned the vessels to the water's edge.

Palmer reports that as soon as the boats were consumed, Arnold led his party through the woods to Crown Point where he arrived at four o'clock the next morning.

The sloop *Enterprise*, the schooner *Revenge* and the galley *Trumbull* with one gondola had reached that place the day before, in safety. The galley *Lee*, Captain Daviss, was run into a bay on the east side of the Lake above Split Rock where she was blown up. The only vessels taken by the enemy were the Washington galley and the gondola *Jersey*. (page 130)

Chapter I of Mahan's *The Major Operations of the Navies in the War of American Independence* is devoted to the battle of Valcour island. H. B. Dawson also describes the battle in his *Battles on Lake Champlain*.

Of Arnold's 16 boats, it appears that only five or six remained afloat as the result of the battle, two having been captured by the British and the others lost.

Such was the defeat which blocked British invasion of New York in 1776 and gained a delay of a year between the battle of Valcour Island and the battle of Saratoga.

#### THE BATTLE OF PLATTSBURG, CUMBERLAND BAY, LAKE CHAMPLAIN

Commodore Thomas MacDonough, in his account of the naval battle on Lake Champlain, September 11, 1814, written years later, says that he had three sloops and two gunboats. British boats were captured, repaired and added to the Navy of the United States but no boat appeared to have been sunk on either side.

H. B. Dawson, in his *Battles on Lake Champlain* gives in book 2, at pages 384-85, a history of this engagement. He does not mention the sinking of any ships. A pamphlet on the "Dedication of the Thomas MacDonough Memorial" published a few years ago refers to the battle of Plattsburg but not to the sinking of any vessel.

**LAKE GEORGE**

If there are any historic war vessels in Lake George, they are probably the gunboats and batteaus captured from the British and used by Colonel John Brown, a young lawyer and graduate of Yale, who commanded the Americans at Diamond island on September 24, 1777. Peter Nelson, formerly of the Archives and History Division, State Education Department, has written a paper on the battle of Diamond Island, printed in volume XX of the Records of the New York State Historical Association, which quotes the report of Irwine, who was in command of the British at Fort George, and the statement of General Burgoyne, indicating that the Americans were routed and escaped towards Skenesborough in great confusion, having burned the gunboats and batteaus.

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