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# New York State Museum Bulletin

Published by The University of the State of New York

No. 330

ALBANY, N. Y.

April 1942

NEW YORK STATE MUSEUM

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

## ONE HUNDRED FOURTH ANNUAL REPORT OF THE NEW YORK STATE MUSEUM

### CONTENTS

	PAGE
Foreword .....	15
Summary of the Activities of the Year.....	15
Cooperation with State and Other Organizations.....	18
State and County Planning.....	20
State Council of Parks .....	21
Relation of the Museum Exhibits to Schools and Colleges.....	21
Annual Attendance to Exhibition Halls.....	24
Information and Publicity .....	24
Printing and Publications .....	25
Temporary and Loan Exhibits .....	26
Condition of the Exhibition Halls and Exhibits .....	31
Photography and Drafting .....	32
Museum Collaborators .....	32
State Museum Council .....	32
The Historic Collection .....	33
Summary of the Activities of the Museum Staff.....	33
General Administrative Problems .....	47
The Long and Short Range Defense Policies.....	47
Historical Policies .....	52
World's Fair of 1940 .....	52
State Museum Work and Storage Space.....	55
A Public Up-state Art Center .....	56
Annual Financial and Statistical Summary.....	60
Needs of the State Museum .....	61
Annual Bibliography of the State Museum.....	66
Museum Accessions for the Year.....	67
School Museums, Field Trips and Travel as Phases of Objective Education, by <i>Charles C. Adams</i> .....	75

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THE UNIVERSITY OF THE STATE OF NEW YORK

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*New York State Education Department*  
*The New York State Museum, April 16, 1941*

*The Honorable Ernest E. Cole*  
*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, 1939, to June 30, 1940.

Very respectfully

CHARLES C. ADAMS  
*Director*



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NEW YORK  
BOTANICAL  
GARDEN

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Photography and Drafting .....	32
Museum Collaborators .....	32
State Museum Council .....	32
The Historic Collection .....	33
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The Long and Short Range Defense Policies.....	47
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World's Fair of 1940 .....	52
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Annual Financial and Statistical Summary.....	60
Needs of the State Museum .....	61
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Museum Accessions for the Year.....	67
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THE UNIVERSITY OF THE STATE OF NEW YORK

1942

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# THE UNIVERSITY OF THE STATE OF NEW YORK

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School Buildings and Grounds, GILBERT L. VAN AUKEN B.Arch.

Secondary Education, WARREN W. KNOX M.A., Ph.D.

## ILLUSTRATIONS

		PAGE
Figure 1	New York State Education Building. The upper floors are devoted to the offices, laboratories and exhibits of the New York State Museum .....	<i>Frontispiece</i>
Figure 2	Map showing by counties the number of school or college classes which have visited the State Museum in 1939-40. Total number of classes 361, and of students, 10,474.....	22
Figure 3	Temporary loan of textile exhibit by Ruth Reeves, as a part of the Federal Art Project, Work Projects Administration..	27
Figure 4	Temporary exhibit illustrating the work of the Work Projects Administration for the treatment of infantile paralysis, sponsored by the city of Albany.....	28
Figure 5	Samples of clothes made by the Work Projects Administration and sponsored by the city of Albany.....	29
Figure 6	Local officials examining the temporary Work Projects Administration exhibit in the State Museum.....	30
Figure 7	The Second Family of Shakers at Mount Lebanon, in 1940. This property has been sold and some of the buildings have since been destroyed or changed. Photograph by N. E. Baldwin....	35
Figure 8	The old stone workshop at the Second Family, Mount Lebanon, 1940, now much changed. Photograph by N. E. Baldwin.....	36
Figure 9	Old gate at the Second Family of Shakers at Mount Lebanon, with the characteristic stone posts. Photograph by N. E. Baldwin .....	37
Figure 10	The "Horse Block" and hitching rack at the Second Family, Mount Lebanon, 1940. Photograph by N. E. Baldwin.....	38
Figure 11	Pine lands near Albany, a summer home of the prairie warbler. Photograph by Dayton Stoner.....	41
Figure 12	Habitat of American egret, in swamp along Hudson river near Stockport, N. Y. Photograph by Dayton Stoner.....	41
Figure 13	Hart's tongue fern ( <i>Phyllitis scolopendrium</i> (L.) Newm.). A rare fern of the limestone talus in Madison and Onondaga counties. An account of the discovery and distribution of this fern is to be found in Bulletin 254, p. 25 (1924). Photograph by H. E. Ransier .....	42
Figure 14	Marsh shield fern ( <i>Dryopteris thelypteris</i> (L.) A. Gray), A frequent fern of open, sunny marshy places throughout most sections of the State. Fronds dimorphic, the fertile or fruiting frond shown on the right .....	43
Figure 15	Narrow-leaved or net-veined chain fern ( <i>Lorinseria areolata</i> (L.) Presl.). An infrequent fern of the coastal-plain region of the State, on Long Island and Staten Island. Fronds dimorphic, the fertile or fruiting frond shown on the right....	44
Figure 16	Broad beech fern ( <i>Dryopteris hexagonoptera</i> (Michx.) C. Chr.). An interesting and not very common fern of moist woodlands across the State south of the Adirondack region..	45

	PAGE	
Figure 17	Fragrant shield fern ( <i>Dryopteris fragrans</i> (L.) Schott.). A rare fern of ledges and cliffs in the Adirondack region of the State. The six localities known for it are near Titus lake, Franklin county, and Avalanche lake, Cascade lakes, Lake Henderson, Panther mountain near Catlin lake and Hunter's Pass near Elk lake in Essex county.....	46
Figure 18	Basement plan of Shaker house at Watervliet. By Allen. Photograph by W. J. Schoonmaker .....	49
Figure 19	Details of Shaker house at Watervliet. By Allen. Photograph by W. J. Schoonmaker.....	53
Figure 20	Further details of Shaker house at Watervliet. By Allen. Photograph by W. J. Schoonmaker .....	57
Figure 21	Introducing Boy Scouts to the pleasures of a fishing field excursion, on the Kanahwauke chain of lakes.....	81
Figure 22	Former location of Allegheny School of Natural History in Allegheny State Park, an outdoor school of natural history where objective teaching was practised.....	84
Figure 23	Field laboratory used at the Allegheny School of Natural History .....	87
Figure 24	A student's summer home at the Allegheny School of Natural History .....	88
Figure 25	Outlook down Quaker Valley, Sunset Point, on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders.....	89
Figure 26	Clump of interrupted fern, showing method of labeling, on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders....	89
Figure 27	Students on the natural history trail, Allegheny School of Natural History. Photograph by A. A. Saunders.....	90
Figure 28	Luxuriant plant growth on old log on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders.....	90
Figure 29	The Braille edition of Saunders' State Museum Handbook on Bird Song, showing the raised letter system for the blind. Photograph by E. J. Stein.....	91
Figure 30	The two-volume edition in Braille of Saunders' Bird Song. Photograph by E. J. Stein .....	91
Figure 31	The Valley Belt from Long Island to Buffalo, where 84 per cent of the population of the State live. Courtesy of State Planning Board .....	93
Figure 32	Map of metropolitan areas showing location of the public and semipublic museums available for school children within about 50 or 75-mile bus ride.....	95
Figure 33	A modern school building in a central rural school district....	99
Figure 34	A typical one-teacher school now included in a central rural school district .....	99
Figure 35	Group of pupils from the Hooper School, Endwell, N. Y., visiting the State Museum .....	100



	PAGE
Figure 36 The Endwell school children assembled about the state relief map in the State Museum .....	100
Figure 37 School class from Malden, Ulster county, visit the State Museum and examine the restoration of the mastodon.....	101
Figure 38 Children from Glens Falls visit the Iroquois Indian Groups of the State Museum .....	102
Figure 39 Map showing by counties the number of school or college classes which have visited the State Museum 1935-36.....	103
Figure 40 Library bus of the Yonkers Public Library, showing the substantial character of the automobile, and suggesting its adaptability to school museum exhibits. Courtesy of Yonkers Public Library .....	105
Figure 41 The bookmobile in action, and showing its active appeal. A collection of specimens would be equally attractive. Courtesy of Yonkers Public Library .....	106
Figure 42 Interior view of the bookmobile showing the space available for collections of specimens. Courtesy of Yonkers Public Library..	107
Figure 43 Another interior view of the bookmobile. Courtesy of Yonkers Public Library .....	108
Figure 44 Colonial kitchen in the Brandywine School Museum, Schenectady, N. Y., developed by Arthur L. Jones, 1938. Photograph by Arthur L. Jones .....	111
Figure 45 School classes visiting the Brandywine School Museum, 1938. Photograph by Arthur L. Jones .....	111
Figure 46 Visiting class at the Schenectady Museum, the outgrowth of the Brandywine School Museum, 1940. Photograph by Arthur L. Jones .....	112
Figure 47 A loan exhibit to the schools from the Schenectady Museum of donated industrial material, 1940. Photograph by Arthur L. Jones .....	112



## 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:

## State Museum Council

WALDEMAR B. KAEMPPFERT  
PIERREPONT B. NOYES  
ORANGE L. VAN HORNE  
SANFORD L. CLUETT  
WILLIAM OTIS HOTCHKISS

## State Museum Staff

CHARLES C. ADAMS Ph.D., D.Sc.....*Director of State Museum*  
ALVIN G. WHITNEY A.B.....*Assistant Director of State Museum*  
WINIFRED GOLDRING M.A., Sc.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*  
DAYTON STONER Ph.D.....*State Zoologist*  
KENYON F. CHAMBERLAIN.....*Assistant State Entomologist*  
NOAH T. CLARKE.....*State Archeologist*  
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*

## Collaborator

EPHRAIM P. FELT

## Temporary Scientific Appointments

EARL T. APFEL Ph.D.....*Temporary Geologist*  
ROYAL E. SHANKS Ph.D.....*Temporary Plant Ecologist (Botany)*  
A. F. BUDDINGTON Ph.D.....*Temporary Geologist*  
GEORGE M. KAY Ph.D.....*Temporary Geologist*





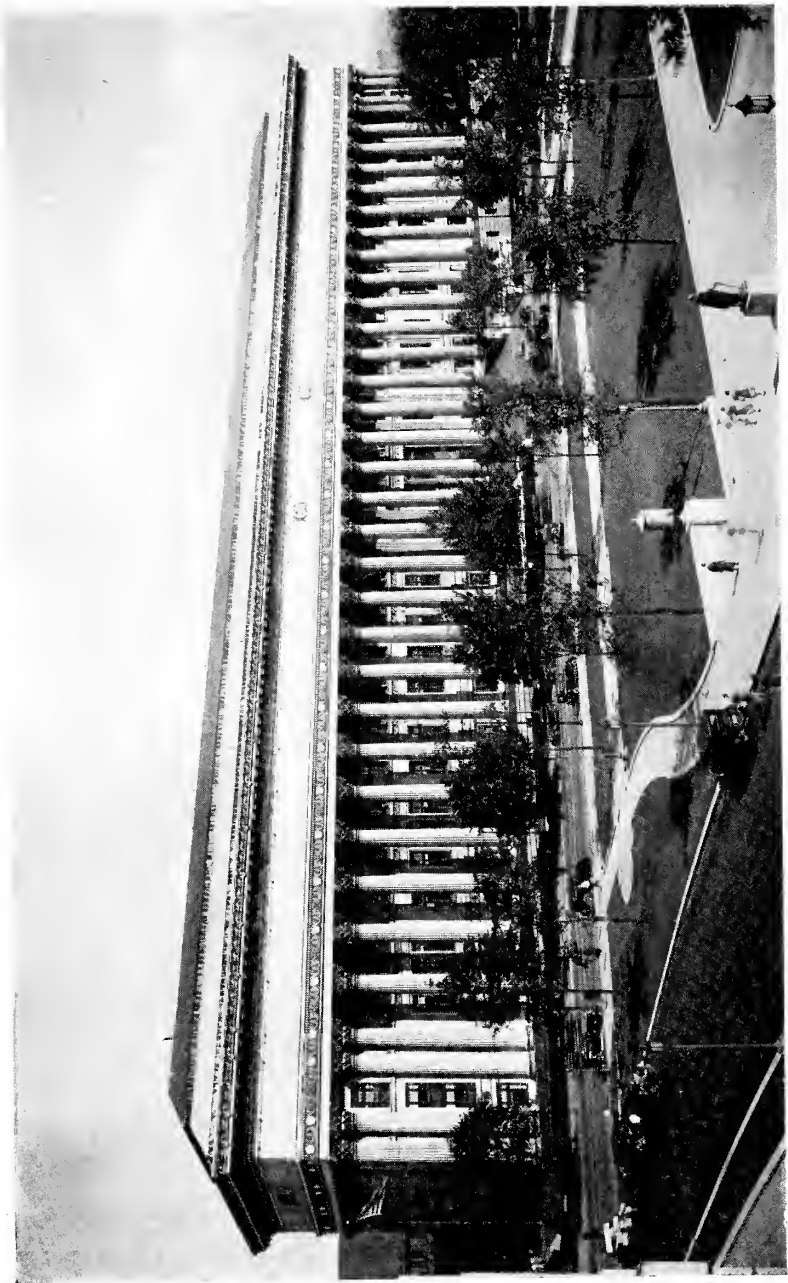


Figure 1 New York State Education Building. The upper floors are devoted to the offices, laboratories and exhibits of the New York State Museum.



# ONE HUNDRED FOURTH ANNUAL REPORT OF THE NEW YORK STATE MUSEUM

BY CHARLES C. ADAMS Ph.D., *Director*  
*New York State Museum*

## FOREWORD

This 104th annual administrative report of the New York State Museum covers the fiscal year closing June 30, 1940. The New York State Museum is a research and educational agency, whose function it is to apply the scientific method to the study of the natural and human resources of the State, its history, its industries and art, in relation to human welfare.

For more than 100 years the State Museum and its antecedents have been devoted to making comprehensive fact-finding scientific surveys of the resources of the State and their relation to the industries, the educational system, the work of public officials and the welfare of the general public. Its files, collections of specimens, records and historic collections of objects, and museum exhibition halls are not duplicated elsewhere by the state government. Representative samples of these collections are on display in the exhibition halls, and their interpretation is available to the public in the numerous popular and technical publications of the State Museum, in libraries throughout the State and in leading libraries elsewhere.

Albany, as the capital city, is visited regularly by great numbers of tourists and school children who find in the exhibition halls of the State Museum a permanent display of the resources of the State. The number of these visitors for the past year is estimated at about 170,000.

The State Museum has, therefore, two major functions: one to find and record facts and the other to diffuse and interpret these facts in terms of their relation to public welfare, to the educational system, to the industries, to the public officials and to the general public.

## SUMMARY OF THE ACTIVITIES OF THE YEAR

1 In cooperation with the State World's Fair Commission, a limited State Museum exhibit was repeated, with slight changes, for the second season of the fair. As stated in the 103d Annual Report, the State Museum had less money for this fair than for any other important previous fair, but with the assistance of the Fair Com-

mission and the Work Projects Administration the most was made of the opportunity that the conditions permitted.

2 Important additions have been made to the Historic Collections, and with Work Projects Administration assistance much progress has been made in securing architectural drawings and photographs of Shaker buildings and caring for the collections. In archeology progress has been made on the bibliography of the Indians of the State and on the indexing of study collections.

3 The report on the botanical literature of botany of the State has been completed. The report on the flora of Columbia county is nearing completion. The report on the primeval forests of Cattaraugus county has been published. The vegetational or ecological survey of Monroe county, made in cooperation with the Division of Planning of Monroe County, has been continued with the assistance of the Work Projects Administration. The report on the flora of Newcomb is nearing completion.

4 Field and laboratory work on the mosquito and black fly problem have continued, as well as on various insects injurious to trees and shrubs.

5 Field and laboratory work have been continued on the oil and gas developments in the State. The popular report on the geology of the Lake George region has been completed. The geological reports on the Wellsville and Willsboro quadrangles have been approved for printing, and the Indian Lake report is still in process of preparation. The report on the glacial geology of several quadrangles in the vicinity of Syracuse is progressing and is expected to be completed in another season. Field work was begun on the geology of the Saranac Lake quadrangle.

6 The report on the geology of the Coxsackie quadrangle is almost completed, and reports are yet under way on the following quadrangles: Randolph, Salamanca, Cattaraugus, Schunemunk, Oriskany, Morrisville and Tarrytown. The report on the Clyde and Sodus Bay quadrangles has been printed. Progress has been made on the graptolite monograph.

7 Zoological studies have been continued on bank, barn and cliff swallows by the banding method. The study of the birds of Washington Park, Albany, is nearing completion. Progress has been made on the report of the summer birds of the Allegany State Park. The study of bird song has been continued. Studies of the local mammals of Rensselaer county and of the woodchuck have been continued.

8 With the development of the Division of State Planning and local county and regional agencies becoming more active, the basal scientific surveys of the State Museum should be expanded, as it would be wasteful and fundamentally an unsound procedure for each county to undertake the geological and natural history fact-finding surveys that are essential for their work. The data and records collected over a period of 100 years by the State Museum should be used by these planning agencies. Our vegetational survey of Monroe county with the local planning division is a good example of how such studies should be conducted.

9 When the federal preparedness program began in June 1940, requests came from the United States Army desiring information on the natural resources of northern New York, as army maneuvers were planned in St Lawrence county. The same request also went to the United States Geological Survey, and in reply this Survey sent a list of five geological reports by the State Museum on that region. Had not the State Museum given much attention to the geology of the Adirondacks for many years, it would not have been possible to supply the needed information immediately upon request. Some who have not been seriously concerned about these scientific surveys in the past are now very eager for immediate results.

10 About 20 cooperative projects have been conducted with various agencies, such as state departments, universities, colleges, museums and federal bureaus, and with individuals.

11 An outstanding cooperation has been with the Work Projects Administration Project No. 50,470, which has provided technical and clerical assistance, supplementing the State Museum budget, that has resulted in preparation of catalogs and indexes, photographic work, inventory of publications, care of the historic collections, binding of books and periodicals, collection of ground water data, architectural drawings of Shaker and other historic buildings, drafting and the preparation of exhibits and labels for the State Museum exhibit at the World's Fair. This assistance has been of the greatest value. The temporary art loan exhibits from the Federal Art Project should also be mentioned in this connection.

## COOPERATION WITH STATE AND OTHER ORGANIZATIONS

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

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

2 New York State Conservation Department. The Director of the State Museum is a member of the State Council of Parks. The geologists of the Museum staff advise the Conservation Department on the purchase of lands when mineral resources are involved. The State Entomologist has continued his studies of the Pales weevil and related weevils injurious to Scotch and other pines, and of the European pine shoot moth. The Division of Fish and Game has cooperated with the State Entomologist on the relation of mosquito control to wild life.

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

4 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.

5 State Executive Department, Division of State Planning. The State Museum has cooperated with the Division of Planning.

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

7 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.

8 Dana Natural History Society, Albany, N. Y. Cooperation on a lecture on birds to Albany school children on Bird Day, April 12, 1940, by Allan D. Cruickshank.

9 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, and with neighboring states.

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

11 National Research Council, Committee on the Preservation of Natural Conditions, Washington, D. C. The Director is a member of this committee, which has been studying the facilities devoted to the preservation of natural conditions.

12 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.

13 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.

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

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

16 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 of the United States Department of Agriculture.

17 Monroe County, Division of Regional Planning. The State Museum has cooperated on an ecological vegetational survey of the county.

18 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 State Museum has cooperated. This work has been under way for 12 years.

19 Work Projects Administration, Federal Art Project. Several valuable loans were made which formed temporary exhibits.

20 Work Projects Administration. Cooperation on Project No. 50,470. By means of this assistance a large amount of clerical and other work has been performed for which the State Museum budget was unable to provide; also professional services in several lines that have materially contributed to the needs of the Museum.

## STATE AND COUNTY PLANNING

The functions and relations of the Division of State Planning 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. 121-41. The water resources have been discussed in the 29th Annual Report: "Suggestions and Recommendations in Planning for the Use and Administration of Water Resources" (Museum Bulletin 306, p. 87-96, 1936). 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 social advantage.

The Museum needs additional funds and personnel if it is to cooperate properly in meeting urgent local requests for such assistance. A bill providing for additional funds rather recently passed the Legislature but was vetoed. The fundamental importance of the local natural resources and the relative advantages of the state's geographic position are physical facts which are fundamental in sound public planning and defense, although these relations are not always appreciated.

In general, local planning boards can not 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. This is particularly true of the plans for defense which have neglected such long-range programs for research on the natural resources.

The comprehensive vegetational or ecological survey of Cattaraugus county is published as Museum Bulletin 321. Another survey

is in process in Monroe county, with the local Division of Regional Planning. These are examples of what is needed throughout the State in connection with local planning programs.

## 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. 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.

## RELATION OF THE MUSEUM EXHIBITS TO SCHOOLS AND COLLEGES

(Figure 2)

During the past year the number of school classes visiting the State Museum was 361, and the total number of students was 10,474, or an average of 29. This was a decline over the previous year and probably was due to bad weather in March and April, especially deterring small children. There was an increase in the number of high school and junior high school classes from the rural schools. Four other states represented were: Connecticut, Vermont, Massachusetts and Ohio. The following 47 counties were represented (figure 2): Rensselaer, Albany, Chenango, Fulton, Schoharie, Madison, Saratoga, Schenectady, Otsego, Columbia, Herkimer, Ulster, Montgomery, Dutchess, Oswego, Warren, Washington, Sullivan, Delaware, Jefferson, Oneida, St Lawrence, Suffolk, Essex, New York, Hamilton, Greene, Broome, Tompkins, Steuben, Wayne, Erie, Cattaraugus, Chautauqua, Rockland, Chemung, Cayuga, Onondaga, Yates, Allegany, Schuyler, Livingston, Orange, Westchester, Clinton, Richmond, Lewis.

The attendance for the past 13 years, as recorded by the State Museum guide, is as follows:

<i>Year</i>	<i>No. classes</i>	<i>No. students</i>	<i>No. counties</i>
1927-28.....	200	3 500	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
1936-37.....	402	12 444	38
1937-38.....	387	11 697	41
1938-39.....	402	10 912	36
1939-40.....	361	10 474	47

The number of classes for each county is shown on the map (figure 2). As is to be expected, the largest number came short distances, and progressively fewer with increasing distance. Such maps indicate where local or branch museums should be located to meet the needs of our schools. This is a subject worthy of careful study and a constructive program for museums.

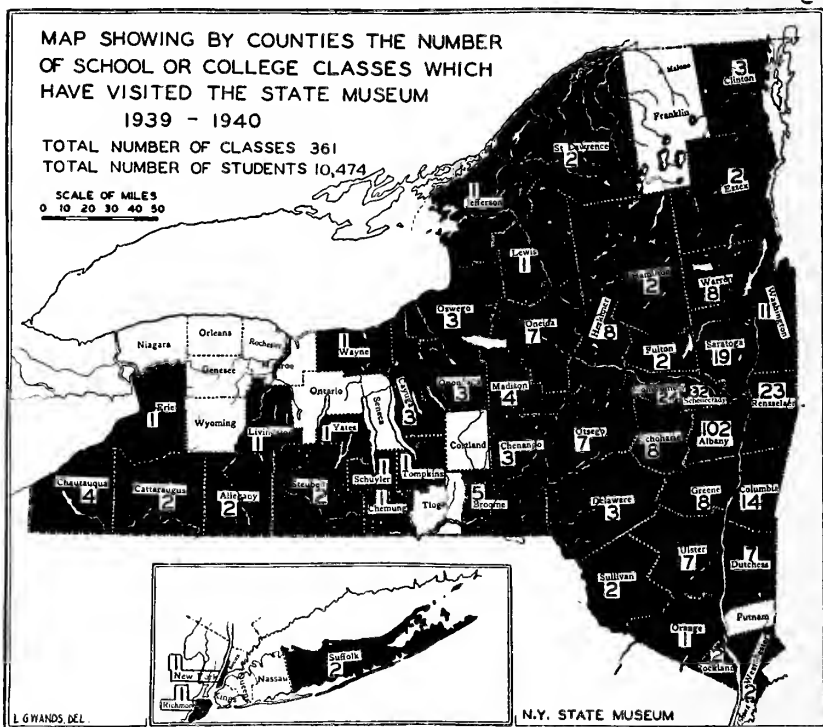


Figure 2 Map showing by counties the number of school or college classes which have visited the State Museum in 1939-40. Total number of classes 361, and of students, 10,474.



*Monthly Class Attendance, 1937-40*

	<i>No. of Classes 1937-38</i>	<i>No. of Classes 1938-39</i>	<i>No. of Classes 1939-40</i>	<i>Attendance 1937-38</i>	<i>Attendance 1938-39</i>	<i>Attendance 1939-40</i>
October.....	29	47	39	802	775	1 072
November....	22	32	18	711	876	414
December....	11	13	6	344	282	104
January.....	17	7	19	373	136	456
February.....	20	11	9	497	403	263
March.....	47	46	26	1 443	1 236	734
April.....	48	83	43	1 453	2 671	967
May.....	94	91	120	3 303	2 505	4 300
June.....	99	72	81	2 771	2 028	2 164
	<u>387</u>	<u>402</u>	<u>361</u>	<u>11 697</u>	<u>10 912</u>	<u>10 474</u>

*Classification of Visiting Groups*

	<i>1937-38</i>	<i>1938-39</i>	<i>1939-40</i>
City schools .....	61	63	67
Rural schools .....	141	159	131
High schools .....	76	53	66
Junior high schools .....	43	31	37
Scout groups .....	10	21	10
Clubs .....	16	27	18
Sunday schools .....	9	11	11
Normal schools .....	15	20	12
Colleges .....	16	12	8
Agricultural colleges .....	....	5	1
	<u>387</u>	<u>402</u>	<u>361</u>

It is evident from the above records that the schools are not making full use of their opportunities. Many school officials call at the Education Department each year, but as the offices they visit are largely on the lower floors, and the State Museum is on the upper ones, no doubt they do not realize the value of encouraging the schools to make these visits. This has suggested that the State Museum should have been placed upon the first floor and the offices on the other floors.

In addition to the school children and college students visiting the exhibition halls, the State Museum reaches both teachers and students through its popular and technical publications. Frequent requests come from teachers for the determination of natural history specimens for teaching purposes, or for loans or donations of materials. Adequate provision has never been made for the State Museum to meet this need properly, as it would involve additional staff, funds, traveling automobile exhibits and loan exhibits. This form of expansion has been urged for many years.

Regularly the State Museum staff has aided the Department Editor in the preparation of the Bird and Arbor Day Bulletin to the

Schools. The State Museum also cooperates with the Dana Natural History Society in giving a lecture to the local school children on birds. This year it was given April 12th, by Allan D. Cruickshank.

It should also be recalled that much of the work done by the State Museum falls in the field of adult education. Its publications, exhibits, correspondence and conferences are constantly contributing to this phase of informal education.

### ANNUAL ATTENDANCE TO EXHIBITION HALLS

The easiest but not the best method of estimating public appreciation of Museum exhibits is by estimating and guessing at the number of visitors. This gives, of course, only a quantitative figure. We have no simple qualitative measure of the benefit secured. The State Museum entrances are so constructed that there is no practicable method of counting visitors, except on certain Sundays and holidays. Actual counts are made of attending classes, however, and are supplemented by conservative estimates by the State Museum guide. Thus are reached the estimates which are used in these Reports.

A considerable number of visitors come for special information or studies, for prolonged conferences, or to spend several hours going over the exhibits or collections in great detail, asking many questions and departing with a wholly new conception of the resources of the State, of what a public museum does regularly in its quiet way for its public patrons.

Under normal economic conditions the attendance at the exhibition halls was about 200,000 a year. Since the depression that attendance had dropped about 30,000, so that the attendance for the past year was about 170,000.

The Sunday and holiday attendance, July 2, 1939, to September 10, inclusive, nine Sundays and two holidays, was 8965. From June 15, 1940, to June 30, 1940, three Sundays, the attendance was 1291, or a total for the summer season of 12 Sundays and two holidays, 10,256.

The attendance for August was estimated at 45,000, and for June and July, each at 35,000.

### INFORMATION AND PUBLICITY

The public considers the State Museum as a bureau of information on the natural resources of the State. This results in an extensive correspondence and frequent office visitors. Members of the

Museum staff, working in cooperation with other agencies, also act as diffusion agents. Press releases assist in keeping the public informed about current aspects of the work of the Museum.

There are a number of requests for public lectures, but with limited travel funds and without official automobiles, not many invitations can be accepted. During the past year members of the staff gave six lectures and talks; reaching nearly 400 persons.

### PRINTING AND PUBLICATIONS

"If you would not be forgotten as soon as you are dead and rotten, either write Things worth reading or do Things worth the writing."—*Benjamin Franklin*.  
 "After all it is the written word that lives."—*Dr W. M. Beauchamp*.

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

#### **Adams, Charles C.**

1940 One Hundred Second Annual Report of the New York State Museum. N. Y. State Mus. Bul., 322:1-132

#### **Gillette, Tracy**

1940 Geology of the Clyde and Sodus Bay Quadrangles of New York. N. Y. State Mus. Bul., 320:1-179

#### **Gordon, R. B.**

1940 Primeval Forest Types of Southwestern New York. N. Y. State Mus. Bul., 321:1-102

#### **Stoner, Dayton**

1939 Temperature, Growth and Other Studies on Eastern Phoebe. N. Y. State Mus. Cir., 22:42

#### **Taylor, Norman**

1939 Salt Tolerance of Long Island Salt Marsh Plants. N. Y. State Mus. Cir., 23:1-42

Accompanying this report, pages 66-67, 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 very serious problem. Frequent requests are made for publications that are out of print. So little has been done to meet this need that it would require \$25,000 to reprint a few of the publications for which there is at present 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's 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 nearly

17 years. Elsewhere the Director has 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 by private firms of the bird plates and the wild flower volumes is an aspect of the problem that calls for careful study and a progressive policy.

## TEMPORARY AND LOAN EXHIBITS

(Figures 3-6)

Temporary and loan exhibits are a very welcome addition to the exhibition halls, particularly since many of the exhibits have not been changed much in several years, because primarily the facilities have not been available to make such changes.

**The Hine loan.** The Lewis W. Hine exhibit of sociological photographs which was installed in June 1939, was extended to July 15, 1939.

**Federal art loans.** The main source of loans was the Federal Art Project, Work Projects Administration (W.P.A.) in New York City, through the courtesy of Mrs Audrey McMahan, as follows:

- 1 Lithographs and etchings. July 15-September 5, 1939.
- 2 Index of American Design. November 1-December 4, 1939. This was the second loan in this series.
- 3 Exhibit of textiles by Ruth Reeves. January 19-February 28, 1940 (figure 3).

The press notice of this exhibit is as follows:

The diversity of designs shows the influence of Central America, England, the Slavic countries and America's own modernistic trend. These interesting designs are applied to materials ranging from coarse sacklike materials to delicate chiffon. In several examples the same design is applied to materials of different textures, with a change in the color scheme, thus producing very beautiful effects, and at the same time demonstrating the versatility of a single design. A majority of the patterns are of modern conventional conception and a few are naturalistic.

Outstanding in the display are two pictorial samples, one printed on rayon and the other embroidered on silk. The rayon sample depicts a scene on a bathing beach, and the silk one is reminiscent of the Trylon and Perisphere of the New York World's Fair.

**General Work Projects exhibit.** A general exhibit of the activities of the local Work Projects Administration was on display in the Rotunda of the State Museum May 20-25, 1940. This



TEXTILES DESIGNED  
BY  
RUTH REEVES  
FEDERAL  
ART PROJECT  
WORK PROJECTS  
ADMINISTRATION

Do Not Touch

Figure 3 Temporary loan of textile exhibit by Ruth Reeves, as a part of the Federal Art Project, Work Projects Administration



SPECIAL EXHIBIT  
ASA PROJECT NO 32859  
SPONSORED BY THE CITY OF ALBANY

THE NEW YORK STATE  
DEPARTMENT OF HEALTH  
ALBANY, NEW YORK  
MAY 1954

DO NOT TOUCH

Figure 4 Temporary exhibit illustrating the work of the Work Projects Administration for the treatment of infantile paralysis, sponsored by the city of Albany



Figure 5 Samples of clothes made by the Work Projects Administration and sponsored by the city of Albany



Figure 6 Local officials examining the temporary Work Projects Administration exhibit in the State Museum



attracted a large public and gave a comprehensive view of the diversity and quality of the work done by this agency (figures 4-6).

**Exhibit of old stoneware.** A small special exhibit of stoneware from the Historical Collection was put on display at the time of the annual meeting of the Early American Industries Association in Albany in October 1939, and has since remained on display.

**Loan of United American Artists.** The United American Artists of New York City made a loan of color prints from September 19 to November 1, 1939.

These loans have been greatly appreciated and have shown how interesting such exhibits are to the general public.

### CONDITION OF THE EXHIBITION HALLS AND EXHIBITS

The crowded storerooms, the leaky roof, the "frozen" condition of the exhibits and their deterioration have for nearly 20 years been the complaint of the Annual Reports. The preceding Director, Dr John M. Clarke, wrote in 1922, 18 years ago, a statement that makes an excellent preface to the present Director's remarks. He said:

The physical condition of the Museum is no longer what it ought to be and what it has been. Large and expensive exhibits which require constant attention have begun to show signs of the degeneration which naturally comes with time and inadequate care. When these exhibits were new and fresh they held together and required the minimum of care, but now special attention of this work is required for all of the earlier exhibits and we have not men with which to meet the demand and keep the natural degeneration of the exhibits from proceeding into serious and costly loss.

The leaky roof has become increasingly worse. The paint peels off the ceilings and walls in layers, which fall upon the cases and on the floors. The curtains are stained by water and faded. The paint on the display cases is worn off by the visitors' clothes and hands as they examine closely the exhibits, and this wear can only be remedied by enough painters to keep the cases in proper condition. It is, however, concrete proof of the sincere interest on the part of the public. A popular exhibit such as the gem collection soon shows wear after each fresh coat of paint.

There has also not been enough help to keep the dust off the cases and the floors clean. Every Annual Report has called attention to these conditions, but no complete remedy has been provided.

The decline of the exhibits and the need of new ones is one reason that this subject calls for a special word, as it is not always

understood by those who glibly propose new exhibits without knowing what this implies. Here are some of the requirements:

1 Increased staff of scientists and technicians. The State Museum staff has been losing positions for about 20 years. Mineralogist, mechanic, carpenter, photographer and draftsman, assistant state botanist, assistant state paleontologist and more temporary experts are urgently needed.

2 Increased appropriations. Funds for additional equipment and supplies are equally essential.

### PHOTOGRAPHY AND DRAFTING

Since the death of the photographer and draftsman on January 7, 1938, this position has not been filled, and had it not been for Work Projects Administration workers, work in this field would have stopped completely; and as it was, it has been injured severely. Files of negatives, drawings, maps and allied materials have not had proper care, nor have they been completely available.

The employment of a Department photographer will assist and supplement, in a welcome manner, the Museum's special needs, but this is no adequate substitute for a photographer and draftsman. What the State Museum really needs is a full-time photographer, a full-time scientific artist and a full-time draftsman, or maps and labels will constantly delay the work.

### MUSEUM COLLABORATORS

In order to encourage the 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, but funds were not available for printing it.

### 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 Departments. 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.

## THE HISTORIC COLLECTION

(Figures 7-10)

"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.*

The outstanding developments in the condition and expansion of the Historic Collection have been due to the Work Projects Administration's assistance. Much progress has been made in the cataloging, cleaning and storing of the collection. The architects and the photographer have continued their survey and records of the Shaker buildings and structures at Watervliet and at Mount Lebanon. As the property is rapidly passing out of Shaker control, the buildings and structures are being changed or destroyed, and for this reason emphasis has been placed on hastening the historic survey as much as possible. Some of the interesting features of the Second Family at Mount Lebanon are shown in figures 7-10.

A valuable collection was secured from the Canterbury Shakers, at East Canterbury, N. H. This is the first important collection from that family, and is a very welcome addition. Attention should also be called to the List of Accessions for other valuable donations and acquisitions of historic significance.

## SUMMARY OF THE ACTIVITIES OF THE MUSEUM STAFF

(Figures 11-20)

"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 the 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 this 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 of 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 activities of the technical staff:

**History, art and archeology.** The Director, assisted by William L. Lassiter and several relief workers, has, as in recent years, continued to give special attention to the history and art collection. The detailed list of accessions to the Historic Collection is given elsewhere in this report. The State Museum historic survey of Shaker buildings and structures, in cooperation with the Work Projects Administration, made considerable progress, particularly at Watervliet, and a substantial start was made on the measurement of the buildings at Mount Lebanon, both at the North and Church families. Photographs accompany all these architectural studies. This has now become the most valuable collection extant of Shaker architectural drawings. Substantial progress has also been made by indexing and improving the historic files and records.

Mr Lassiter has supervised the displays of the Work Projects Administration Art Project temporary loans and similar displays to which reference is made elsewhere in this report.

Noah T. Clarke, State Archeologist, has made progress on a bibliographic index of New York State Archeology and Ethnology, as well as on the index to the archeological material in storage.

**Botany.** Dr Homer D. House, State Botanist, has completed a report on the bibliography of the botany of New York State, has practically completed the report on the Newcomb region in the Adirondacks, has made progress on the revision of the State Annotated List of Plants, and has, with Dr R. B. Gordon, completed a report on the additions to the flora of the Allegany State Park. With Work Projects Administration assistance much progress has been made in improving the condition of the herbarium and arranging the collection in the new storage cases.



Figure 7 The Second Family of Shakers at Mount Lebanon, in 1940. This property has been sold and some of the buildings have since been destroyed or changed. Photograph by N. E. Baldwin.

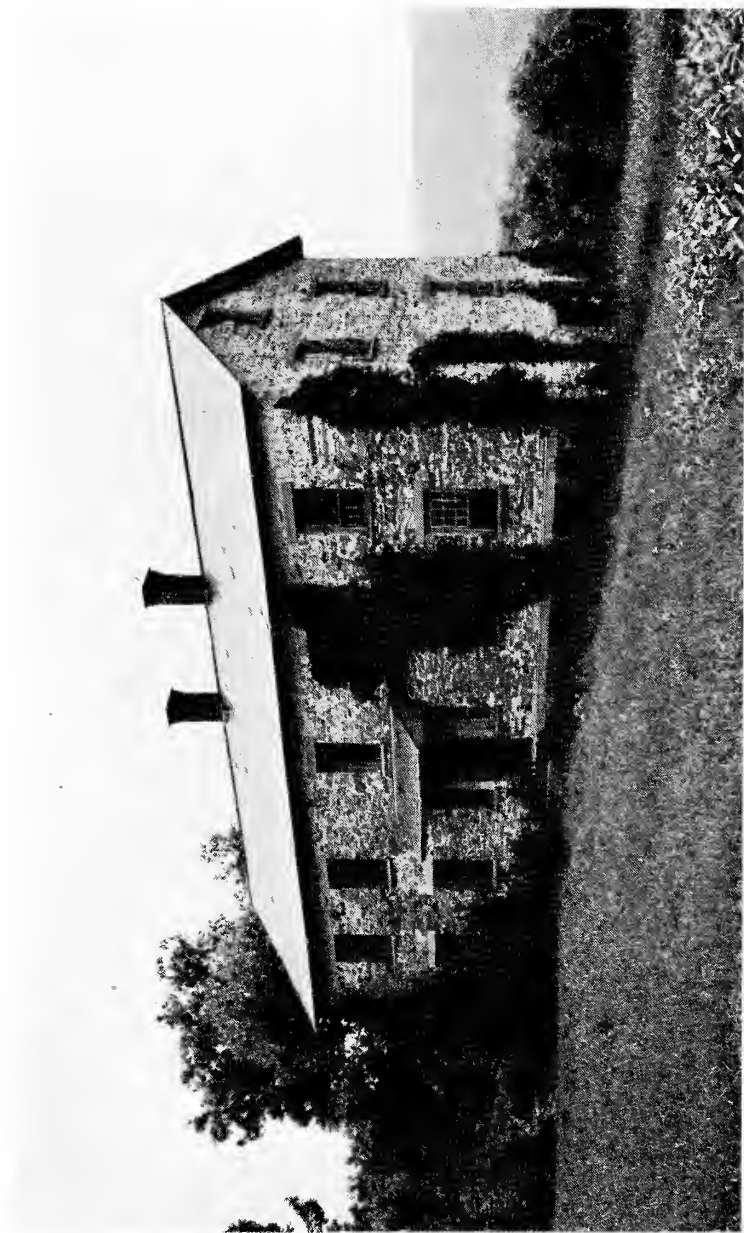


Figure 8 The old stone workshop at the Second Family, Mount Lebanon, 1940, now much changed.  
Photograph by N. E. Baldwin.

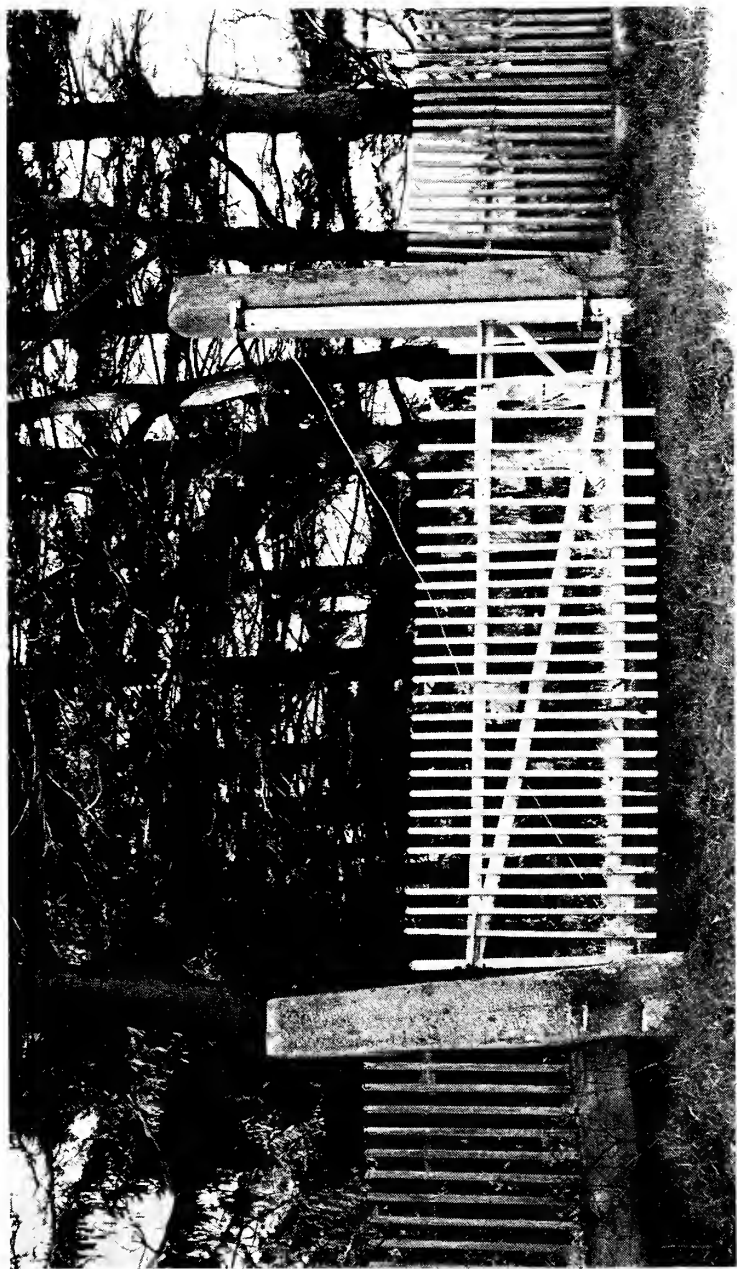


Figure 9 Old gate at the Second Family of Shakers at Mount Lebanon, with the characteristic stone posts.  
Photograph by N. E. Baldwin.



Figure 10 The "Horse Block" and hitching rack at the Second Family, Mount Lebanon, 1940.  
Photograph by N. E. Bakdwin.



Dr Robert B. Gordon's report on the vegetation of Cattaraugus county has been printed as Museum Bulletin 321.

Dr Rogers McVaugh, temporary botanist, has continued his work on the flora of Columbia county.

Dr Royal E. Shanks, temporary ecological botanist, continued the second season's work on the study of the vegetation of Monroe county, in cooperation with the Monroe County Division of Regional Planning.

**Entomology.** Dr Robert D. Glasgow, State Entomologist, has continued his studies of the black flies and mosquitoes, particularly their relation to economic conditions. He has also continued his studies of the Pales weevil and the European pine shoot moth.

Doctor Glasgow has devoted much time to the general supervision of the Work Projects Administration Project No. 50,470. He also gave much assistance to the Work Projects Administration's special exhibit (figures 4-6), and to the preparation of the permanent record of it. The Work Projects Administration assistance has aided in indexing the entomological literature, in translating, in photography and in bookbinding.

Several of these workers have also devoted their time to general museum work for the various other offices, such as bookbinding, photography, drafting, inventory of publications, arranging office files of correspondence, and as has been stated, to the Historic Collection.

Kenyon F. Chamberlain, Assistant State Entomologist, has continued the transferring of the insect collection to the new insect boxes in the steel cabinets, and through field trips has made important additions to the insect collection.

**Geology.** Dr David H. Newland, State Geologist, and Henry Vaughan, temporary geologist, completed their handbook on the geology and mineralogy of the Lake George region. The completion of the report has been delayed by the lack of a photographer and draftsman. A popular account of the geology of this region, with its large number of summer visitors, should be of much interest.

Doctor Newland has begun a revision of the older Museum bulletins listing the mineral localities in the State.

Doctor Newland, assisted by Chris A. Hartnagel, Assistant State Geologist, has for many years prepared the cooperative biennial report on mining and quarry production of the State. Some changes of policy by the United States Bureau of Mines made cooperation increasingly difficult on the museum's limited funds, so that this work was regretfully dropped.

Mr Hartnagel has continued his careful attention to the development of oil and natural gas within the State, and has nearly completed his report on the Randolph mammoth.

Dr Arthur F. Buddington, temporary geologist, has completed his report with Doctor Whitcomb on the geology of the Willsboro quadrangle and has begun field work on the Saranac Lake quadrangle.

Dr Lawrence Whitcomb, temporary geologist, completed his joint report on Paleozoic rocks with Doctor Buddington on the Willsboro quadrangle.

Mrs Medora H. Krieger, temporary geologist, continued her work on the report of the Indian Lake quadrangle.

Dr Earl T. Apfel, temporary geologist, has devoted his time to field work on the glacial geology of the quadrangles in the general region about Syracuse.

Dr Chauncey D. Holmes, temporary geologist, has cooperated with Doctor Apfel in the Syracuse region.

**Paleontology.** Dr Winifred Goldring, State Paleontologist, has completed her report on the Coxsackie quadrangle, and has also continued with Dr G. Arthur Cooper, of the United States Geological Survey, field studies on the Devonian stratigraphy.

Dr Rudolf Ruedemann, retired, is continuing his report on graptolites, and reports that more than 100 drawers of species remain to be examined, and the general chapters of the monograph are yet to be written.

John H. Cook, temporary geologist, is completing his report on the glacial geology of the Coxsackie quadrangle.

Clinton F. Kilfoyle, technical assistant, has continued the catalog of the type collection and the catalog of pamphlets in the office collection. He revised the list of publications of the State Museum which has been published in Museum Bulletin 322. He assisted Doctor Goldring on the fossils for the World's Fair exhibit.

Dr Rousseau H. Flower, temporary geologist, made progress on his report on Devonian cephalopods.

Dr George H. Chadwick, temporary geologist, has completed his report on the geology of the Catskill and Kaaterskill quadrangles and it awaits publication.

Dr A. C. Tester, temporary geologist, has not yet completed his report on the geology of the Randolph quadrangle.

Dr Gordon I. Atwater, temporary geologist, has not yet completed his report on the revision of the geology of the Salamanca quadrangle.



Figure 11 Pine lands near Albany, a summer home of the prairie warbler. Photograph by Dayton Stoner.

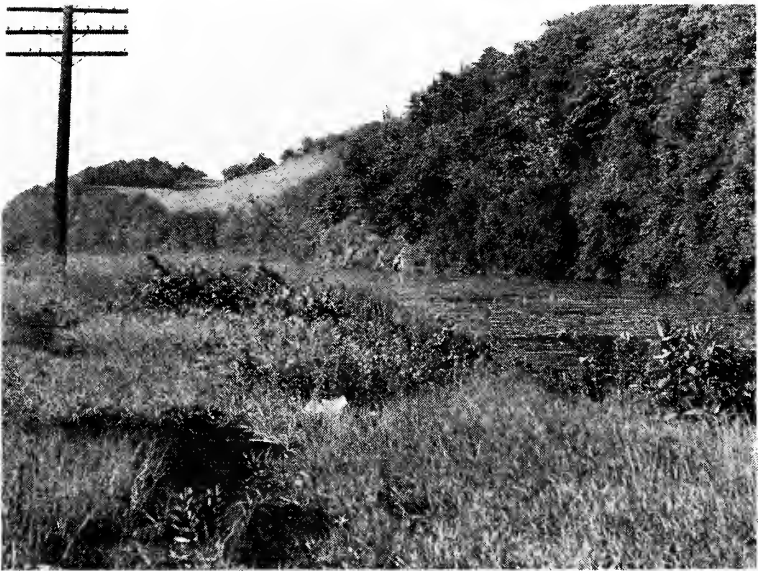


Figure 12 Habitat of American egret, in swamp along Hudson river near Stockport, N. Y. Photograph by Dayton Stoner.



Figure 13 Hart's tongue fern (*Phyllitis scolopendrium* (L.) (Newm.)). A rare fern of the limestone talus in Madison and Onondaga counties. An account of the discovery and distribution of this fern is to be found in Bulletin 254, p. 25 (1924). Photograph by H. E. Ransier.



Figure 14 Marsh shield fern (*Dryopteris thelypteris* (L.) A. Gray). A frequent fern of open sunny marshy places throughout most sections of the State. Fronds dimorphic, the fertile or fruiting frond shown on the right.



Figure 15 Narrow-leaved or net-veined chain fern (*Lorinseria areolata* (L.) Presl.). An infrequent fern of the coastal-plain region of the State, on Long Island and Staten Island. Fronds dimorphic, the fertile or fruiting frond shown on the right.



Figure 16 Broad beech fern (*Dryopteris hexagonoptera* (Michx.) C. Chr.). An interesting and not very common fern of moist woodlands across the State south of the Adirondack region.



Figure 17 Fragrant shield fern (*Dryopteris fragrans* (L.) Schott.). A rare fern of ledges and cliffs in the Adirondack region of the State. The six localities known for it are near Titus lake, Franklin county, and Avalanche lake, Cascade lakes, Lake Henderson, Panther mountain near Catlin lake and Hunter's Pass near Elk lake in Essex county.



Professor L. W. Ploger, temporary geologist, has continued his study of the geology of the Cattaraugus quadrangle.

Colleagues in the Department of Geology, Columbia University, of Dr R. J. Colony, temporary geologist, who died March 26, 1936, will complete the report on the complex geology of the Schunemunk quadrangle on which he was engaged for many years. The field work was practically completed.

Professor N. C. Dale, temporary geologist, is completing his report on the geology of the Oriskany quadrangle.

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

Dr John G. Woodruff, of Colgate University, completed his report on the geology of the Wellsville quadrangle, studied in cooperation with Colgate University, and the report awaits publication.

**Zoology.** Dr Dayton Stoner, State Zoologist, has continued his study of the bank swallows of the Oneida Lake and Albany regions, by the banding method. The report on the birds of Washington Park, Albany, is nearing completion. His report on the temperature and growth of the phoebe is completed. He assisted in the preparation of the Bird Day Bulletin to the Schools, and in the preparation of the World's Fair exhibit.

Walter J. Schoonmaker, Assistant State Zoologist, has continued his study of the woodchuck and of the mammals of Rensselaer county and also assisted in the installation of the World's Fair exhibit.

Aretas A. Saunders, temporary ornithologist, is completing his report on summer birds of the Allegany State Park.

Dr Wallace Craig, temporary ornithologist, has continued the preparation of his report on bird song.

## GENERAL ADMINISTRATIVE PROBLEMS

### THE LONG AND SHORT RANGE DEFENSE POLICIES

The old saying that we never miss the water until the well runs dry applies to many phases of life, but it is not always true, because there are people of foresight who take the long view and prepare for the future. More than 100 years ago there were those who realized that this State needed a reasonable knowledge of its natural resources, and at that time the inventory was begun, and has been continued, on a small scale to date. As a result of this policy the publications of the New York State Museum and its antecedents have accumulated a vast reservoir of information on the resources of the State. These State Museum publications, which are distributed by exchanges through the State Library, have brought into the

State Legislative Reference Library a vast fund of information on other states. It is thus possible, in an emergency, to call upon the State Museum and the State Library and find a wealth of information about the resources of this State and adjacent regions. This State, having once initiated such a procedure, has learned that the results are cumulative. This policy was not only an example for other states, but has even been outdistanced by some states in the financial support given for such work. The immediate value of this prolonged constructive policy was revealed recently in an unexpected manner.

In June 1940, when the United States Army was making plans in northern New York for the First Army Maneuver Area, in St Lawrence and Franklin counties, it urgently needed information on the natural resources of this region, including the geology, mineral resources, glacial features, vegetation and water resources.

The Army officers, in addition to writing to various New York State officials, also wrote to the Federal Geological Survey at Washington for information on this subject, and received the following reply:

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

*Lt. Herbert H. Rasche,  
Headquarters Third Corps Area,  
United States Army,  
Baltimore, Md.*

WASHINGTON

*June 21, 1940*

DEAR LIEUTENANT RASCHE:

In reply to your letter of June 7: Geologic investigations in the area in St Lawrence County, New York, indicated by you have been conducted by the New York State Museum, which has several reports on the geography, geology, and mineral resources of the region, and geologic work in the area has, therefore, not been duplicated by the Federal Geological Survey. The publications of the State Museum on the area include those named below, and possibly others. Inquiry about them should be addressed to Dr C. C. Adams, Director, New York State Museum, Albany, N. Y.

- (1) Geology and mineral resources of the Hammond, Antwerp, and Lowville quadrangles, N. Y., by A. F. Buddington: Bulletin 296, New York State Museum, 1934.
- (2) Bulletin 259, Geology of the Gouverneur quadrangle, N. Y., by H. P. Cushing and D. H. Newland, New York State Museum, May, 1925.
- (3) The Paleozoic rocks of the Canton quadrangle, by G. H. Chadwick: New York State Museum Bulls. 217-218, 1920.
- (4) The pre-Cambrian rocks of the Canton quadrangle, by J. C. Martin, New York State Museum Bull. 185, 1916.
- (5) Geology of the vicinity of Ogdensburg, by H. P. Cushing: New York State Museum Bulletin No. 191, Nov. 1, 1916.

I am sending to you under separate cover a copy of Water-Supply Paper 854 which contains records of flow of streams in the St Lawrence River Basin for 1938. This report was obtained from a small reserve kept for official and other special uses.

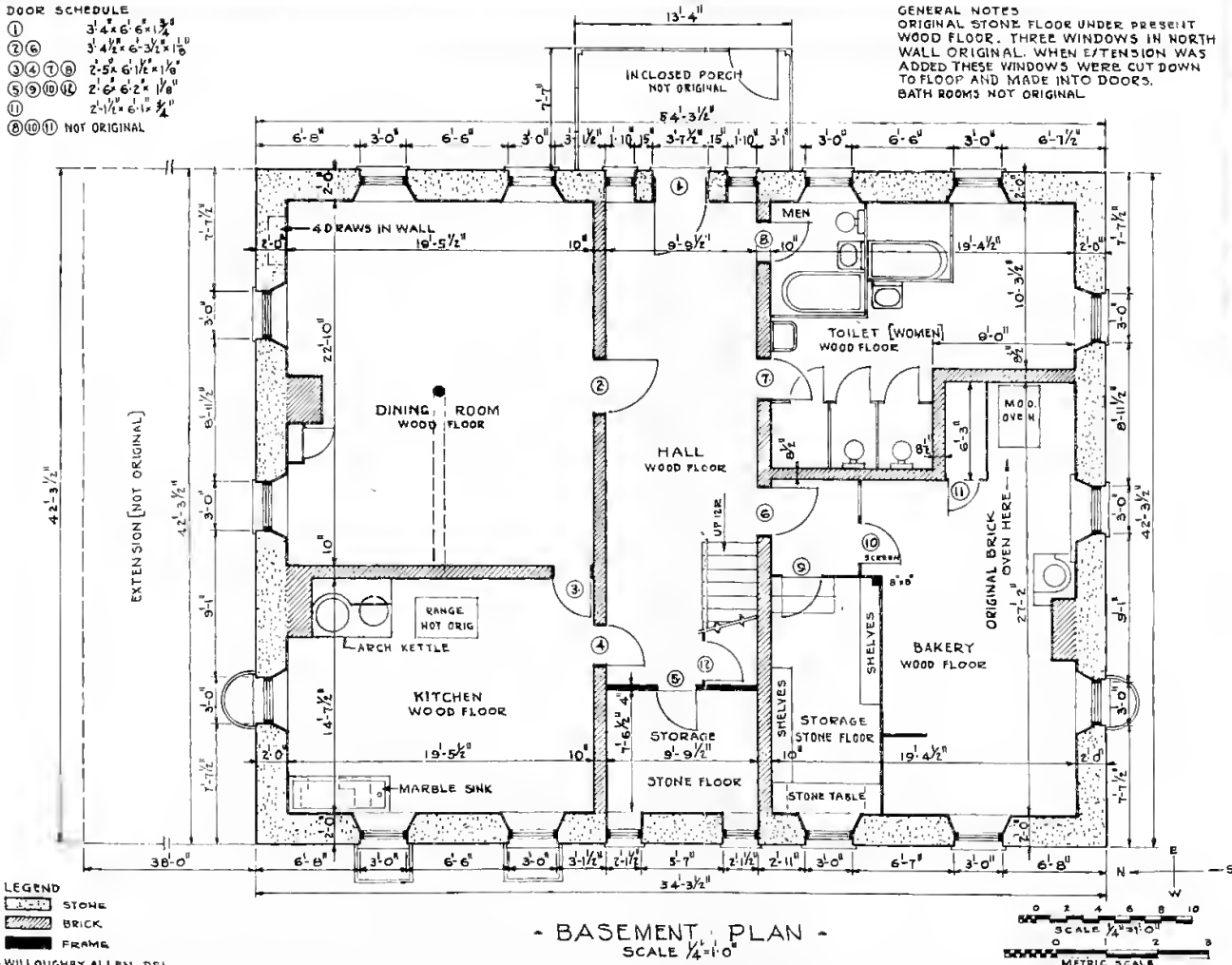
Very truly yours,

[Signed] W. C. MENDENHALL  
Director

DOOR SCHEDULE

- ① 3'-4" x 6'-6" x 1'-3/4"
- ② ⑥ 3'-4 1/2" x 6'-3 1/2" x 1'-0"
- ③ ④ ⑦ ⑧ 2'-5 1/2" x 6'-1 1/2" x 1'-0"
- ⑤ ⑨ ⑩ ⑫ 2'-6" x 6'-2" x 1'-0"
- ⑪ 2'-1 1/2" x 6'-1" x 3/4"
- ⑧ ⑩ ⑪ NOT ORIGINAL

GENERAL NOTES  
 ORIGINAL STONE FLOOR UNDER PRESENT WOOD FLOOR. THREE WINDOWS IN NORTH WALL ORIGINAL. WHEN EXTENSION WAS ADDED THESE WINDOWS WERE CUT DOWN TO FLOOR AND MADE INTO DOORS. BATH ROOMS NOT ORIGINAL.



LEGEND  
 STONE  
 BRICK  
 FRAME  
 G.WILLOUGHBY ALLEN DEL.  
 NEW YORK STATE MUSEUM  
 HISTORIC COLLECTION

BUILDING NO. 3  
 NAME OF STRUCTURE  
**SOUTH FAMILY OF WATERVLIET SHAKERS**  
 TOWN OF COLONIE  
 ALBANY COUNTY N.Y.

HISTORIC BUILDINGS SURVEY  
 SHEET 1 OF 13 SHEETS

Figure 18 Basement plan of Shaker house at Watervliet. By Allen. Photograph by Walter J. Schoonmaker.



It will be noted that all five of these publications were State Museum Bulletins printed from 1916 to 1934, and that each is a special study, as more general work preceded these reports for many years, and provided the general background for these special studies and for the adjoining regions.

Had it not been for the long-established policy of the State Museum to cover systematically the Adirondacks as rapidly as possible with the limited funds available, this information would not have been available for immediate use.

Finally, it should be observed that the request also called for information on the vegetation, water resources and glacial geology—all of which fall within the field of the scientific surveys of the State Museum; but for lack of funds these subjects have not been studied in detail in that region. Also for several years the Annual Reports of the State Museum (Mus. Bul. 301, p. 47, 1934) have urged that adequate financial provision should be made for ground water research in this State, but these funds have not yet been provided, and even in recent years a bill which provided an increased appropriation for these scientific surveys was vetoed.

A modern vegetational map, such as is most useful in land use studies is known as an ecological map of the vegetation. This is a relatively new kind of map, and calls for a special training in order to prepare it according to the latest standard. Two such maps have been published by the State Museum, one in Handbook 17, on the Allegany State Park, and the other in State Museum Bulletin 321, on Cattaraugus county; and a third is in process of preparation in Monroe county, in cooperation with the Division of Planning of Monroe county.

The Franklin County Planning Board has requested cooperation in the study of the geological and mineral resources of that county. The Federal Government also uses the scientific work of the State Museum in connection with other important public policies. Thus, in the recent study of the St Lawrence problem, the United States Department of Commerce, in its recent report by N. R. Danielian, on "The St Lawrence Survey, Part VI, The Economic Effects of the St Lawrence Power Project," quotes from a State Museum Bulletin, as follows (p. 39), "D. H. Newland and C. A. Hartnagel,

'The Mining and Quarry Industries of New York State for 1934 to 1936,' N. Y. State Mus. Bul., No. 319, February 1939, p. 28. 'The absence of workable coal seams is perhaps the principal deficiency in New York's mineral endowment.' " (Cf. also p. 107.) This is a geological fact which has far-reaching consequences on the industrial development of the State as well as on its public policies.

The preceding considerations show clearly that both the State and the Nation have, in emergencies, turned to the scientific results of the work of the State Museum, and any serious deficiency in its support is thus of more than merely local importance.

### HISTORICAL POLICIES

In previous Annual Reports attention has been called to the need of revised or new policies on certain historic matters intimately related to the work of the State Museum such as the following:

1 The unsatisfactory status of state-owned historical and scientific reservations, and the need of a comprehensive constructive policy for their administration, care and use. (Cf. State Mus. Bul. 288, p. 51-56. 1941.)

2 The unsatisfactory status of the battleships that lie upon state land, in public waters of the Atlantic ocean, the Great Lakes, Lake Champlain and Lake George. (Cf. State Mus. Bul. 313, p. 123-36.)

### WORLD'S FAIR OF 1940

The State Museum exhibit, which was on display in the New York State Building at the World's Fair in 1939, was continued with slight changes during the season of 1940, as funds were not available to make any marked improvements. In anticipation of the closing of the fair, the Director of the State Museum made application, later confirmed by the State Commissioner of Education, for the four historic murals made by the well-known artist of our Iroquois Indian Groups, David C. Lithgow, which adorned the entrance hall of the New York State Building. Application was also made for 28 table cases and 30 wall cases, in the hope that with these some new exhibits could be prepared for the State Museum. The transparencies of the Iroquois Indian Groups, and of the birds and wild flowers, which had been prepared by the Fair Commission, as well as the seating kiosks with transparencies of New York scenery, were also requested for the State Museum.

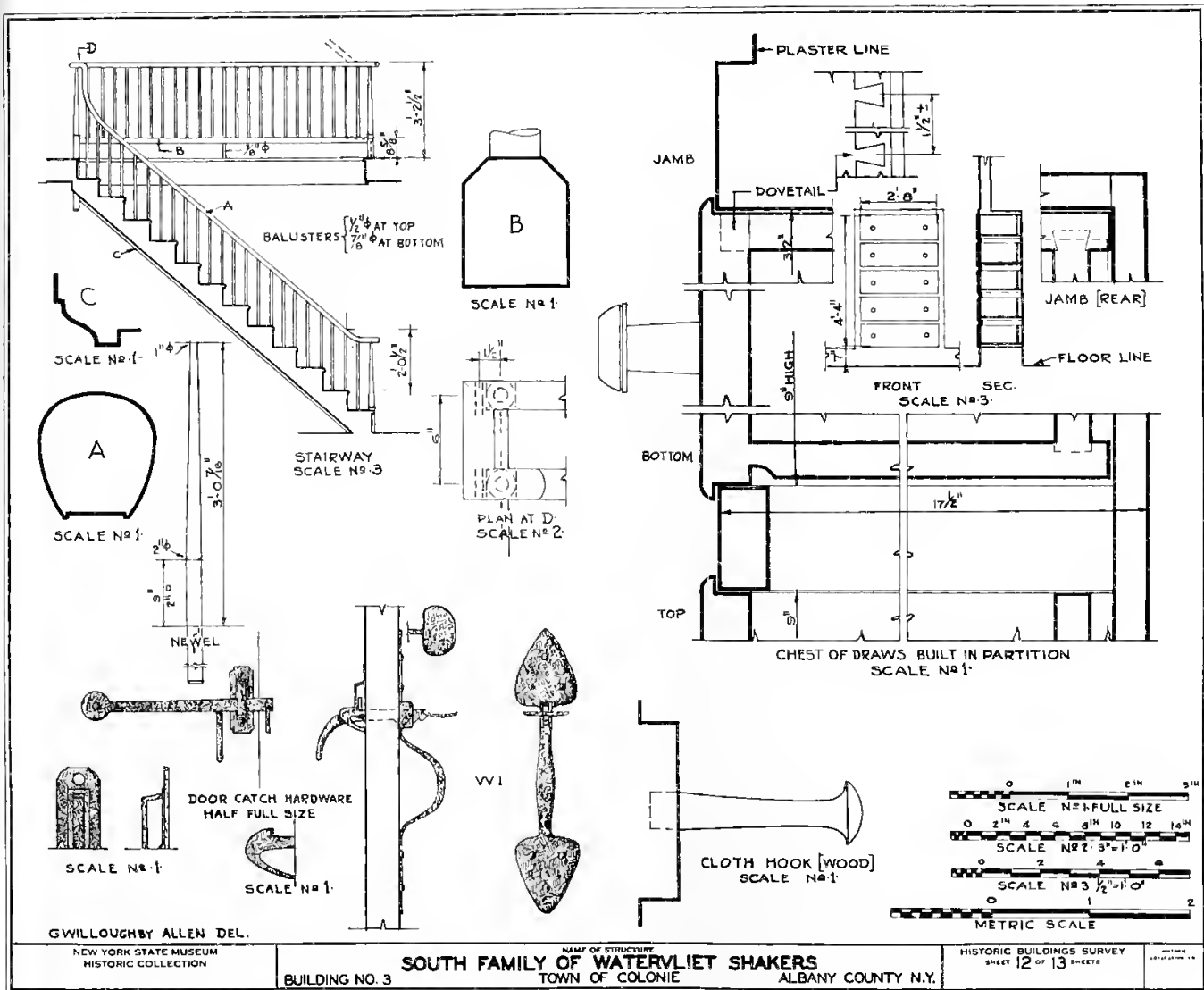


Figure 19 Details of Shaker house at Watervliet. By Allen. Photograph by Walter J. Schoonmaker.





## STATE MUSEUM WORK AND STORAGE SPACE

When the Education Building was built there was no adequate provision made for storage. This is a word difficult to grasp by those who are not accustomed to deal with concrete objects, and who work only with "paper," and thus do not realize that a functional museum must have collections of materials close at hand, in order to use them intelligently. To office workers *storage* seems to mean filing cases, but to Museum workers it has a very different significance, because the *materials* and *collections* which are constantly used in the regular work are essential tools.

Because of this lack of storage, the offices and laboratories of the State Museum have been overcrowded with materials and collections that should be in properly equipped workrooms, in cases and files suitable for the purpose. The clerical work alone of indexing, cataloging, caring for and storing such collections is in itself a considerable undertaking, and when any of the essentials are lacking there is bound to be confusion, which, to an outsider, is incomprehensible.

Research and educational exhibits in the natural sciences require an abundance of collections and specimens, and these always need space for their storage and display. The same is true of history and art objects, all of which were authorized nearly 50 years ago in the Education Law when additional provision was made for expanding the functions of the State Museum.

It is generally understood by the public and officials that museum *exhibits* require much space and cases, but it is not so generally appreciated that the *study collections* in science, history and art also require *even as much or more space*, and proper cases if these materials are to be made available for use. Too often storage means only inferior and limited space for boxes and barrels of materials, but a museum with its collections so stored is in the same position as a library would be with its books nailed up in boxes, rather than accessible on the shelves. Neither the museum staff nor the inquiring expert or visitor can thus readily consult such materials. Space alone is not a satisfactory solution because valuable materials should be in appropriate cases, in order to shut off the light and keep out the dust. Much valuable material is injured or destroyed by light and dust. Proper humidity is also important for the storage of many kinds of materials; if there is too much moisture, objects mold, and

if not enough, they dry out and crack. It is thus evident that storage space is not simply room or space that no one else desires, but that it should be on a par with museum exhibition space, if the materials are to be used to the best advantage.

The safety of materials in storage can only be assured by periodical inspections and constant use. For this reason boxes and barrels are positive proof of inadequate storage! Furthermore, only responsible persons should be allowed access to such collections, and that can be accomplished only when locks and keys are properly safeguarded. This subject of storage is one that needs constant emphasis because its importance is very generally underestimated. Often large museums are as unfortunate in this respect as smaller ones.

The Education Building has for years been overcrowded, and the only large storage room assigned to the State Museum was one in the northwest corner of the basement, Room 5. In making certain adjustments of rooms in the basement, it was decided by the Regents to accept storage space in the old St Agnes School building, behind the Education Building, and to move the contents of Room 5 into this abandoned school building. (Cf. Journal of Regents Meeting, January 8, 1938, p. 380.) The collections which were moved into the school in March 1938 consist largely of geological and industrial history materials, and are now as excessively crowded as they were in Room 5. It was hoped that during the process of moving, certain uncataloged materials could receive attention, but this was not practicable, and the resultant crowded condition has prevented it since. Until adequate space and cases are provided this very valuable material will remain a cause of serious concern as to its condition and safety. Furthermore the school is built on varve clay, on the side of a ravine and bordered by landslide topography.

#### A PUBLIC UP-STATE ART CENTER

Nearly 50 years ago legal provision was made for the State Museum to build up an art collection. During this interval but slight progress has been made. It is true, nevertheless, that a high grade of art was shown in the construction of the Lithgow-Parker Iroquois Indian Groups, the Gilboa Fossil Forest, the Devonian Sea Bottom Groups and the Fleshy Fungus (wax) exhibit. And there should be mentioned the fine series of wash drawings of birds by Ernest Seton

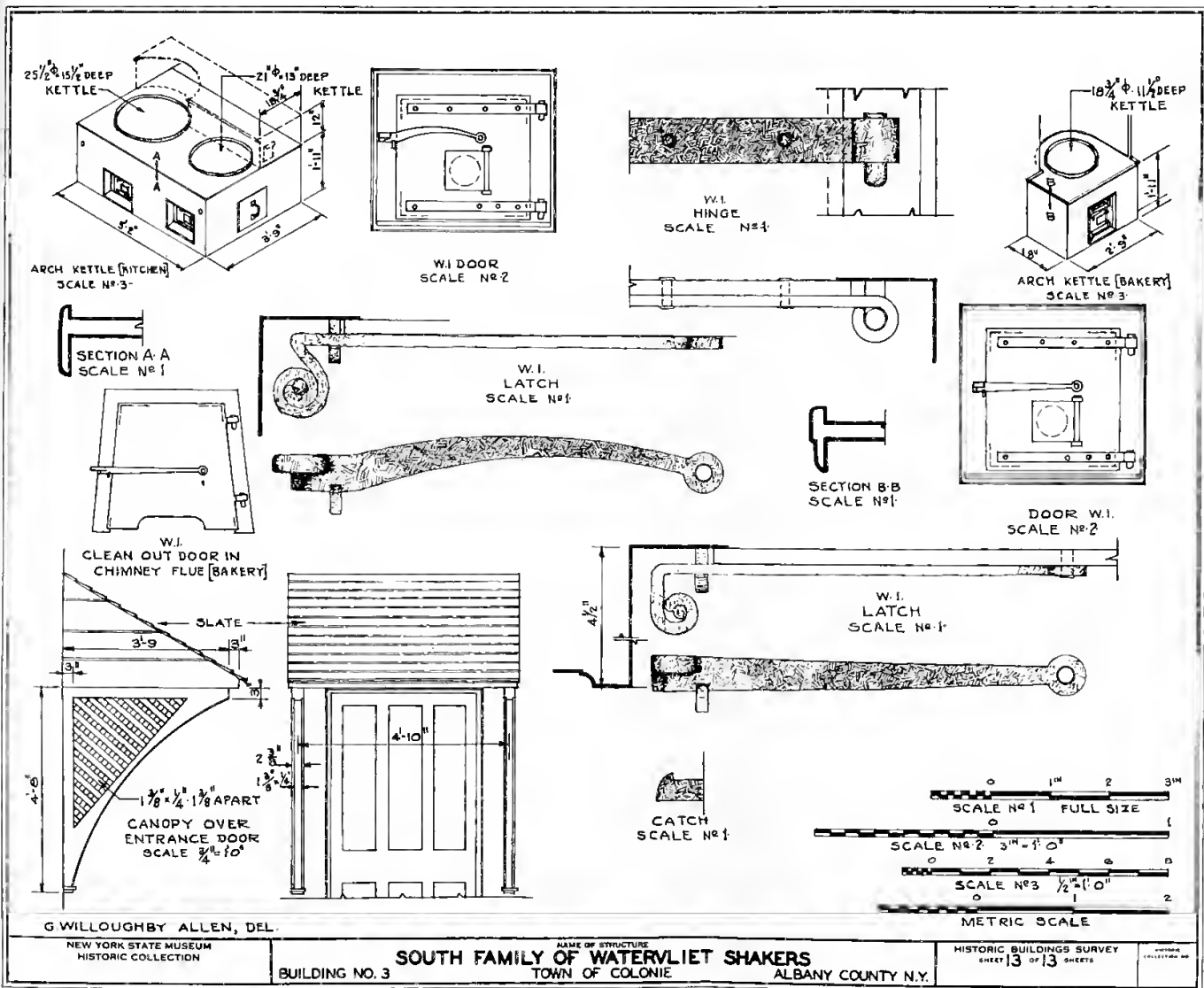


Figure 20 Further details of Shaker house at Watervliet. By Allen. Photograph by Walter J. Schoonmaker.



Thompson, and the water color drawings for plates of the birds by Louis Agassiz Fuertes which illustrated Eaton's Birds of New York, and were later donated to the State Museum by Mrs Russell Sage.

Of industrial art an outstanding series is that of the Shaker furniture and samples of their allied industries, including architectural drawings of Shaker buildings and a very important collection of Shaker photographs.

There is a valuable series of stoneware, some glass, china and textiles, and a small series of drawings, prints, oils, water colors and medals which serve as a nucleus for further development. The State should not stop at this stage. As soon as satisfactory space is available for display and for storage, much valuable art material will be donated to the State Museum.

When one considers that the State of New York is the art metropolis of the Western hemisphere, it would seem that the State itself should play a leading role in encouraging the fine arts. It is therefore proposed that there should be developed in the New York State Museum at least a representative collection depicting the art history of the State, including the work of contemporary artists, and that the State should be a liberal patron of the arts. It is only by such methods that creative work can be substantially encouraged and developed. There should be diffusion of collections by loans, to reach the largest possible appreciative public, and enough variety to meet varied tastes and interests.

It is suggested that this collection should not be limited to the finished work, but should include sketches and all other appropriate materials illustrating how the finished work was produced. Such a collection could be made of great educational value if properly displayed or stored and made readily accessible to students.

The attention of artists and artists' organizations is called to this proposal, as their interest, cooperation and support is necessary if such a possibility is developed as it should be.

The Director has discussed this proposal with sculptors, painters and other artists and has found universal approval of the idea, and even active efforts on their part to lend assistance. It was noteworthy that most of those consulted were surprised at the suggestion, as it had not occurred to them that the State should build up such a public collection. Possibly this was due to the prevailing belief that

the field of art has been largely a private preserve and not one of general importance to our people.

For more than 100 years the State Museum and its varied ancestors have continued a constructive program along scientific cultural lines. This indicates a certain amount of stability which is a necessary qualification for a repository of valuable materials. The annual attendance averaging about 170,000 even during the depression demonstrates that the State Museum attracts many visitors.

A surprisingly large number of persons of the State have valuable art materials which they wish to donate to some stable public institution, where they will become available to the general public. Such donations, although they should not be the main source of material, may be made a valuable accessory source of material for the state collection.

Not the least advantage of such a state art collection would be its stimulus toward a comprehensive state policy in regard to the fine arts. At present there is hardly a trace of such an attitude. Each case that develops is handled as a unit, and without the guidance of general principles, with the result that a confusion is developing which later will require serious revision and organization.

## **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 statistical summary for the fiscal year July 1, 1939, to June 30, 1940, follows:

## APPROPRIATIONS AND FUNDS FOR THE FISCAL YEAR

(July 1, 1939, to June 30, 1940)

### *Appropriations*

Salaries:

Administrative staff .....	\$9 870 00
Scientific staff .....	37 990 00
Temporary expert service .....	2 340 00
Scientific assistants .....	5 820 00
Clerical, labor etc. ....	11 680 00
<b>Total salaries .....</b>	<b>\$67 700 00</b>
Equipment and supplies .....	1 990 00
Traveling (of which \$150 for out of State).....	2 500 00
Printing .....	5 000 00
<b>Total budget .....</b>	<b>\$77 190 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. (See State Museum Bul. 313, p. 85-121, 1937, for historical sketch.)

*Open to the public:* Open week days from 9 a. m. to 5 p. m. Closed on Sundays and legal holidays, except from June to September. Total number of hours open to the public for the year, about 2556.

## 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 total 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 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 financial support of the State Museum during the 20-year period.

The tragic feature of the situation is that during this same period there was a great period of economic prosperity, during which museums 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 in a single year for its geologic work alone \$67,500; Illinois, \$125,000; and California, \$63,000; and the New York 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 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, in spite of the fact that aside from finances, they are not properly staffed for such scientific, economic and educational work; they do not have the necessary library, collections, files of data for such work; and, in common with administrative departments, they do not generally have the viewpoint conducive to research and the educational approach. Furthermore, various state administrative agencies at Albany frequently need scientific and technical assistance and cooperation which can best and more quickly be furnished by an agency at Albany.

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

The State Museum has for many years urged that a careful, comprehensive, scientific study be made of the role of research in the State Government, with special reference to the work of the State Museum. Upon such a foundation it should then proceed toward a more constructive administrative policy, instead of the present relatively confused one. Phases of this problem have been the basis for special studies that have appeared in the Annual Reports and elsewhere, but these studies have never been a substitute for the comprehensive study so urgently needed.

The State Education Department has been the subject of several intensive and extensive studies, most of which have been concen-



trated on the public school system, elementary and secondary education. Other educational aspects, such as private education and higher education, including the colleges and universities and research organizations have never had adequate attention, so that even today we do not have a complete picture of the educational system as a whole. These previous studies have not attempted to evaluate critically all previous studies, and then to build upon them a new comprehensive program.

#### THE CURRENT FINANCIAL PROBLEM

As shown by the preceding financial summary, the budget for the past fiscal year was about \$77,000. In addition to this amount 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, as above indicated. On the other hand, valuable assistance has been received from the Work Projects Administration, which furnished both clerical and skilled 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, it is at once apparent that a budget of \$77,000 is ridiculously inadequate to cover an up-to-date, statewide scientific survey of the natural resources. Not until the State Museum has a budget of about \$250,000 can a reasonable approach be made to this important problem.

The summary of the finances for the past ten years follows:

Summary of the State Museum Budgets and Allotments for Fiscal Years, 1930-31—1939-40

	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40
Salaries.....	\$60 870 00	\$60 870 00	\$60 720 00	\$60 370 00	\$60 370 00	\$60 670 00	\$60 670 00	\$62 720 00	\$65 040 00	\$67 700 00
Equipment and supplies (General expense).....	5 000 00	5 000 00	3 000 00	2 400 00	3 000 00	2 800 00	4 100 00	3 000 00	2 690 00	1 990 00
Traveling expenses.....	3 000 00	3 300 00	2 450 00	2 550 00	2 700 00	2 790 00	2 600 00	2 600 00	No allotment	2 500 00
Traveling expenses (out of State).....	(200 00)	(200 00)	(200 00)	(200 00)	(200 00)	(310 00)	(250 00)	(275 00)	(150 00)	(150 00)
Sunday opening.....	1 020 00	1 020 00	.....	.....	.....	.....	.....	.....	.....	.....
Printing.....	7 500 00	10 000 00	8 500 00	5 300 00	5 300 00	5 300 00	6 367 00	5 000 00	5 000 00	5 000 00
Total.....	\$77 390 00	\$80 190 00	\$74 670 00	\$70 620 00	\$71 370 00	\$71 470 00	\$73 737 00	\$73 320 00	\$72 730 00	\$77 190 00

## GROUND WATER RESEARCH

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.

## DONATIONS TO THE STATE MUSEUM

In spite of the earlier 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 Indians, 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.

3 Finally, although the Education Law has provided for nearly 50 years (since 1892), for collections of art, and although New York City is the outstanding art center in the Western hemisphere, neither the general public nor artists have taken an active aggressive effort to build up a state art collection, worthy of the history of art in the State and recognizing the modern development of art. The State should not depend solely on donations any more than it does for highways, agriculture or state publicity; there should be definite financial provision for such work.

### ANNUAL BIBLIOGRAPHY OF THE STATE MUSEUM

Publications by the Museum staff for the fiscal year ending June 30, 1940, or based, at least in part, on the Museum collections, or made in cooperation with the State Museum, are as follows:

#### Adams, Charles C.

- 1940 One Hundred Second Annual Report of the New York State Museum. N. Y. State Mus. Bul., 322:1-132
- 1940a Selected References on the Relation of Science to Modern Life. N. Y. State Mus. Bul., 322:79-96
- [1940b The State Museum. In 35th Ann. Rep't of the Education Department, v. 1, p. 283-84. The customary report by the Director of the State Museum was not printed, but an abstract by H. H. Horner.]
- 1940c The New York State Museum. The Chronicle of the Early American Industries Association, 11:101

#### Flower, Rousseau H.

- 1938 Devonian Brevicones of New York. Palaeontographic Americana, v. 2, no. 9:1-84
- 1939 Study of the Pseudorthoceratidae. Palaeontographic Americana, v. 2, no. 10:1-214

#### Gillette, Tracy

- 1940 Geology of the Clyde and Sodus Bay Quadrangles of New York. N. Y. State Mus. Bul., 320:1-179

#### Gordon, R. B.

- 1940 Primeval Forest Types of Southwestern New York. N. Y. State Mus. Bul., 321:1-102

#### Hartnagel, C. A.

- 1940 Summary of Oil and Gas Activities in New York. Oil Scouts and Landmen's Association, p. 297-303

#### Kilfoyle, C. F.

- 1940 List of the Official Publications of the New York State Museum. N. Y. State Mus. Bul., 322:97-121

#### Lassiter, W. L.

- 1940 The Shakers and Shaker Industries. The Chronicle of the Early American Industries Association, 11:97-99; Reprint, Bul. Columbia County Historical Society, no. 48:14-18

#### Ruedemann, Rudolf

- 1939 General Geology of North America. Geologie der Erde: Geology of North America, 1:41-55

1939a General Paleogeography of North America. *Geologie der Erde: Geology of North America*, 1:72-87

1939b *Climates of the Past in North America*. *Geologie der Erde: Geology of North America*, 1:88-99

**Schoonmaker, W. J.**

1939-40 Fifteen popular articles in *National Humane Review*, v. 27-28

1940 *My Friend the Beaver*. 2d Annual, Adirondack Mountain Club, 20-21 and 44-45

**Stoner, Dayton**

1939 Eastern Sparrow Hawk Feeding on Big Brown Bat. *Auk*, 56:474

1939a Temperature, Growth and Other Studies on Eastern Phoebe. *N. Y. State Mus. Cir.*, 22:1-42

1939b Parasitism of the English Sparrow on the Northern Cliff Swallow. *Wilson Bulletin*, 51:221-22

1940 Autumn Shore Birds in the Albany Region. *Univ. State of New York Bulletin to the Schools*, 26, no. 7:248-51

**Taylor, Norman**

1939 Salt Tolerance of Long Island Salt Marsh Plants. *N. Y. State Mus. Cir.*, 23:1-42

## 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: payments 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

Aspinwall, Dr F. E., Miami, Fla.

22 articles to General Historical and Medical History Collection

Austin, Frederick, Albany, N. Y.

Specimens of carpenter ants, Brooktondale, N. Y.

Bacon, Dr Lyle, St Paul, Minn.

Old foot warmer

Earthenware inkwell

Ink duster

Baker, John W., Huntington, N. Y.

7 wind-eroded pebbles

Baum, Dr T. H., Rome, N. Y.

Hair worm, Rome, N. Y.

Bidwell, Frederick, Albany, N. Y.

Specimens of Mexican bean beetles, Albany, N. Y.

Bogardus, Charlotte, Round Lake, N. Y.

Eastern mourning dove, Round Lake, N. Y.

Boy Scouts of America, Troop 91, Barryville, N. Y.

15 fossil plant specimens, near Barryville, N. Y.

Brown, Dr John S., Edwards, N. Y.

Anhydrite,

Native silver, Edwards mine, Edwards, N. Y.

Bryan, C. S., Providence, R. I.

2 specimens of orchids from New England

- Buddington, Professor A. F., Princeton, N. J.  
 Series of 84 Adirondack rocks
- Burden Iron Works, Troy, N. Y.  
 Old circular of Burden's horseshoe machine
- Campaney, Leo, Indian River, N. Y.  
 Specimens of larvae and work of maple leaf-cutter moth, Indian River, N. Y.
- Clark, John W., Albany, N. Y.  
 Caterpillar of Cecropia moth, Albany, N. Y.
- Clement, R. L., Hempstead, Long Island, N. Y.  
 Specimens of periodical cicada, Rock Point, Long Island, N. Y.
- Coates, Mrs J. S., Goshen, N. Y.  
 Specimen of firefly (*Photuris pennsylvanica* DeG.), Goshen, N. Y.
- Cook, David B., Albany, N. Y.  
 Nest of tree swallow, Stephentown Center, N. Y.
- Cook, John, Albany, N. Y.  
 Copperhead, South Bethlehem, N. Y.
- Corning, Dr Erastus, Albany, N. Y.  
 Old leather-covered trunk; antique weaver's reed; silver point portraits of Governor and Mrs Horatio Seymour by Thomas N. Dewing; an extensive archeological collection, and a box of miscellaneous fishing tackle from Albany, N. Y., and Alaska.
- Curtin, Patrick, Waterford, N. Y.  
 Old pliers
- Dahm, Sister Mary, Church Family of Shakers, Mount Lebanon, N. Y.  
 16 Shaker basket molds
- Deal, John P., Round Lake, N. Y.  
 Many specimens of marine shells
- Deats, William, Barryville, N. Y.  
 98 fossil plant specimens near Barryville, N. Y.
- Deer, John, Catskill, N. Y.  
 25 fossils, Limestone, west of Athens, N. Y.
- Delehanty, A. L., Albany, N. Y.  
 Sample of historic wallpaper
- DeRouville, J. M., Albany, N. Y.  
 Specimens of small bees (*Halictus* sp.), Albany, N. Y.
- Dolder, Mrs Jacob, Voorheesville, N. Y.  
 Catbird, Voorheesville, N. Y.
- Eakins, Martha, Albany, N. Y.  
 Ovenbird near Helderberg lake, N. Y.
- Eardeley, J. W., Woodhaven, Long Island, N. Y.  
 Collection of state tax tokens
- Finlayson, William, Albany, N. Y.  
 2 dog ticks, Albany, N. Y.
- Follett, Louis E., Saratoga Springs, N. Y.  
 Sinew stone and scraper from Saratoga county, N. Y.
- Glasgow, Mrs Robert D., Albany, N. Y.  
 Old wool card  
 Specimen of *Dryopteris fragrans*, Hunter's Pass, Essex county, N. Y.
- Goodselle, Richard H., Batchellerville, N. Y.  
 Large fine feldspar crystal, Batchellerville, N. Y.
- Greeley, Dr J. R., Delmar, N. Y.  
 2 European charr, Iceland
- Griggs, Mrs Charles W., Albany, N. Y.  
 Northern yellowthroat, Albany, N. Y.
- Hall, Charles F., Albany, N. Y.  
 Eastern nighthawk, Albany, N. Y.
- Halladay, J. Stuart, and Thomas, Herrel, Sheffield, Mass.  
 Old lace apron  
 Old bonnets  
 Men's old ties

- Hasbrouck, Mary K., Ogdensburg, N. Y.  
70 specimens of plants from St Lawrence county, N. Y.
- Hoffman, Daniel, New Rochelle, N. Y.  
Specimens of ants, New Rochelle, N. Y.
- Hogan, Steve, Albany, N. Y.  
Orb-weaver spider, Albany, N. Y.
- Hotaling, Mrs Alice M., Albany, N. Y.  
60 specimens of mounted birds and numerous other natural history specimens
- Hoyt, Marshall E., Troy, N. Y.  
2 old brush backs
- Hurtel, Ronald, Rocky Stores, New Baltimore, N. Y.  
Slab containing fossils, Rocky Stores, New Baltimore, N. Y.
- Jordan, Charles, Rensselaer Heights, N. Y.  
New York weasel, Rensselaer Heights, N. Y.
- Kennison, Mary, Selkirk, N. Y.  
Specimen of owl beetle (*Alaus oculatus* L.), Selkirk, N. Y.
- Kimm, S. C., Herkimer, N. Y.  
Old handmade shingles
- Lathrop, Gertrude K., Albany, N. Y.  
Young eastern flying squirrel, Albany, N. Y.
- Leath, James E., Kinderhook, N. Y.  
Columbia Historical Society Quarterly
- Lithgow, David C., Albany, N. Y.  
Plans for Indian Groups in New York State Museum  
2 lithographs of old Albany streets
- Lowenthal, E., Keene Valley, N. Y.  
Specimens of jumping plantlice (*Chermidae*), Keene Valley, N. Y.
- Mansfield, William K., Waterford, N. Y.  
35 miscellaneous antique household articles  
5 oil paintings  
Water color  
Powder horn; 2 war clubs; wood flute, Genesee valley, N. Y.
- Mason, Donald W., Granville, N. Y.  
Northern pileated woodpecker, Granville, N. Y.
- Matthews, W. A., Rochester, N. Y.  
20 plant specimens from western New York
- Mead, Esther, Sherburne, N. Y.  
Specimens of *Kalmia latifolia*, from Madison county, N. Y.
- Miner, Mrs Ella M., and Johnson, Mrs Anna B., Richland, N. Y.  
51 miscellaneous antique household articles
- Muench, E., Greenfield Center, N. Y.  
Specimens of ticks, wood-boring larvae (*Cerambycidae*), and goat lice, Greenfield Center, N. Y.
- Mynter, Kenneth H., Hudson, N. Y.  
Plummet; stone tube fragment; stone pipe stem; stone gouge fragment; semilunar knife (in process), from within a seven-mile radius of Hudson, N. Y.  
12 potsherds; 9 projectile points; drill, bar celt; 39 chipped implements; 2 netsinkers; pestle fragment; ½ pint miscellaneous teeth; clay concretions; charcoal, from Greene Point, N. Y.
- Naumann, Marie, Rocky Stores, New Baltimore, N. Y.  
Slab containing fossils, Rocky Stores, New Baltimore, N. Y.
- Neale, Sister Emma, Church Family of Shakers, Mount Lebanon, N. Y.  
12 books on Shaker religion  
4 Shaker articles  
3 Shaker work baskets
- Nowacki, Joseph, and Woods, Frank, Utica, N. Y.  
Starling, Utica, N. Y.
- Pauly, K. A., Schenectady, N. Y.  
Specimen of *Gorgonis perantiqua*, Middleville, N. Y.

- Perry, J. E., Erie, Pa.  
 Specimen of *cf. Barinophyton* sp., east of Erie, Pa.  
 5 "cone-in-cone" structure specimens, Erie county, Pa.
- Peterson, Mrs Robert, Hillsdale, N. Y.  
 Specimens of flour beetles (*Cathartus advena* Wlatl.), Hillsdale, N. Y.
- PHELPS, Mrs ORRA PARKER, Gansevoort, N. Y.  
 Specimen of *Phlox stolonifera* from Fulton county, N. Y.
- Pohl, Mrs Robert, Albany, N. Y.  
 Catbird, Albany, N. Y.
- Potter, Catharine Eights Boies, Whitehall, N. Y.  
 99 additional historical objects and memorabilia to the Rear Admiral  
 William Parker Potter, Sarah W. Porter and Catharine Eights Boies  
 Potter Collection
- Quillan, F. E., Albany, N. Y.  
 Big brown bat, Albany, N. Y.
- Reed, Andrew, New Lebanon, N. Y.  
 Old thermometer  
 Old apple parer
- Robertson, Mrs Anne S., Troy, N. Y.  
 Sperm whale tooth
- Rowley, Elmer B., Glens Falls, N. Y.  
 Posepnyte, Lake county, Calif.  
 Triphyllite, Grafton Center, N. H.  
 Concretion, agatized, Blythe, Calif.  
 Concretion from lava beds, eastern Oregon
- Samons, Howard, and Sanders, Harry, Albany, N. Y.  
 Starling, Albany, N. Y.
- Sampson, Dr J. A., Albany, N. Y.  
 Eastern vesper sparrow, Grafton, N. Y.
- Sanderson, W. E., Loudonville, N. Y.  
 Ring-necked pheasant, 3 miles south of Rensselaer, N. Y.  
 Eastern sparrow hawk, Loudonville, N. Y.  
 3 eastern wild turkeys, Loudonville, N. Y.
- Sanford, Phyllis, Schodack Landing, N. Y., through Mrs Hianz  
 Slab containing fossils, Hudson River valley, N. Y.
- Schafer, Alice, Albany, N. Y.  
 Baltimore oriole, Rensselaerville, N. Y.
- Schrieber, G. L., Oneonta, N. Y.  
 165 plant specimens, mainly from Otsego county, N. Y.
- Schultze, Arnold E., Albany, N. Y.  
 Specimens of Japanese beetles, Albany, N. Y.
- Scribner, Charles, Albany, N. Y.  
 Specimen of luna moth, Albany, N. Y.
- Second Family of Shakers, Mount Lebanon, N. Y.  
 Shaker cast iron grave marker
- Siemsen, Harry J., Sawkill, N. Y.  
 2 slabs containing tidal markings, Ulster county, N. Y.
- Smiley, Daniel K., jr, Lake Mohonk, N. Y.  
 Wood rat and specimens of flies (*Sarcophaga* sp.), Lake Mohonk, N. Y.
- Smith, H. J., Watervliet, N. Y.  
 Cephalopod, near Copenhagen, N. Y.
- Smith, Ralph H., Albany, N. Y.  
 5 plant specimens from Valcour island, Lake Champlain
- South Family of Shakers, Watervliet, N. Y.  
 6 Shaker flatirons
- Stephens, Eldress Rosetta, North Family, Mount Lebanon, N. Y.  
 Booklet, Autobiography of Eldress Antoinette Dolittle  
 Booklet, Discourse on Religion, Science and Education  
 Old Shaker mirror board
- Street, Mrs Irving M., Utica, N. Y.  
 Samples of early needlework



- Stromberg, Mrs J. A., Albany, N. Y.  
Virginia rail, Albany, N. Y.
- Thomas, Frank, Catskill, N. Y.  
2 old books on interior decorating  
Catalog of artists' materials
- Thomas, Wilfred, Catskill, N. Y.  
Parian ware head of Abraham Lincoln  
Steel engraving of Abraham Lincoln  
Steel engraving of General Marion and British officer  
Steel engraving, Courtship of Washington  
Steel engraving of Thomas Jefferson  
Engraving of Catskill Mountain House  
Old painting of stream in the Catskills  
Old engraving of Queen Victoria
- Van Epps, Percy, Glenville, N. Y.  
Reports of Historian of Schenectady county, N. Y.
- Vosburgh, Dr Frances E., Albany, N. Y.  
Virginia opossum, Voorheesville, N. Y.
- Wetmore, Perry E., Middleburg, N. Y.  
Ring-necked snake, Middleburg, N. Y.
- Wickes, Frank, Greenville, N. Y.  
Old book on surveying
- Wing, Emma O., Hoosick Falls, N. Y.  
Unfinished bannerstone, west of Hoosick Falls, N. Y.
- Ziegler, Louis W., Rockville Centre, Long Island, N. Y.  
Specimens of periodical cicada, Pinelawn, Long Island, N. Y.

#### BY EXCHANGE

- Clausen, Dr Robert T., Ithaca, N. Y.  
274 plant specimens from the Ontario Lake basin  
Gray Herbarium, Harvard University, Cambridge, Mass.  
136 plant specimens
- Rose, Lewis R., San Francisco, Calif.  
581 plant specimens from California
- Solheim, W. G., University of Wyoming, Laramie, Wyo.  
4 specimens of fungi from Wyoming
- University of North Carolina, Chapel Hill, N. C.  
100 plant specimens from the southern United States
- Whitcomb, Professor Lawrence, Lehigh University, Bethlehem, Pa.  
4 specimens of *Homalonotus (Brongiatella) trentonensis* from Pennsylvania
- Willard, Professor Bradford, Lehigh University, Bethlehem, Pa.  
3 specimens of *Bothriolepis canadensis* from Canada

#### BY PURCHASE

- Canterbury Shakers, Canterbury, N. H.  
Collection of 48 Shaker articles
- Neale, Sister Emma, Church Family of Shakers, Mount Lebanon, N. Y.  
Collection of 32 Shaker articles
- South Family of Shakers, Watervliet, N. Y.  
Collection of 16 Shaker articles
- Stephens, Sister Rosetta, North Family of Shakers, Mount Lebanon, N. Y.  
Collection of 38 Shaker articles
- Thomas, Wilfred, Catskill, N. Y.  
Pestle; wood mortar; grooved ax, Catskill, N. Y.
- Ward's Natural Science Establishment, Inc., Rochester, N. Y.  
Fluorite with celestite from Clay Center, Ohio  
Crystallized celestite from Chittenango Falls, N. Y.

## BY THE STAFF

- Adams, Dr Charles C., Albany, N. Y.  
 19 articles to general historical collection
- Chamberlain, K. F., Albany, N. Y.  
 Specimens of 25 species of water beetles (*Dytiscidae*) from Florida, Connecticut, New Hampshire and Manitoba  
 Many specimens of aquatic beetles, New Lebanon, N. Y.
- Glasgow, Dr R. D., Albany, N. Y.  
 Specimens of pigeon horntail, Albany, N. Y.  
 Many specimens of black fly larvae, pupae and adults from Ray brook, Alcohol brook, Sentinel brook and Stony wold, N. Y.
- Grant, David, Troy, N. Y.  
 Old hat brush  
 Carpenter's old hammer  
 Old hand-forged chain link  
 Old tap and die  
 Old bedding fork  
 Old account book  
 Old engraving of Lincoln  
 Old engraving of Burden Iron Works
- House, Dr H. D., Albany, N. Y.  
 Specimens of wasps, Loudonville, N. Y.
- Newland, Dr D. H., Albany, N. Y.  
 Autinite, Grafton, N. H.  
 3 specimens remarkably fluorescent, Grafton, N. H.  
 Feldspar, perthitic, Grafton, N. H.  
 Actinolite, Chester, Vt.  
 Triphyllite, Grafton, N. H.  
 Psilomelane, Grafton, N. H.  
 Apatite in feldspar, Grafton, N. H.  
 Pyroxine crystals in white marble, Tupper Lake, N. Y.
- Paladin, Arthur, Albany, N. Y.  
 4 skulls of eastern red fox, from East Schodack, Altamont and Averill Park, N. Y.  
 Skull of eastern gray fox, Averill Park, N. Y.  
 Skull of eastern gray squirrel, Meadowdale, N. Y.
- Schoonmaker, W. J., Albany, N. Y.  
 Smokey shrew, Stephentown Center, N. Y.  
 Skull of red squirrel, Nassau, N. Y.  
 Red-backed mouse, Stephentown Center, N. Y.  
 Red-headed woodpecker, Best, N. Y.
- Stoner, Dr Dayton, Albany, N. Y.  
 Yellow-bellied sapsucker, Albany, N. Y.  
 2 barn swallows, Westerlo, N. Y.  
 3 Northern cliff swallows, Altamont and Westerlo, N. Y.  
 3 nests of long-billed marsh wren, 5 miles south of Albany, N. Y.  
 Catbird, Guilderland, N. Y.  
 Starling, Albany, N. Y.  
 Bronzed grackle, Albany, N. Y.  
 Virginia opossum, Whaley lake, N. Y.  
 Big brown bat, Albany, N. Y.  
 Red squirrel, Horicon, N. Y.  
 Eastern gray squirrel, Albany, N. Y.  
 2 white-footed mice, Albany, N. Y.

## BY TRANSFER

- Hartnagel, C. A., Slingerlands, N. Y.  
 Book—"William McKinley Memorial"  
 Astronomical lantern slides  
 Old letter of LeGrand Cannon

- New York State Conservation Department, Albany, N. Y.  
 Collection of fishes from 1939 survey of the Lake Ontario region  
 New York State Department of Canals  
 Old taps  
 New York State Education Department, Albany, N. Y.  
 Old incandescent lamp  
 New York State Library, Albany, N. Y.  
 Civil War sword and scabbard

### GIFTS TO INDIVIDUALS AND INSTITUTIONS

- Albertus Magnus Science Club, Pittsburgh, Pa.  
 Specimens of rock salt, talc, gypsum, hematite, magnetite and garnet  
 Attica State Prison  
 7 specimens of trilobites and graptolites from out of the state, for the paleontological exhibition case  
 Boy Scouts of America, Troop 3, Nyack, N. Y.  
 Specimens of black tourmaline, pink tourmaline, beryl and titanite  
 Boy Scouts of America, Bronx, N. Y.  
 17 specimens of rocks and minerals  
 Bulman, Dr O. M. B., Sedgwick Museum, Cambridge, England  
 12 specimens of Ordovician graptolites from New York  
 Harris, Martha L., W. C. University of North Carolina, Greensboro, N. C.  
 Rock salt and iron ore specimens  
 Little, Ernest, Morris Plains, N. J.  
 Specimen of talc  
 Minnick, Harold J., Wilkesburg, Pa.  
 Specimens of talc, hematite and magnetite  
 Nylander, Dr Olof O., Caribou, Me.  
 Specimen of *Devonaster eucharis*, New York, N. Y.  
 2 specimens of *Bothriolepis canadensis* from Canada  
 Slab of *Spirifer mucronatus*, New York, N. Y.  
 Slab of Devonian *Tentaculites* from Gaspé region, Canada  
 Schuchert, Dr Charles, Yale University, New Haven, Conn.  
 3 specimens of the brachiopod *Rensselandi johanni* from Iowa  
 Sellards, Professor E. H., University of Texas, Austin, Texas  
 6 specimens of the Devonian plants *Eosperma topteris* and *Protolepidodendron* from New York, for the Texas Memorial Museum  
 Spafford, Mary W., Fairport, N. Y.  
 10 specimens of rocks and minerals  
 Stark, Cynthia, Wilmington, Del.  
 16 specimens of rocks and minerals  
 Turner, Filmore, Oak Park, Ill.  
 10 specimens of rocks and minerals  
 Willard, Professor Bradford, Lehigh University, Bethlehem, Pa.  
 4 specimens of the starfish *Devonaster eucharis*, New York, N. Y.  
 5 crinoids and 3 blastoids from the Carboniferous of the Mississippi valley.  
 Wold, Hugo M., Duluth, Minn.  
 Specimen of anorthosite



## SCHOOL MUSEUMS, FIELD TRIPS AND TRAVEL AS PHASES OF OBJECTIVE EDUCATION

BY CHARLES C. ADAMS Ph.D.

*Director, New York State Museum*

### CONTENTS

Introduction
Utilization of Local, Natural and Human Resources
The Role of Field Trips or Excursions
The Role of the Travel Trips
The Role of the School Museum—Urban and Rural
Summary and Conclusions
Selected References

"LePlay is the father of scientific regionalism. He has taught us to think in terms of regional sequence. His line of reasoning begins with the soil and its natural products; it continues with man, the creature of work and place; it culminates in man the builder of cities and creator of arts and sciences; and it returns through all the vicissitudes of war and peace to end again in the soil with its fertility renewed and increased by the hand of man, or ruined and destroyed by the same hand. The tale of that cycle in its full complexity, is the history of civilization. The merit of LePlay is to have insisted on the elemental beginnings and to have elucidated their continuity throughout the cycle." *Victor Branford and Patrick Geddes*. "The Coming Polity." p. 92. 1917.

### INTRODUCTION

Education is such an extensive subject, covering so many kinds of activities, and extending from the cradle to the grave, that what we commonly consider the role of the "teacher" is concerned with only a relatively small part of this process. The home, the school and college, the library, the museum, the radio, the "job," and the "world," each plays its role and contributes internal and external pressure (Plant, '37) toward this general process. Only a few individuals run the whole gamut of this series, and the majority are experienced and influenced mainly by the home, the school, the radio and the job. But by degrees more and more of these opportunities are reaching progressively a larger number of people.

The older methods of formal education were by word of mouth and by book learning, and this was preceded by the less formal instruction that was passed along in the family or by the customs and crafts of the communities; both of which were distinctly objective and practical. The very perfection of formal book learning and the social prestige which it acquired enabled it to resist its proper balancing with the objective approach, which has developed with the advance of science, invention and industrialization, as these are based primarily on objective experience as contrasted with verbal or book learning, upon which modern society is founded. (Cf. Graubard, '38; Sears, '39). Although considerable progress has been made toward

a balanced program in certain fields, others lag lamentably. Nor is this lagging confined to the literary and social fields; it even includes the natural sciences and technical fields where it might be least expected, as for example even today when the natural and earth sciences are taught almost exclusively by the book and laboratory method, with little or no direct contact with natural processes, as found in the fields, forests, rivers, lakes and oceans. As has been said, the biological sciences and geography are thus not alone in this neglect, for it extends all too often to history, government, economics and the social sciences in general.

The emphasis placed on objective education in this paper is intended to aid in this orientation, and particularly to indicate some of its relations to school museums, field trips or excursions, to travel as a kind of glorified field excursion, and finally to the coordination of all these methods.

A word of warning should also be given, in order that it would be understood that by a school museum I do not mean a dingy room whose walls and floor are crowded with cases, empty or overflowing with miscellaneous specimens, with no intimate relation to the teaching program; covered with dust, and generally ignored by everyone. I refer rather to a school museum which consists of museum rooms, with cases and exhibits which are *directly and intimately and immediately related to the actual teaching in the school*, and as well other objective teaching materials in *each room* devoted to teaching and supplemented by field trips and excursions. There is the same need, and for the same reasons, for a school museum as there is for a school library, but this is not yet fully recognized. Each class will need to use certain books, while other books will be placed in the school library, and the same should be true of the smaller objective teaching materials; some will be needed at hand for each class, where the pupils are able to handle and examine the objects, and some can be best used in the exhibit or in the storeroom of a school museum, and still other objects can be taken home just as a library loan book. Also, like the school library, the school museum will not take care of itself, and just as there should be a librarian, the school museum must have its curator-teacher, for the same reasons, because museum collections will not care for themselves any better than do books or any other valuables.

Furthermore, emphasis is placed on field excursions and travel because these important aspects of objective teaching have been so grossly neglected, even since school buses have become so generally

available for rural and some urban schools. The fundamentals of all this objective teaching are much the same, and all have been rather generally neglected in practice and need emphasis and re-orientation.

**References.** Adams, '08, '10, '13; Graubard, '38; Hoban, Hoban and Zisman, '37; Moore, '41; Plant, '37; Sears, '39; Vinal, '26.

#### UTILIZATION OF LOCAL, NATURAL AND HUMAN RESOURCES

One of the first steps in practical objective teaching is a study of the local resources of the region, natural and human. It is a fortunate locality indeed which has such a local survey in printed form readily available for local use. Even the partial surveys available are mainly devoted to the larger centers of population. These studies are also largely devoted to the natural sciences, as for example, that by Arnold ('36) and Shannon ('35) for the vicinity of New York City; Grabau and Woodman ('98) for Boston; and Shelford ('13) Cowles ('01) and Downing ('22) for Chicago. No corresponding papers are known to me for the social sciences of these regions. In case such materials are not available the first step is to begin such a survey and make it a part of the general teaching program, thus giving it the zest that accompanies local exploration.

In most localities there are persons who are interested in local history, local industries and the local natural history, who will gladly assist in any such plan, provided there is intelligent leadership. These persons are available to aid in the accumulation of the basal data that must be secured and recorded in usable form, and will often serve as leaders or guides for local field trips.

It is desirable to assemble the best available local maps, and if these are not readily accessible to make even rough ones of your own, as a part of the survey. On these maps indicate the location of the sites worthy of attention. A definite system of note taking will soon become necessary, and such a record, even in the form of a daily journal, will prove of cumulative value, as the survey progresses. Photographs will soon become necessary and if these are numerically tied into the field notes they will more readily be kept under control.

The object of these exploratory field trips is to acquire a first-hand knowledge of the region, to collect ideas, facts and objective materials, and make it all a part of your own experience. Then you will have material for your own records and something to pass on to your pupils and others when the proper time arrives. As previ-

ously stated, begin the survey with the natural features of the region, its geography and physical appearance, plants and animals, and eventually the kind of use that man has made of the region, and how wisely.

Such a survey will not progress far before objective materials will begin to accumulate, and the only long-time plan that will keep such materials under control is to *label* them and give them *numbers* to correspond with the field notes. Nearly every one will at first think that he can remember the data, and has to pass through a stage of confusion before he will overcome the resistance and inertia involved in taking notes, recording the photographic data and numbering the collections of specimens. Possibly you may save yourself some of this confusion, but generally experience is the only teacher!

Soon after starting the survey it is desirable to digest the results. This will involve a careful examination of the observations and facts secured, and of the collections of materials. This will generally involve consulting printed sources of information, talks with local persons who are informed, and recording the results in form for future use, possibly even the preparation of a general report. One can not, of course, make the best use of the local resources until one has become familiar with them and is thus able to select intelligently the most significant available materials when needed.

Some teachers would prefer to make these local explorations alone, but as a rule teachers will prefer to include others, and often some of their pupils, in order to allow them to enjoy this exploratory experience that will be mutually enjoyable and advantageous.

After one has mastered the general local environment, it is time to consider how man has sunk his local cultural roots in this kind of soil and has built his institutions upon these conditions. (*Cf.* Stein, '26.) What is the influence of geographic position on the local conditions? What industries are a direct response to these conditions? Is it the soil and agriculture, or other mineral wealth and allied industries, or geographic position in relation to transportation systems? The relative values of these influences should be evaluated, as well as the changes in the local industries as revealed by their histories and the changes in the relative importance of the various industries. Understanding the relation of local conditions to local industries gives a new interest to all local activities and institutions. (*Cf.* Adams, '41, for an example of a local historic survey.) With such a background, one is ready to consider other influences,



of a more general character, such as our public institutions, as these are patterned in conformity to our state and federal systems.

For these reasons the survey and study of the local public institutions are an essential condition for understanding the life of the community. After one has a grasp of the relation of the people to their local environment and sees how the ways of making a living form the basis for the various industries, it is a natural step to turn to the "rules of the game," our laws and institutions which have developed to supervise the human relations that have grown up to assure a practical or just access to the natural and human opportunities provided in the region. The function of local institutions will have a new meaning to many when approached from this angle, not as arbitrary and remote, as when approached as an independent subject, without regard to local conditions. It is one thing to read about the functions of local, state and federal governments, but when they are enlivened by field trips and actually viewed in action, as they touch upon the life of each one, they take on a meaning and significance that does not come in any other way.

In these studies sequences are just as important as elsewhere, and beginning with the local, then with the state, and finally with the federal agencies, an expanding series is provided, and thus is gained a comprehensive view and a general understanding of these public problems.

Finally, with this general background the next step is to include the gamut of local private, informal (Thomas, '41) and formal agencies and activities, educational and cultural, as these are also a real part of the picture. This field is so vast and complex that it is important to keep in mind that it is primarily the broad general relations that should be stressed, in order that the fundamentals of the situation will not be obscured by too many details.

**References.** Adams, '25, '37, '41; Arnold, '36; Cowles, '01; Branford and Geddes, '17; Chase, '36; Mumford, '38; Grabau and Woodman, '98; Bryan, '33; Hoban, Hoban and Zisman, '37; Lobeck, '18, '27; Kroeber, '39; Mukerjee, '26; Downing, '22; Shannon, '35; Shelford, '13; Stein, '26; Thomas, '41; N. Y. Division of Planning, '39, Graphic Compendium.

### THE ROLE OF FIELD TRIPS OR EXCURSIONS

As soon as a substantial acquaintance has been made of local conditions it is time to begin conducting classes or other groups on local field excursions to favorable sites.

The main objective of the excursion is to cultivate an attitude of mind toward acquiring new knowledge, its accumulation, and its appreciation, such as can only be stimulated and acquired in the immediate presence of the situation as a whole. Other values will possibly come later, but to miss this vital element is to lose the most important.

The plans for exploratory trips should include the practical details as to routes, time needed, maps, and any special directions as to the method of transportation. The leader should have a definite idea of what is to be learned and the procedure, and should be careful not to attempt too much for the time available or for the preparation and condition of the party.

There is no better guide than common sense in conducting these excursions, but this also involves substantial information. If too much is undertaken there is confusion of ideas, no clear understanding and assimilation. The time element is also very important; if there is too much haste and the group becomes tired interest will lag, and there are many other possibilities of failure.

There are many advantages in following a definite plan or sequence of excursions. Many persons have never really looked at their physical environment. I have known very intelligent adults who got little more than color and form out of a fleeting landscape, and have really no idea of what it means in terms of physical or human relations. There is probably not much of this, however, among normal pupils and students. (*Cf.* Lobeck, '18, '27, '33; Mackaye, '32.)

The most favorable sequence is to consider first the features of the physical environment, the geography, topography, gross vegetational cover and the conspicuous and significant animals, then to consider the activities of man, as related to the local conditions, or as examples of special or remote control, either as a result of relative accessibility, neglect, or the lag of time from former conditions no longer fully operative, as when a canal, railroad or highway is abandoned, factories are closed or farms abandoned.

Field trips may range in size from those by individuals and small groups to classes of various sizes. The size of the party will vary with the aim of the trip. By experience one learns how to adjust such matters. With a small group, the leader does not need to prepare his groups in advance so carefully, for he has time to give general directions and to discuss matters with members individually; but with larger groups, written directions become more desirable or necessary.

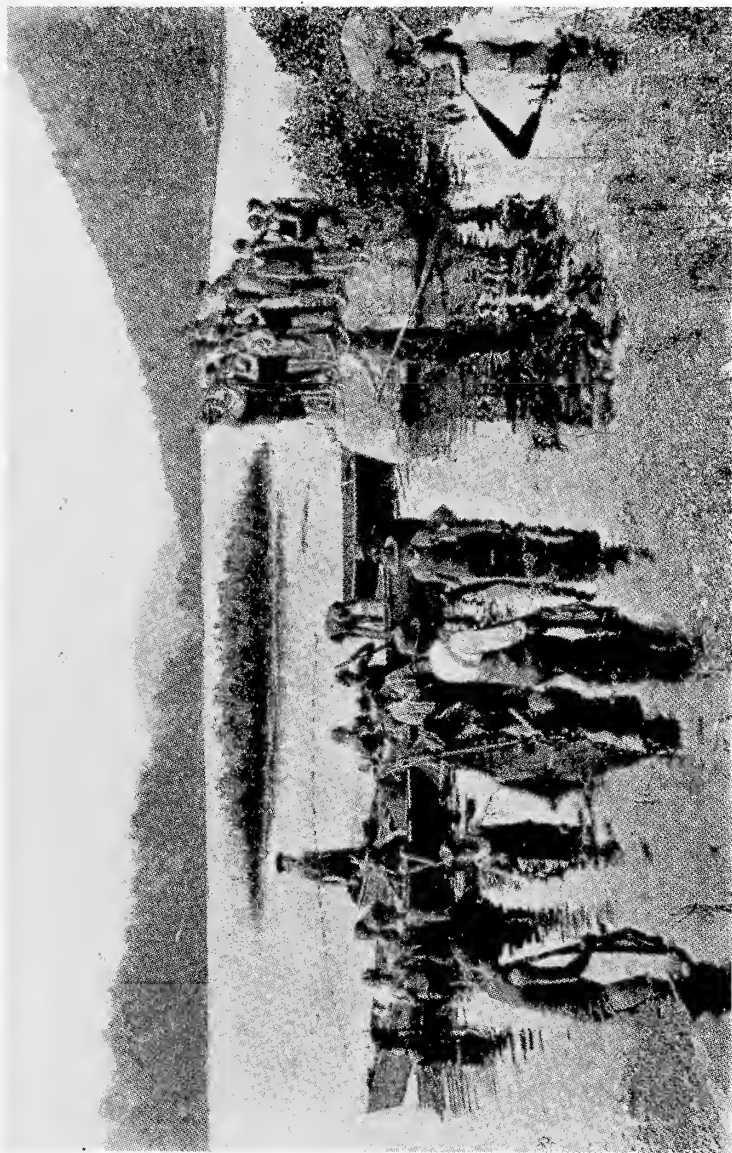


Figure 21 Introducing Boy Scouts to the pleasures of a fishing field excursion, on the Kanahwauke chain of lakes



Defective methods of teaching or leading are just as injurious in the field as elsewhere. A teacher or leader who talks too much and does not give the student a chance to think, or one who tells the group everything instead of stimulating personal activity by questions and other methods defeats the purpose of the trip. I recall an assistant in charge of a subgroup of a large party, who gathered his group around him and lectured to them, instead of leading them to find out for themselves what was all about them. I recall another instance of a scout leader who came to me in the Palisades Interstate Park and asked for a "lecture" on fish to his boys, who were camping on a lake in the park (Adams, '19). I told my field partner that I had refused to give a talk, to which he expressed surprise, because he knew I was interested in such boys. It was a clear case of the leader not knowing what was needed. I told him to pick out a half dozen of the best boys of his group and to have them in bathing suits at 9 a.m. or 2 p.m., when we would arrive in rowboats. Our flat-bottomed scows were loaded with tubs, pails, battery jars and fruit jars, small dip nets and inexpensive four-foot minnow seines mounted on hoe handles. We showed these boys from the New York City streets how to use these nets and seines and catch aquatic insects, tadpoles and small bullheads. The catches were then placed in the jars and tubs for observation. After these preliminaries we turned the outfit over to these lads and for a couple of hours they had the time of their life! Two such trips were taken each day for three days, and about 150 boys were thus introduced to this experience, at the end of which my partner and I were completely tired out, as it was the most strenuous and enjoyable work that we had done that summer! Oh yes, we could have lectured to them, but that would have been just some more words and remote from their lives on the lake; but we put them in the mud with better results (figure 21) and those boys probably remember that experience to this day!

A common source of hesitation on the part of teachers or leaders is the fear that, when on field trips, the members of the party will ask questions that they can not answer. In general, this means that the teacher lacks preparation for the work, either of knowledge or experience. No teacher or leader can go on a trip and answer correctly all questions. One needs to learn early that it is only necessary to retain the confidence of the party, to be fair and honest with them, and to let them know that he is also out to learn! It is only gross, inexcusable ignorance and bluffing that brings distrust of the leader.

In spite of the danger some leaders think that they must give an immediate answer to every question, and such a trail is generously strewn with errors, and although some "get away" with it, others do not, and pay the penalty by deserved distrust. The leader should be a *member of the party*, and the most eager person to learn. To the best teachers these excursions are a main source of new facts, ideas, interpretations and inspiration.

Field trips which ignore the beauty, the color and form of the landscape, the same qualities in the trees, flowers, birds and other animals, as well as the sounds of nature, the winds, the ripple and splash of rapid water, the waves rolling in on the beach, will lose many of the essential features of the scene, and one of the greatest benefits to be derived from field excursions and the satisfaction that comes from pleasant recollections.

Without such experience one can not adequately appreciate some of the outstanding American authors, such as Thoreau, Muir, W. H. Hudson, John C. Van Dyke, W. Hamilton Gibson (*cf.* Adams, '10, and '40a for lists of such authors) and others who have discovered the wealth of beauty in the American scene.

Let us consider some of the many experiments that have been tried in order to profit from this direct contact with nature in the field. From its inception and for many years, I was responsible for

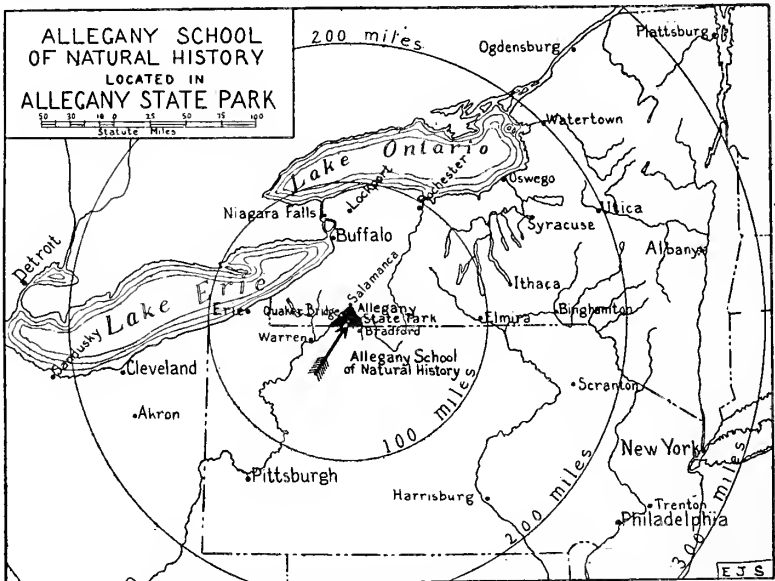


Figure 22 Former location of Allegheny School of Natural History in Allegheny State Park, an outdoor school of natural history where objective teaching was practised.

the educational policy of the Allegany School of Natural History in the Allegany State Park, south of Buffalo, N. Y. (figure 22). This was an outdoor school of natural history, conducted jointly with the Buffalo Society of Natural Sciences, and located in the woods (figure 23) of this 56,000-acre state park (Adams, '40). The students lived at the school in cabins (figure 24) surrounded by the forest, in which deer, bear, raccoons, foxes, porcupines and similar wild animals lived with great freedom. This made it possible for urban students to live in the woods, for weeks in succession, and become acquainted with the region as an intimate experience. Field trips on foot or by bus made it possible to get acquainted with a considerable variety of forests and streams, under very favorable circumstances. The entire day was devoted to various phases of the same general subject, for example, such as plants, birds or geology, with the result that it was possible to become saturated with a subject and enjoy it greatly. Characteristic views of the conditions of life and the work are shown in figures 25-28.

The teachers themselves shared the favorable conditions for study and the inspiration of such conditions, with the result that they have passed on their experience to others in the form of reports that leave a permanent record of the life which they lived. Saunders, ('29) produced a Handbook on Bird Song that marked a new era in this field of study, and the Congressional Library reproduced this in Braille for the blind (figures 29, 30) thus extending its influence far beyond the field study in the Allegany Park. The same naturalist (Saunders, '29a), following the higher Adirondack trails, showed what can be learned about the birds along these mountain routes.

Many years ago another teacher-naturalist, Silloway, visited the Palisades Interstate Park on the lower Hudson river and prowled around studying and reflecting on the birds and the great crowds of city people that came to the Bear Mountain Park, and then told ('19, '20a) how to use such a park for educational as well as recreational purposes. Silloway's narrative has been in circulation now for over 20 years. He discovered a new ideal that even today few rural parks have been able to reach and none surpass (*cf.* also Brown, '20).

Many other similar and allied methods have been devised to enable students and visitors to get a direct personal acquaintance with nature under favorable conditions, as at the lake and seaside laboratories and schools, but most of these are conducted as advanced schools (Ready, '30) and not as a part of the public school system, although they contribute to the training of teachers and leaders.

There has been a great wave of interest in summer camps for children, but most of these center interest on recreation rather than on science and education (Mason, '30; Vinal, '36). These camps have, however, demonstrated how the school system might make use of such experiences. Most of the teaching "factories" are in cities and are not properly located to handle this rural aspect. With the extensive public acquisition of land for local, state and federal parks and forests, however, there should follow a definite system of relating these lands to public education. The Allegany School of Natural History was conducted as a definite experiment to test several phases of this problem in connection with state parks and to build up literature on this problem. The natural history trail (Bishop, '28), the trailside museum (Bumpus, '26), the "nature trails" of the American Museum of Natural History in the Palisades Interstate Park and the national parks have been extensively publicized.

**References.** Adams, '10, '11, '19, '20, '21, '25, '40; Bishop, '28; Bumpus, '26; Carr, '27, '29, '30, '31, '37; Cooke, '30; Coleman, '28; Lobeck, '18, '27, '33, '34; Lutz, '26; Mason, '27, '30; Ramsey, '38; Ready, '30; Saunders, '29, '29a; Silloway, '20, '20a; Vinal, '26, '36.

### THE ROLE OF TRAVEL TRIPS

Local field excursions are intended to give experience in applying the scientific attitude of mind beyond the printed page and beyond the walls of the school to the neighboring environment. When these methods of study are in hand it is time to extend the base of action to larger and even to remote areas.

Travel tours have long been in use by the favored economic groups, but it is only within comparatively recent years, with the development of the bicycle, automobile and school bus, that a rapid increase in the number of students sharing these advantages has taken place, and tours have become a regular school activity.

These tours have had a slow development even in the colleges, and then mainly in the natural, and later in the social sciences. European summer travel by conducted parties was a partial substitute, but this was not, as a rule, based on local travel experience, and no doubt suffered from this defect.

A travel tour is, of course, much more complicated than a local trip, but its fundamentals are the same. A considerable amount of executive ability is needed to plan such trips, to make all the arrangements in advance and to maintain the morale of the party, so that it will be in the best possible frame of mind to make the most of



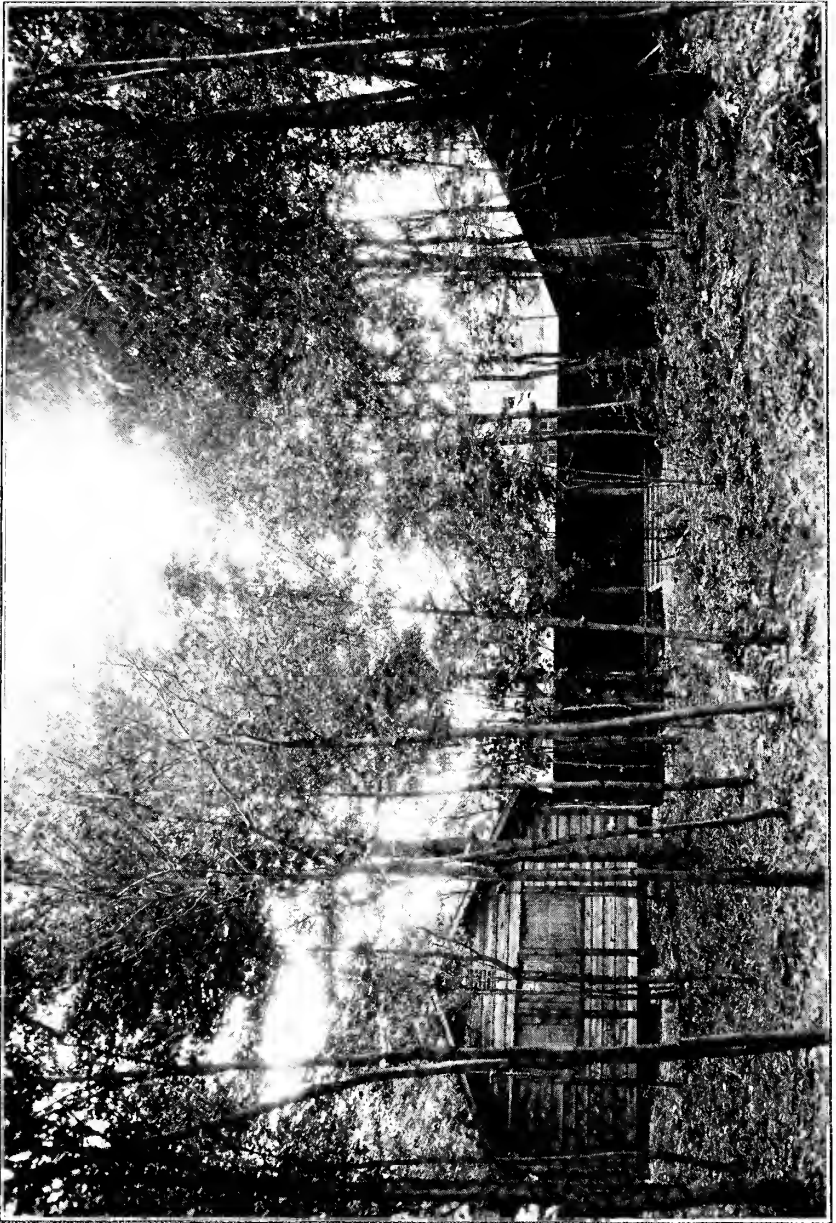


Figure 23 Field laboratory used at the Allegany School of Natural History



Figure 24 A student's summer home at the Allegheny School of Natural History. From Allegheny School of Natural History Announcement, summer of 1934.



Figure 25 Outlook down Quaker Valley, Sunset Point, on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders.



Figure 26 Clump of interrupted fern, showing method of labeling, on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders.



Figure 27 Students on the natural history trail, Allegheny School of Natural History. Photograph by A. A. Saunders.



Figure 28 Luxuriant plant growth on old log on the natural history hiking trail, Allegheny School of Natural History, Allegheny State Park. Photograph by A. A. Saunders.

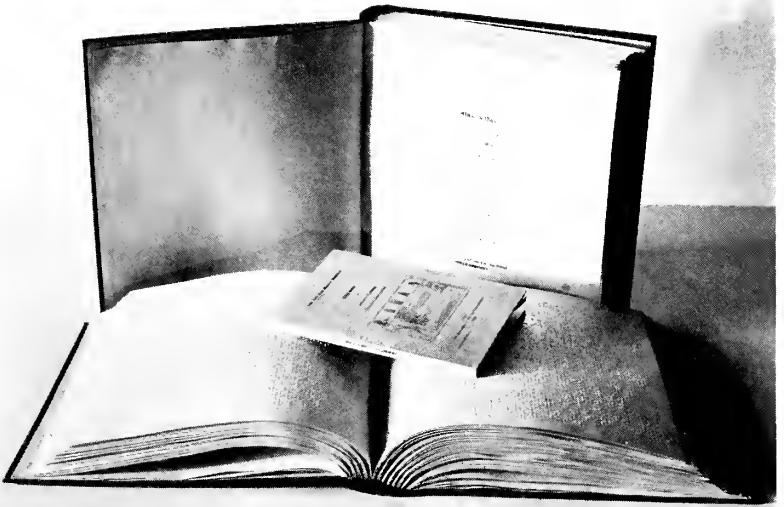


Figure 29 The Braille edition of Saunders' State Museum Handbook on Bird Song, showing the raised letter system for the blind. Photograph by E. J. Stein.

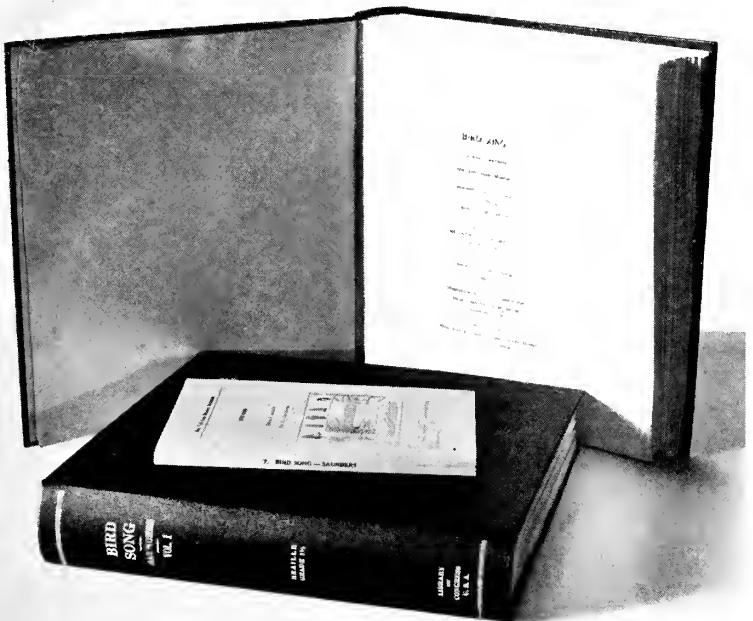


Figure 30 The two-volume edition in Braille of Saunders' Bird Song. Photograph by E. J. Stein.



the trip. This is no amateur undertaking and calls for skilled and experienced leadership. The aim is not simply to cover the country, see the sights and have a pleasant time, but to understand nature and man in the local situation.

These objective methods are being extended to many fields of education and their practical value has come to be recognized for their value in business and government, as a necessary means of keeping informed about any undertaking of importance. Full advantage

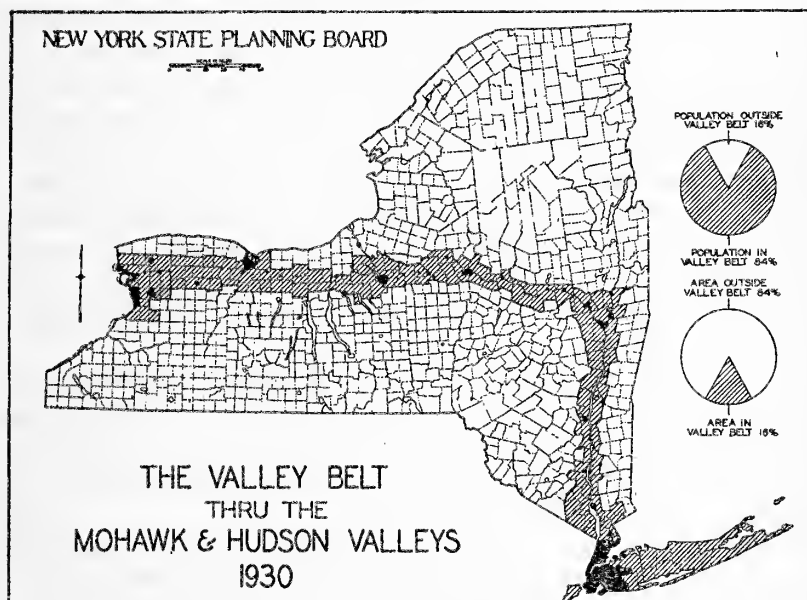


Figure 31 The Valley Belt from Long Island to Buffalo, where 84 per cent of the population of the State live. Courtesy of State Planning Board.

of this should be utilized to hasten its expansion throughout the educational system. Lobeck ('33) has prepared an excellent guide for air travel.

One of the most frequent and popular tours is a visit to the state capital or some large city, culminating in a visit to Washington. There is much to be said for such a plan, but travel should not end with this, for it is only a beginning. Each year hundreds of students visit the State Museum at Albany en route to Washington on such tours.

It has long been customary for students of geography, geology and the biological sciences to make extensive tours by buses. Furthermore, as previously mentioned, the summer schools on the seashore, lakes, rivers, in the mountains, and the conducted tours of the national

parks (Bryant and Atwood, '32) use these same general methods. Each one becomes a new local base for field trips, and should thus get away from the laboratory and bookish atmosphere. A change of location, however, is no assurance of a fundamental change of teaching. I recall an instance in which a prominent university moved its summer classes in the biological sciences to the riverside, where there was a marvelous chance for unsurpassed field work, but continued its laboratory teaching as it did in the city, ignoring the large river, the unrivaled swamps, lakes, bottomland forests, and even the near-by sand dunes! The instructors' theory of "organic adaptation" did not extend to themselves or their teaching! This was not addiction to book learning, but to the laboratory which was equally deadly when not properly conducted.

The automobile has been a very great aid toward travel; with it has come a great improvement in maps and travel guides, tourist camps, and in rural accommodations. Our people are learning for themselves the pleasure of travel, and this is favorable to educational support for such activity and is helping to break down conservatism and provincialism.

Strange as it may seem, the supply of general information for travel is vastly more abundant than that needed for local field trips in most regions. Without question the various Work Projects Administration writers' state guides have made a great contribution to this phase of education.

To make the most of a travel trip, or of a local field trip, the student must write an account of it. There is no substitute for this kind of report. A daily journal of the trip is generally found to be the basis for a summary report, but this should not be considered a substitute for it. For most persons writing a connected report is the best method of learning just how thoroughly one understands a complicated experience such as a well-executed tour.

**References.** Bryant and Atwood, '32; Hoban, Hoban and Zisman, '37; Lobeck, '18, '27, '33, '34; Mackaye '32; Pennsylvania Dep't of Public Instruction, '30; U. S. Office of Education, Cir. No. 177, 1939; Vinal, '36.

#### THE ROLE OF THE SCHOOL MUSEUM—URBAN AND RURAL

In the preceding discussion objective education was stressed in contrast with book and laboratory learning, and emphasis was placed upon the use of the local natural and human resources by means of field trips, excursions and travel, in order to orient the school or



teaching museum in the general objective scheme. In general, the teaching museum should not attempt to be a substitute for local field trips or travel, but it should *supplement* their methods. No sharp line can, however, be drawn between them, for when field trips and travel are not yet possible more stress should be placed upon the museum as a partial substitute. This survey of the situation, however, indicates that the teaching museum has a fairly definite role in this series of procedures.

The school museum problem for urban schools, particularly for those of the metropolitan centers, is fundamentally different from that of the rural and smaller town schools. As is well known, 84 per cent of the population of New York State lives in the narrow valley belt extending from New York City to Albany, and from Albany to Buffalo. (N. Y. Div. Planning, '39, p. 120; Stein, '26, p. 41). Binghamton is the only metropolitan area off this main route (figure 31). The metropolitan centers of the State are shown in

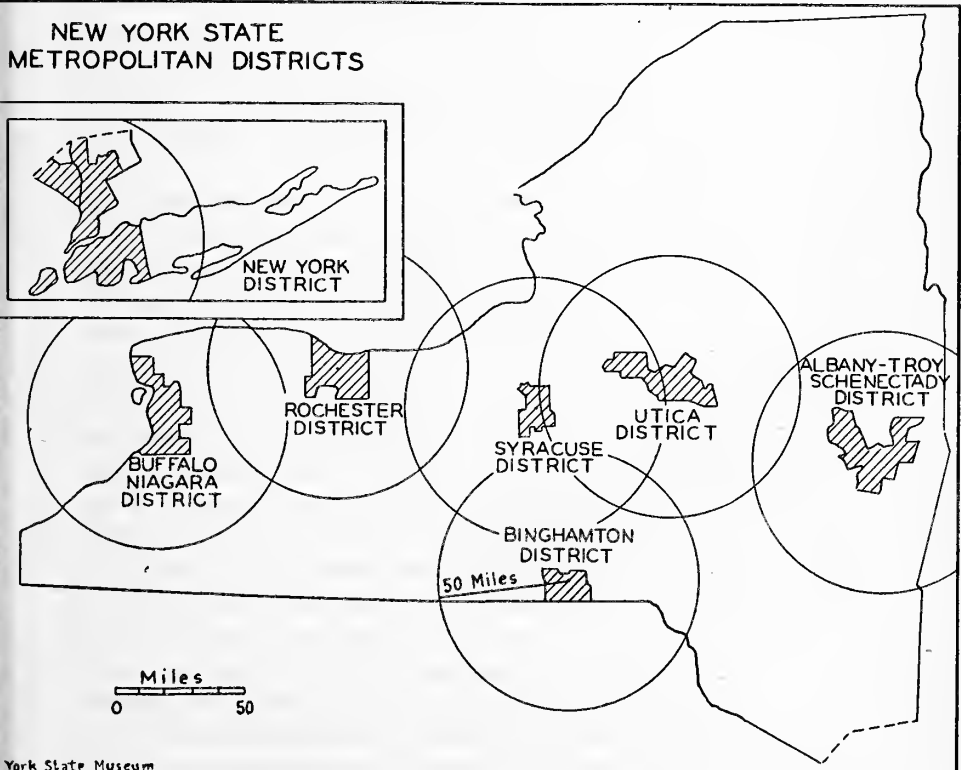


Figure 32 Map of metropolitan areas showing location of the public and semipublic museums available for school children within about 50 or 75-mile bus ride

figure 32, and if 50-mile circles are drawn around these seven metropolitan areas it will be seen that a very large percentage of school children, by means of about a 50-mile bus ride, can reach centers which are capable of maintaining general public museums. There is only one of the localities which does not have a general public or semipublic museum—and that is Binghamton, but Syracuse is within reach. New York City, of course, leads with the greatest number, even an excessive number of museums of many kinds, as some of these would do much more good elsewhere in neglected regions. Albany has the State Museum and the Albany Institute of History and Art; Utica has a semipublic art museum, the Munson-Williams-Proctor Institute; Syracuse has a semipublic art museum and several other local collections; Rochester has a public museum, the Rochester Museum of Arts and Sciences, and a semipublic Memorial Art Gallery, and Buffalo several semipublic museums, including science, history and art. Thus the great mass of the population of the State is fairly well provided for with regard to general public museums. In case the St Lawrence is developed for navigation and power, the chances are that northern New York will also develop a public museum. Possibly here is an opportunity for the Paul Smith Foundation to make an important local educational contribution to the Adirondack region.

In some cases both rural and urban bus services are provided from the schools to the museum, or loans from the museum to the schools, or both. Where such facilities are provided not much more is needed except provision for those materials which are to be *put into the hands of the pupils or students for direct personal use* in the school-room, shop or laboratory.

The first practical step is to determine in each case the kind of school collections that are needed to meet the local situation and the conditions under which they are to be made available; in other words, to decide just what kind of materials are needed to fit into the teaching program. Many teachers have never been provided with collections and do not know how to use them. Some teachers, like other leaders, will request materials or assistance not suitable for the purpose. These conditions must be taken into account. No doubt teachers will have to experiment and test their provisional selections. There should be constant experimentation as the teacher's experience develops and as the collections grow and change.

Another difficult practical problem is to refuse materials which are offered as donations to the school museum and which are of no

value to the collection. If material is accepted with no conditions, however, the useless material can be discarded judiciously. Similar tact is required when pupils or students make contributions. A gift often makes the donor a participant in the work, and this is often mutually advantageous.

These general conditions indicate that school museums should not attempt to compete with the larger museums, but should confine their efforts to their particular school problems, and thus become primarily local teaching museums.

In the case of the smaller towns and those that have centralized schools, there is another problem. A careful study of their museum problems is needed. Such schools should emphasize local needs, supplementing the exhibits in accessible metropolitan museums.

With the rapid expansion of the radio and with the prospects of television, the voice and pictures may even have an undue influence over the objective method for a time, just as textbook learning has in the past, and yet a balanced program will remain the basal necessity.

In spite of the great advances made in objective education, textbook learning dominates education. Turn to the outstanding educational surveys which have been made during the past 20 years, and as a rule note the neglect of libraries (as contrasted with the textbooks) and museums, and the gross neglect of excursions and travel. With hundreds of pages given to other topics, not even tens are given to these subjects.

The needs of the urban and rural schools are often complementary. The urban schools need the rural experience and the rural schools need the urban experience. The practical problem is how to make the desirable exchanges. The urban school museum needs to present the rural problems and thus pave the way for the rural field trip and for travel.

The school will often be able to secure loan material which, as a rule, is well prepared for use. Having materials for handling by the pupils and students is a very important phase of teaching, and *must be made the main basis for the most direct application of the scientific method*, because as a rule at present, loan materials are to be looked at only and not handled, or worn out or used up! Therefore it is not the loan material, but the nucleus of material that is for handling that should be made the essential core of school museum and of class teaching.

A central rural school (figure 33) may be large enough to have a room or rooms for the school museum collections, but in general the smaller the school the less it will have of objective material. The smaller schools (figure 34), however, are often favorably located for field trips and for visits to small industrial plants and certain public works. These differences in the local conditions should be clearly recognized and corresponding changes should be made in the school collections.

The rural school is generally better equipped for field trips and bus trips than the city school, and even trips to public museums are becoming increasingly available to them (figures 35-39).

The automobile traveling library has demonstrated what it can do with books (figures 40-42), and a large moving van properly equipped with museum teaching objects and exhibits could do much for the smaller and isolated schools. If a museum truck should spend two to three days at a central or consolidated school, it would have a stimulating effect if accompanied by a competent teacher, a field trip leader or demonstrator. As I have said over the radio (Adams '37, p. 18-19):

"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



Figure 33 A typical one-teacher school now included in a central rural school district



Figure 34 A modern school building in a central rural school district



Figure 35 Group of pupils from the Hooper School, Endwell, N. Y., visiting the State Museum



Figure 36 The Endwell school children assembled about the state relief map in the State Museum

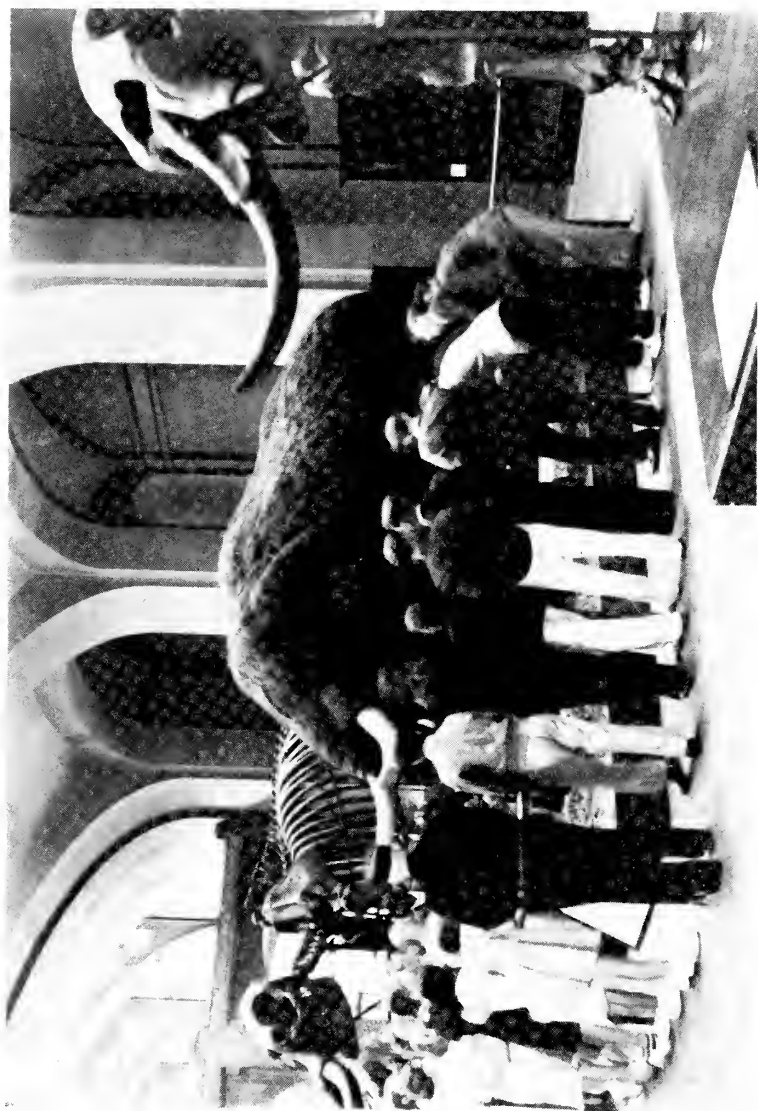


Figure 37 School class from Malden, Uister county, visit the State Museum and examine the restoration of the mastodon



Figure 38 Children from Glens Falls visit the Iroquois Indian Groups of the State Museum





tions, in relation to economic exhibits, has been the Commercial Museum of Philadelphia. This began by lending to the local schools small cases of specimens of commercial products, as coal, peat and textiles, each loan accompanied by explanatory booklets. Later this service was extended to the schools of the state. After much experience with this loan system the conclusion was drawn by Dr Charles R. Toothaker ('38, and other papers) that what the schools *most needed was their own school collection or museum*, a very significant conclusion, upon which too much stress can not be placed.

There are other leading organizations testing the loan system. The Field Museum of Natural History of Chicago has a special N. W. Harris Fund for loan collections to the schools of the city. While this work has been conducted for many years and excellent exhibits have been lent, these exhibits have been in cases and not for handling, as was permitted by the Philadelphia exhibits. No comprehensive study has been made of this system to summarize all that has been learned.

The American Museum of Natural History in New York City has likewise for many years lent exhibits to the city schools on a very large scale. Here, also, the children have the chance to visit the museum, so that the loans are supplementary. No comprehensive study and evaluation of this system has been made.

In many cities, as in Buffalo, Rochester, Newark, Pittsburgh and St Louis, loans are made to the schools. In St Louis this has been a part of the school system and not a loan by some outside agency, and there has been no central general museum (*cf.* Rathmann, '15). A careful critical review and evaluation of this loan system is urgently needed today. Although descriptive accounts have been given of the methods, the broad relations need study and criticism.

As early as June 1902, the New York State Museum, through Dr E. P. Felt, State Entomologist, proposed the loans of insect collections to the schools, but the response did not warrant its continuation.

Many years later, in June 1926, I presented to the New York State Board of Regents two proposals for extension work by the New York State Museum. One was the plan for the Allegany School of Natural History, and the other was for the development of loans and cooperation with the schools. To make this proposal objective and concrete, a representative series of the best exhibits from the Philadelphia Commercial Museum, the Field Museum and the American Museum of Natural History were displayed to the Re-



Figure 40 Library bus of the Yonkers Public Library, showing the substantial character of the automobile, and suggesting its adaptability to school museum exhibits. Courtesy of Yonkers Public Library.



Figure 41 The bookmobile in action, and showing its active appeal. A collection of specimens would be equally attractive. Courtesy of Yonkers Public Library.

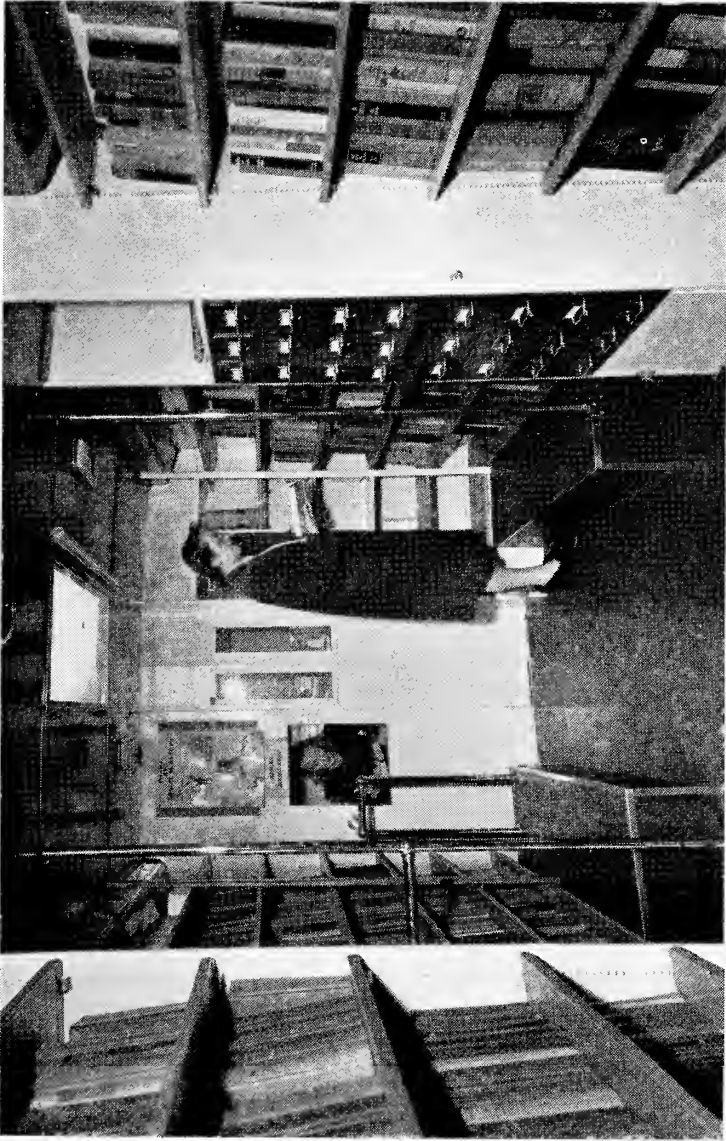


Figure 42 Interior view of the bookmobile showing the space available for collections of specimens. Courtesy of Yonkers Public Library.

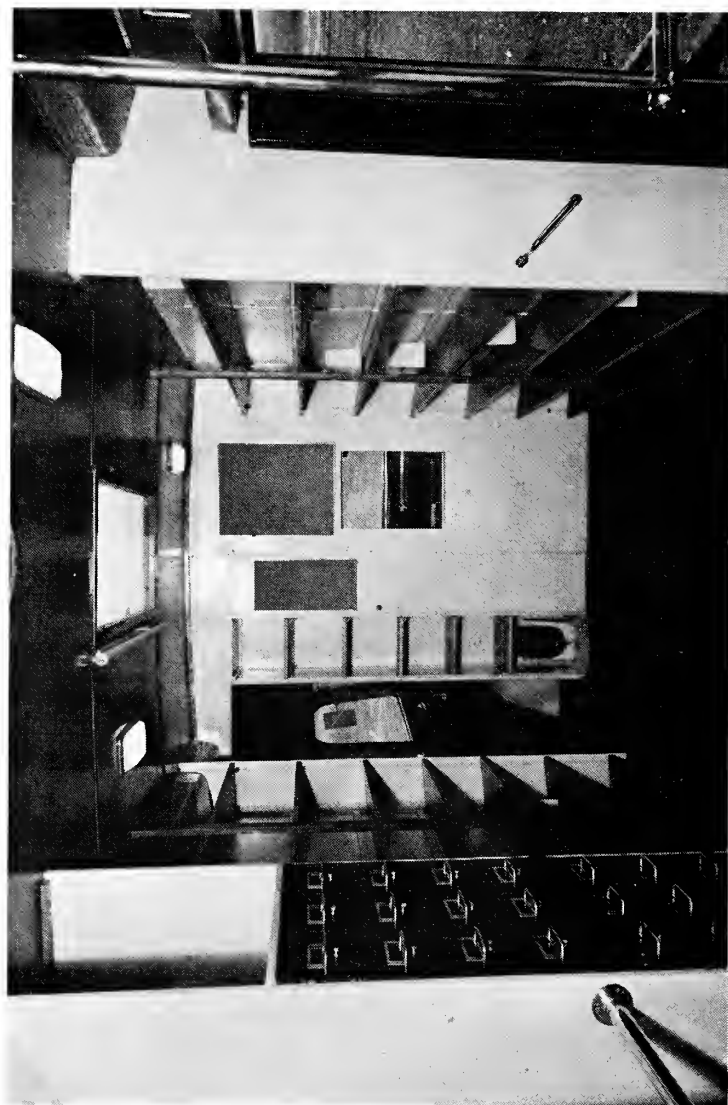


Figure 43 Another interior view of the bookmobile. Courtesy of Yonkers Public Library.

gents, and I urged definite provision for both kinds of work, cooperation with the schools and an outdoor school of natural history. The Allegany School proposal was accepted at that time (Adams, '40). This school was intended to demonstrate how to relate the educational system of the State to the state parks system, because here is a vast educational resource that is now primarily used for recreation, and should also be utilized for education. This is in harmony with the theory of diversified or multiple use of public facilities. Some of the same persons who are eager to see the idea of multiple use of school properties for recreation show slight interest in the use of parks for educational purposes!

In view of past experience it seems evident that there is a very distinct field for the school museum that supplements the laboratory, the classroom, the shop, the various kinds of loan collections and even field trips and travel tours. Each has its proper place in a comprehensive plan, and each is capable of making a positive contribution. The *relative emphasis* should depend on the local conditions, *their coordination and integration*.

In New York State, away from the metropolitan centers, there are perhaps about 500 schools which are located in communities that are able to support good school museums. There are a number of schools where conditions have been favorable because teachers or officials have been at work, such as the Central School District No. 1 at Bolivar, where J. E. Whitford, supervising principal, has built up an excellent school museum. But these museums have had no assistance comparable to that provided for school libraries. No state official is specifically charged or provided with funds for giving special attention to these museums, and no report or survey gives a satisfactory account of their status.

There are also schools in or adjacent to the metropolitan areas that are doing excellent work, such as the museum at Schenectady, which was started in the Brandywine School and grew into a school museum organization (figures 44-47), now occupying an entire building. It has become the leading community center in that city through the leadership of Arthur L. Jones, and with the support of Dr W. Howard Pillsbury, superintendent of schools. It is now privately financed.

A frequent question regarding the school museum is how its collections can be secured—when it is once known what is needed. There is no simple answer to such a question. First of all, a considerable amount of the best local material can be secured by local

field trips and from the local community. This is the best plan on which to begin. Much other valuable local material can be secured by donation, as soon as confidence is established in the soundness of the plan and its stability. Other material must be purchased. Cooperation with the school manual trade divisions may produce many useful pieces of equipment and aids to display. Commercial advertising is another source of materials (Booth, '20). Various relief agencies have provided clerks, artists, draftsmen and labor, which have done much to improve school museums. When all of these local influences are focused and coordinated, it is surprising how much can be done and has been done.

In recent years there has been considerable agitation for teaching conservation of natural resources. Just where can this be taught to the best advantage? There are those who desire every special interest to be made the basis for special courses, such as temperance, health, safety and conservation, and there are those who advocate such teaching by means of emphasis in their proper place in the general curriculum, rather than by special courses. Conservation is fundamentally a phase of the "land use" problem—the relation of the natural resources to man. It seems to me that this is one of the fundamentals that should be taught throughout the educational system by means of all methods of teaching, with emphasis naturally on field trips and excursions where these relations can be observed to the best advantage (Hanna, '39; Chase, '36). Public policies for planning follow naturally from the consideration of conservation of which it is a part (Adams, '37).

**References.** Adams, '10, '11, '37, '40; Berkeley, '32; Booth, '20; Chase, '36; Coleman, '27; Hanna, '39; Rathmann, '15; Stein, '26; Toothaker, '11, '38.

### SUMMARY AND CONCLUSIONS

The emphasis of the present paper is for a more balanced teaching and educational program between book learning and objective teaching. This should apply throughout the educational system. At present we are not using all of the available objective resources to the best advantage, and additional ones are urgently needed.

The suggested changes in teaching and leadership are intended to make a more practical use of the *scientific and explanatory method*, by the intensive and extensive use of the local natural, human and cultural resources by the local educational system. A mastery of this method will enable the teachers and leaders not only to understand better their own region, but as well how to study other local-



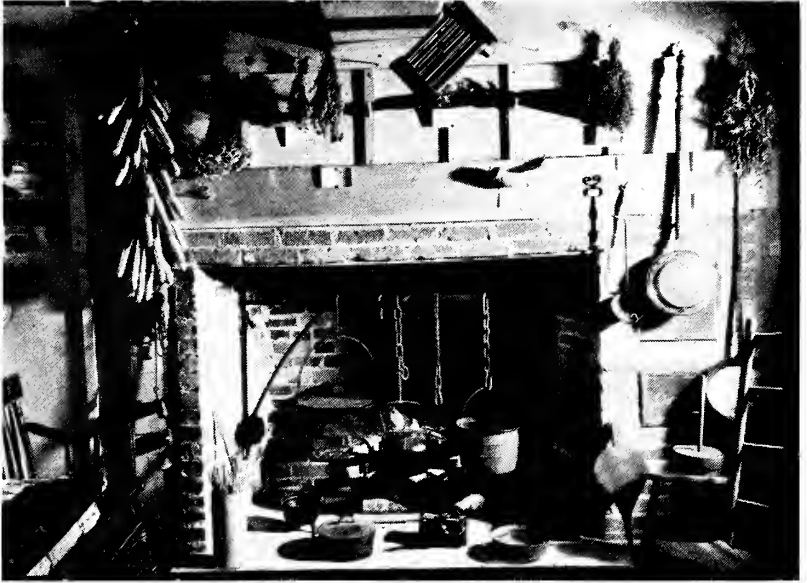


Figure 44 Colonial kitchen in the Brandywine School Museum, Schenectady, N. Y., developed by Arthur L. Jones, 1938. Photograph by Arthur L. Jones.



Figure 45 School classes visiting the Brandywine School Museum, 1938. Photograph by Arthur L. Jones.



Figure 46 Visiting class at the Schenectady Museum, the outgrowth of the Brandywine School Museum, 1940. Photograph by Arthur L. Jones.



Figure 47 A loan exhibit to the schools from the Schenectady Museum of donated industrial material, 1940. Photograph by Arthur L. Jones.

ities, as when traveling, and will thus contribute toward estimating the relative values of influences which are of fundamental importance in the process of coordinating and integrating experience.

The preceding discussion has been devoted to ways and means, or methods of securing by direct experience, the attitude of mind and the other conditions which are favorable to the application of the scientific method of solving the problems of objective education. It has not attempted to discuss the subject matter which accompanies these efforts. That in itself is another phase. On this aspect, however, valuable assistance may be secured from many of the publications in the list of references.

This sketch, although incomplete, might serve as an outline for a comprehensive program for aid to school museums by the New York State Museum. The supervision of such a program should not be a swivel-chair job, as it would call for as objective an approach as has been advocated throughout this paper, and finally, to be successful, the administrative methods should be adapted to its needs rather than the reverse.

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## INDEX

- Accessions**, list, 67-73; Shaker material, 33
- Activities of the year**, summary, 15, 33-47
- Adams, Dr Charles C.**, School museums, field trips and travel as phases of objective education, 75-116
- Administrative problems**, general, 47
- Allegany School of Natural History**, 85
- Appropriations**, 61; ten-year summary, 64
- Archeology**, summary of work in, 34
- Art**, summary of work in, 34
- Art center**, museum as, 56
- Art loans**, 26, 31
- Attendance**, 24; school and college classes, 21
- Bequest**, form of, 10
- Bibliography**, annual, 66; School museums, field trips and travel as phases of objective education, 113-16
- Botany**, 16; summary of work in, 34
- Budget**, 60; ten-year summary, 64
- Canterbury Shakers**, collection from, 33
- Central rural schools**, school museums in, 98
- Collaborator**, 11, 32
- Collections**, historic, 16, 31, 33; storage space needed for, 55
- Colleges**, relation of exhibits to, 21-24
- Cooperation with state and other organizations**, 18
- Council**, 32; members, 11
- Council of Parks, State**, 21
- County and state planning**, 17, 20
- Curator**, honorary, 11
- Defense policies**, long and short range, 47
- Donations**, kind sought, 65; list, 67-71
- Drafting**, 32
- Ecological studies**, 51
- Education**, School museums, field trips and travel as phases of objective education (Adams), 75-116
- Employes**, *see* Staff
- Entomology**, 16; summary of work in, 39
- Exchange**, accessions by, 71
- Excursions**, as objective education, 79
- Exhibition halls**, condition, 31
- Exhibits**, loan collections for schools, 103
- Exhibits**, State Museum, annual attendance, 24; condition, 31; relation to schools and colleges, 21-24; temporary and loan, 26; World's Fair of 1940, 15, 52
- Expenditures**, 61
- Federal art loans**, 26
- Field trips**, in objective education, 79
- Financial problem**, current, 63; general, 61
- Financial summary**, 60-64
- Functions**, major, 15
- Funds**, 61; ten-year summary, 64
- Geology**, 16; summary of work in, 39
- Gifts**, accessions from staff, 72; kind sought, 65; list, 67-71; to institutions, 73
- Ground water research**, 51, 65
- Hine photograph loan**, 26
- Historic collections**, 16, 33; stone-ware exhibit, 31
- Historical policies**, 52
- History**, summary of work in, 34
- Human resources**, utilization of, for school museums, 77
- Information**, 24
- Institutions**, gifts to, 73
- Legal status**, 9
- Loan collections**, suggested for schools, 103
- Loan exhibits**, 26
- Local resources**, utilization of, for school museums, 77
- Museum**, needs, *see* Needs of the State Museum
- Museum budget**, 60; ten-year summary, 64
- Museum collaborator**, 11, 32
- Museum Council**, 32; members, 11
- Museums**, School museums, field trips and travel as phases of objective education (Adams), 75-116
- Natural history**, school of, 85

- Natural resources, information requested by United States Army, 17, 48; utilization of, for school museums, 77
- Needs of the State Museum, 61; condition of exhibition halls and exhibits, 31; funds for art center, 56; storage space, 55
- Objective** education, School museums, field trips, and travel as phases of (Adams), 75-116
- Organizations, cooperation with, 18
- Paleontology**, summary of work in, 40
- Parks, State Council of, 21
- Personnel, *see* Staff
- Photography, 32
- Planning, state and county, 17, 20
- Policies, defense, long and short range, 47; historical, 52
- Printing, 25
- Public up-state art center, museum as, 56
- Publications, 25; by Museum staff, 66
- Publicity, 24
- Purchase, accessions by, 71
- Quadrangles**, reports on, 16
- References**, on school museums, field trips and travel, 113-16
- Regional planning, 17, 20
- Research, ground water, 51, 65
- Resources, information requested by United States Army, 17, 48; utilization of, for school museums, 77
- Rural schools, role of school museum in, 94
- Salaries**, 61
- School museums, field trips and travel as phases of objective education (Adams), 75-116
- Schools, loan collections for, 103; relation of museum exhibits to, 21-24; rural and urban, school museums in, 94
- Scientific appointments, temporary, 17
- Shaker material, 33, 34
- Staff, accessions from, 72; bibliography of publications, 66; list, 11; salaries, 61; summary of activities, 33-47
- State Council of Parks, 21
- State Museum Council, 11, 32
- State organizations, cooperation with, 18
- State planning, 17, 20
- Statistical summary, 60
- Stoneware, exhibit of, 31
- Storage space, need for, 55
- Study collections, storage space needed for, 55
- Summary, financial and statistical, 60-64
- Summary of activities, 15, 33-47
- Temporary** and loan exhibits, 26
- Temporary scientific appointments, 11
- Travel trips, role in objective education, 86
- United American** artists, art loan, 31
- United States Army, information on natural resources of State, 17, 48
- Up-state art center, museum as, 56
- Urban schools, role of school museum in, 94
- Vegetational** maps, 51
- Visitors, 24; school and college classes, 21-24
- Water**, ground water research, 51, 65
- Work Projects Administration, assistance in entomology, 39; assistance on historic collections, 16, 33; clerical and technical assistance, 17, 63; Federal art loan, 26; general exhibit, 26
- World's Fair of 1940, 15, 52
- Year's** work, summary, 15, 33-47
- Zoology**, 16; summary of work in, 47







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