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New York State Museum Bulletin

Published by The University of the State of New York

No. 322 ALBANY, N. Y. April 1940

NEW YORK STATE MUSEUM

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

ONE HUNDRED SECOND ANNUAL REPORT OF THE NEW YORK STATE MUSEUM

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ALBANY
THE UNIVERSITY OF THE STATE OF NEW YORK
1940

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New York State Education Department
The New York State Museum, May 8, 1939

The Honorable Frank P. Graves
President of the University and
Commissioner of Education

SIR: I beg to submit herewith the report of the Director of the New York State Museum for the period from July 1, 1937, to June 30, 1938.

Very respectfully

CHARLES C. ADAMS
Director

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ALBANY
THE UNIVERSITY OF THE STATE OF NEW YORK
1940

MAY 16 1940

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of the University
With years when terms expire

1943 Thomas J. Mangan M.A., LL.D., *Chancellor* - - - - - Binghamton
1945 William J. Wallin M.A., LL.D., *Vice Chancellor* - - - Yonkers
1950 Roland B. Woodward M.A., LL.D. - - - - - - - - - Rochester
1951 Wm Leland Thompson B.A., LL.D. - - - - - - - - - Troy
1948 John Lord O'Brian B.A., LL.B., LL.D. - - - - - - - - Buffalo
1940 Grant C. Madill M.D., LL.D. - - - - - - - - - - - Ogdensburg
1942 George Hopkins Bond Ph.M., LL.B., LL.D. - - - - - - Syracuse
1946 Owen D. Young B.A., LL.B., D.C.S., LL.D. - - - - - New York
1949 Susan Brandeis B.A., J.D. - - - - - - - - - - - New York
1947 C. C. Mollenhauer LL.D. - - - - - - - - - - - - Brooklyn
1941 George J. Ryan Litt.D., LL.D. - - - - - - - - - - Flushing
1944 Gordon Knox Bell B.A., LL.B., LL.D. - - - - - - - New York

President of the University and Commissioner of Education
Frank P. Graves Ph.D., Litt.D., L.H.D., LL.D., D.C.L.

Deputy Commissioner and Counsel
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Associate Commissioner and Acting Assistant Commissioner for Instructional Supervision
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State Librarian
Robert W. G. Vail B.A.

Director of State Museum
Charles C. Adams M.S., Ph.D., D.Sc.

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Research, Warren W. Coxe B.S., Ph.D.
School Administrative Services, Ray P. Snyder
School Buildings and Grounds, Gilbert L. Van Auken B. Arch.
Secondary Education, Warren W. Knox M.A., Ph.D.

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THE LEGAL STATUS OF THE NEW YORK STATE MUSEUM

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

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

THE FUNCTIONS OF THE STATE MUSEUM

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

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

ENDOWMENT AND TRUST FUNDS

While the State has done much for the New York State Museum, it has not fully met its needs. Just as the citizens of the State have in the past generously donated much valuable material to the Museum, the public should be informed in what ways it may continue to assist.

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

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

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

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

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

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

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

State Museum Staff

CHARLES C. ADAMS, Ph.D., D.Sc. . . . . *Director of State Museum*
ALVIN G. WHITNEY A.B. . . . . *Assistant Director of State Museum*
RUDOLF RUEDEMANN Ph.D[1] . . . . . *State Paleontologist*
DAVID H. NEWLAND B.A., Ph.D. . . . . *State Geologist*
ROBERT D. GLASGOW Ph.D. . . . . *State Entomologist*
HOMER D. HOUSE Ph.D. . . . . *State Botanist*
CHRIS A. HARTNAGEL M.A. . . . . *Assistant State Geologist*
WINIFRED GOLDRING M.A., Sc.D. . . . . *Assistant State Paleontologist*
DAYTON STONER Ph.D. . . . . *State Zoologist*
KENYON F. CHAMBERLAIN . . . . . *Assistant State Entomologist*
ELSIE G. WHITNEY A.M.[2] . . . . . *Assistant State Botanist*
NOAH T. CLARK . . . . . *State Archeologist*
EDWIN J. STEIN[3] . . . . . *Museum Draftsman and Photographer*
WALTER J. SCHOONMAKER . . . . . *Assistant State Zoologist*
ARTHUR PALADIN . . . . . *Museum Technical Assistant (Taxidermy)*
CLINTON F. KILFOYLE . . . . . *Museum Technical Assistant (Paleontology)*
JOHN L. CASEY . . . . . *State Museum Guide*

Honorary Curators

WILLIAM L. BRYANT . . . . . *Honorary Curator of Fossil Fishes*
HARRY S. PECK[4] . . . . . *Honorary Curator of Minerals*

---

[1] Retired November 1, 1937.
[2] Resigned September 15, 1937.
[3] Died January 7, 1938.
[4] Died December 8, 1937.

Collaborator

Ephraim P. Felt

Temporary Scientific Appointments

Aretas A. Saunders Ph.B. . . . . *Temporary Ornithologist*
Robert B. Gordon Ph.D. . . . . *Temporary Botanist*
William L. Lassiter M.A. . . . . *Temporary Curator of History*
Henry Vaughan . . . . . *Temporary Geologist*
Rogers McVaugh Ph.D. . . . . *Temporary Botanist*
Medora L. H. Krieger M.A. . . . . *Temporary Geologist*
Norman Taylor . . . . . *Temporary Botanist*
Wallace Craig Ph.D. . . . . *Temporary Ornithologist*

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 SECOND ANNUAL REPORT OF THE NEW YORK STATE MUSEUM

By Charles C. Adams Ph.D., *Director*
New York State Museum

FOREWORD

This annual administrative report covers the fiscal year closing June 30, 1938, and is the One Hundred Second Annual Report. The State Museum is a research and educational agency devoted to the scientific study of the natural resources, history and art of the State in relation to public welfare.

THE CENTENARY OF THE NEW YORK STATE MUSEUM

(Figures 2–6)

Although the one hundredth anniversary of the establishment of the State Museum by the Legislature, as the State Geological and Natural History Survey, was on April 15, 1936, the celebration of this centenary by the State Board of Regents did not occur until October 15, 1937, and thus falls within the period of the present annual report. The staff of the State Museum appreciated very much this recognition of the activities and accomplishments of the State Museum during the past century. This was the first outstanding public recognition of its work since the formal opening of the State Museum on December 29, 1916, after it had been moved into its present quarters on the top floors of the State Education Building in 1912 (*cf.* Univ. State of N. Y. Bul., 634: 1–44, 1917).

The State Conservation Department in cooperation with the Adirondack Mountain Club sponsored a centennial celebration commemorating the first recorded ascent of Mount Marcy, the highest mountain of the Adirondacks, whose height is 5344 feet. This ascent was made August 5, 1837, not as a "stunt" or for "recreation," but as a part of the regular scientific survey work of the State Geological and Natural History Survey, the direct ancestor of the present New York State Museum.

In recent Annual Reports of the State Museum attention has been called to the proposed centenary of the establishment of the State Survey and it is therefore a pleasure to call attention to these two celebrations. The program for the observance at the University Convocation follows:

SEVENTY-THIRD CONVOCATION
OF
THE UNIVERSITY OF THE STATE OF NEW YORK

CELEBRATING THE ONE HUNDREDTH

ANNIVERSARY OF THE ESTABLISHMENT OF THE

DIVISION OF SCIENCE AND STATE MUSEUM

Friday, October 15, 1937

The State Education Building

Albany, New York

SCIENCE IN RELATION TO THE STATE AND SOCIETY

In the field of government, those dedicated to the advancement of scientific research face conditions and problems similar to those in the field of economics. The general purpose of investigations in the broad domain of political science is to make public agencies more appropriate instruments of social control and social progress. Thus conceived, government research must take account of constantly changing conditions and changing sets of facts; and, if it has due regard for conditions and facts, it must draw its conclusion from them rather than from a body of immutable principles. *Harold G. Moulton*

Scientists see very clearly how, if politicians were more intelligent, if business men were more disinterested and had more social responsibility, if governments were more fearless, far-sighted and flexible, our knowledge could be more fully and quickly used to the great advantage of the standard of life and health—the long lag could be avoided, and we should work for social ends. *Sir Josiah Stamp*

SCIENCE AND CULTURE

The music produced on this program exemplifies one phase of cultural significance which the progress of science and invention has greatly promoted.

GENERAL THEME OF THE CONVOCATION

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

This aim is further supplemented by emphasis on the higher and cultural values of science.

Opening Session, October 15th, 2 p. m.

Musical Prelude: Scott "Philharmonic" radio and phonograph music begins at 1.30 p. m., when the doors of the Hall are opened.

Session called to order by THE HONORABLE WILLIAM LELAND THOMPSON B.A., LL.D., *Chairman of the Convocation Committee*

Induction into office of Chancellor THOMAS J. MANGAN M.A., LLD., and Vice Chancellor WILLIAM J. WALLIN M.A., LL.D., by THE HONORABLE FREDERICK EVAN CRANE LL.D., *Chief Judge of the Courts of Appeals*

Convocation opened by CHANCELLOR THOMAS J. MANGAN

Invocation: THE VERY REVEREND EDWARD R. WELLES B.D., M.A. (Oxon.) *Dean of the Cathedral of All Saints, Albany*

Selections: By the Waters of Minnetonka.....*Lieurance*
From the Land of the Sky Blue Water.....*Cadman*
(Indian Themes)

Address: "Influence of Science upon Appreciation of Nature"
JOHN C. MERRIAM Ph.D., D.Sc., LL.D.
President, Carnegie Institution of Washington

Selections: Dance of the Hours, from "La Gioconda"....*Ponchielli*
Overture from "Carmen" .....*Bizet*
Moonlight Sonata .....*Beethoven*

Address: "The New York State Museum: One Hundred Years Young"
C. STUART GAGER Ph.D., Sc.D.
Director, Brooklyn Botanic Garden

Selections: Élégie .....*Massenet*
Young Prince and Princess, from "Scheherazade"
Rimsky-Korsakov

Address: "Regional Survey: Science for Citizenship"
LEWIS MUMFORD
Author, New York City

Session closed by CHANCELLOR MANGAN

Selection: 1812 Overture.....*Tschaikowski*

Closing Session, October 15th, 8 p. m.

SCIENCE AND DEMOCRACY

1 One of the only two articles that remain in my creed of life is that the future of our civilization depends upon the widening spread and deepening hold of the scientific habit of mind; and that the problem of problems in our education is therefore to discover how to mature and make effective this scientific habit. Mankind so far has been ruled by things and by words, not by thought, for till the last few moments of history, humanity has not been in possession of the conditions of secure and effective thinking. Without ignoring in the least the consolation that has come to men from their literary education, I would even go so far as to say that only the gradual replacing of a literary by a scientific education can assure to man the progressive amelioration of his lot.

Scientific method is not just a method which it has been found profitable to pursue in this or that abstruse subject for purely technical reasons. It represents the only method of thinking that has proved fruitful in any subject — that is what we mean when we call it scientific. It is not a peculiar development of thinking for highly specialized ends; it is thinking so far as thought has become conscious of its proper ends and of the equipment indispensable for success in their pursuit.

If ever we are to be governed by intelligence, not by things and by words, science must have something to say about what we do, and not merely about how we may do it most easily and economically. And if this consummation is achieved, the transformation must occur through education, by bringing home to men's habitual inclination and attitude the significance of genuine knowledge and the full import of the conditions requisite for its attainment.

2 The other "article" is faith in democracy as a social mode of life.

John Dewey

Musical Prelude: Scott "Philharmonic" radio and phonograph music begins at 7.30 p. m., when the doors of the Hall are opened.

Academic Procession: Pomp and Circumstance.....*Elgar*
Fest March, from Tannhäuser.....*Wagner*
Coronation March, from "Le Prophète" *Meyerbeer*

Session opened by THE HONORABLE THOMAS J. MANGAN M.A., LL.D., *Chancellor of the University*

Selections: Largo, from "New World Symphony".....*Dvorák*
Toccata and Fugue
Ride of the Valkyries, from "Die Walküre"....*Wagner*

Address: "The Relation of Electricity to Social Policy"
ARTHUR E. MORGAN D.Eng., Sc.D.
Chairman, Tennessee Valley Authority

Selections: Anitra's Dance, from "Peer Gynt Suite".....*Grieg*
Piano Concerto No. 1.....*Tschaikowski*
Symphony No. 9.....*Beethoven*

Address: "Science and Democracy"
WALDEMAR B. KAEMPFFERT B.S., LL.B.
Science Editor, New York Times

Conferring of Honorary Degrees
FRANK P. GRAVES PhD., Litt.D., L.H.D., LL.D.
President of the University and Commissioner of Education

Session closed by CHANCELLOR MANGAN

Benediction: THE RIGHT REVEREND MONSIGNOR JOHN T. SLATTERY A. M., Ph.D., Litt.D., *Pastor of St Joseph's Church, Troy*

Selection: Prelude, Act 3, from "Lohengrin".....*Wagner*

The audience is requested to remain in the Hall until the academic procession has withdrawn.

Reception

Friday, October 15th, 10 p. m.

Reception in the Library Rotunda, tendered by the Board of Regents and the President of The University of the State of New York. Music by the Scott "Philharmonic" radio and phonograph.

The reception will be concluded with an inspection tour of the exhibition halls of the State Museum, on the top floor of the Education Building.

SCIENCE AND SOCIETY

When the intellectual history of this time comes to be written, nothing, I think, will stand out more strikingly than the empty gulf in quality between the superb and richly fruitful scientific investigations that are going on, and the general thought of other educated sections of the community. I do not mean that scientific men are, as a whole, a class of supermen, dealing with and thinking about everything in a way altogether better than the common run of humanity, but in their field they think and work with an intensity, an integrity, a breadth, boldness, patience, thoroughness, and faithfulness — excepting only a few artists — which put their work out of all comparison with any other human activity . . . In these particular directions the human mind has achieved a new and higher quality of attitude and gesture, a veracity, a self-detachment, and self-abnegating vigor of criticism that tend to spread out and must ultimately spread out to every other human affair.
H. G. Wells

NOTICE

Both sessions of the Convocation will be held in Chancellors Hall. No tickets are necessary for either session of the Convocation.

THE MUSICAL PROGRAM

The musical program is being provided through the courtesy of the E. H. Scott Radio Laboratories, Inc., of Chicago and New York. Recordings are being reproduced by the Scott "Philharmonic" radio, a thirty-tube radio and phonograph combination, which is a creation of this company's research laboratory.

THE ASCENT OF MOUNT MARCY BY SCIENTISTS, AUGUST 5, 1837

The one hundredth anniversary of the first recorded ascent of Mount Marcy, which was observed on August 5, 1937, focused attention on the Geological and Natural History Survey of New York, the first scientific agency formed by the State Government for the study of the State's natural resources. Under various names this work has been continued to date and now is designated as the New York State Museum. These facts are presented in an account of the event prepared by Dr Homer D. House, State Botanist, of the New York State Museum. Doctor House based his account upon statements in scientific reports and journals of a century ago, which emphasize the fact that the ascent was made as a regular part of the scientific duties of members of the Geological Survey.

The celebration was sponsored by the Adirondack Mountain Club in conjunction with the State Conservation Department.

Doctor House's account of the first climbing of New York State's highest summit follows:

One hundred years ago, on August 5, 1837, a party of 15 men made their way to the summit of Mount Marcy. Three of the party

were members of the recently organized Geological Survey of New York, appointed by William L. Marcy, then Governor of New York. Mount Marcy may have been scaled earlier by white men but this is the first recorded ascent of the mountain for purposes of scientific observation.

In the preceding summer a smaller party, led by Judge McMartin, of Broadalbin, had gone as far as Lake Colden, and had glimpsed the so-called "high peaks of Essex," as Mount Marcy and its surrounding peaks were then sometimes designated.

The 1837 party consisted of Ebenezer Emmons, geologist in charge of the second district of the Survey, which included all of northern New York; James Hall, his assistant in 1836, then in charge of the fourth district of the Survey (western New York); Professor John Torrey, of Columbia College, New York City, appointed to write the botanical portion of the survey; William C. Redfield, of New York, who so graphically described the trips in the American Journal of Science for 1838 (p. 301–23, with map), and Ebenezer Emmons jr, of Williamstown. Other members of the party were Archibald McIntyre and David Henderson, of the McIntyre Iron Company; Messrs Ingham and Strong, of New York, and Miller, of Princeton. Of the last three we know little. That they had some compelling motive in the matter must be evident from the mere fact that they undertook what was then a most difficult and hazardous journey. The party was accompanied by five woodsmen who carried supplies and camping equipment for the party. Of these five, Harvey Holt and Cheney were two well-known woodsmen of that period.

Mr Redfield's account of the journey makes interesting reading today when we consider the present means of transportation and the well-marked trails leading to Mount Marcy. It is doubly interesting to those who have so casually hiked up Mount Marcy and back in one day, whereas Mr Redfield's party was absent from Lake Sanford, the starting point, for seven days, but this included the ascent also of Mount McIntyre, a visit to Avalanche lake and return to Sanford by way of Indian Pass, a feat which is possible now in a couple of days.

The party left Albany on July 28th, took a steamboat at Whitehall on the 29th, landed at Port Henry and proceeded to East Moriah for the night. Leaving East Moriah on the 31st the first day's ride took them to "Johnson's" on Clear lake. On August 1st they completed the journey over the Black River road, now approximated by the route of the so-called Blue Ridge road from Schroon river to Tahawas, and reached the outlet of Lake Sanford about noon. Here two boats awaited the party and at 4 p.m. they reached the McIntyre settlement on the upper part of Lake Sanford.

The party accompanied by five woodsmen left the McIntyre settlement on August 3d, and rested for the night at their old camp on Lake Colden. On the 4th the difficult journey was resumed and the party camped that night on the high divide between the source of the Hudson river (Opalescent) and a branch of the Ausable.

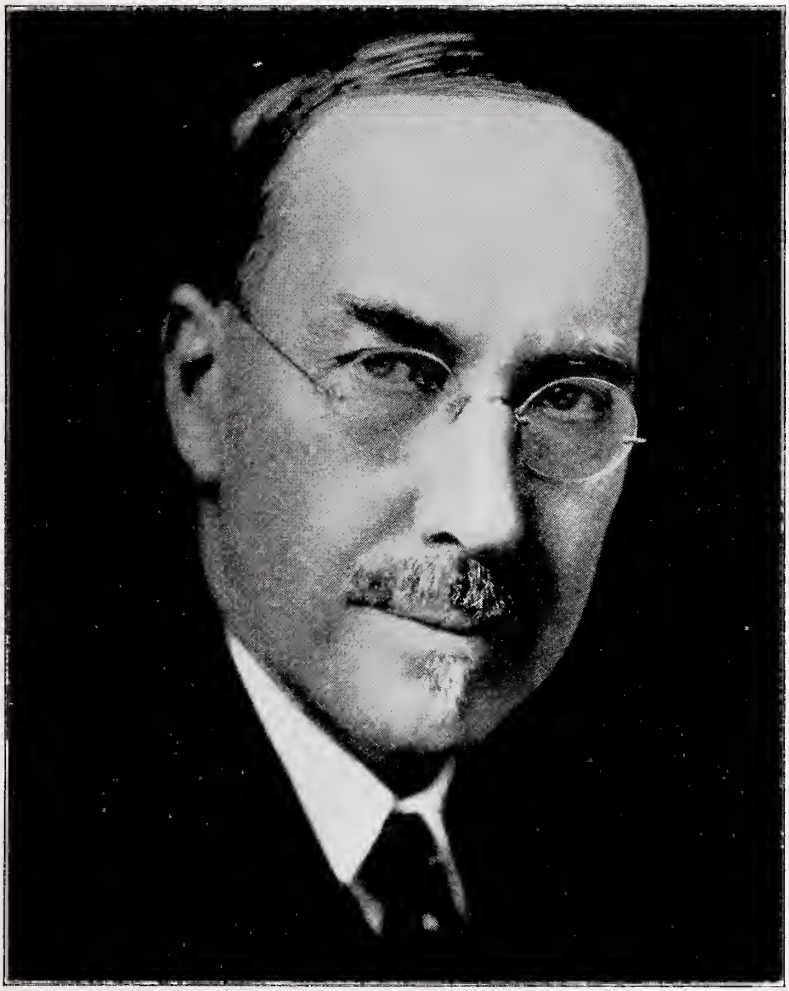

Figure 2 Dr John C. Merriam, president of the Carnegie Institution of Washington. Centenary speaker on "Influence of Science upon Appreciation of Nature"

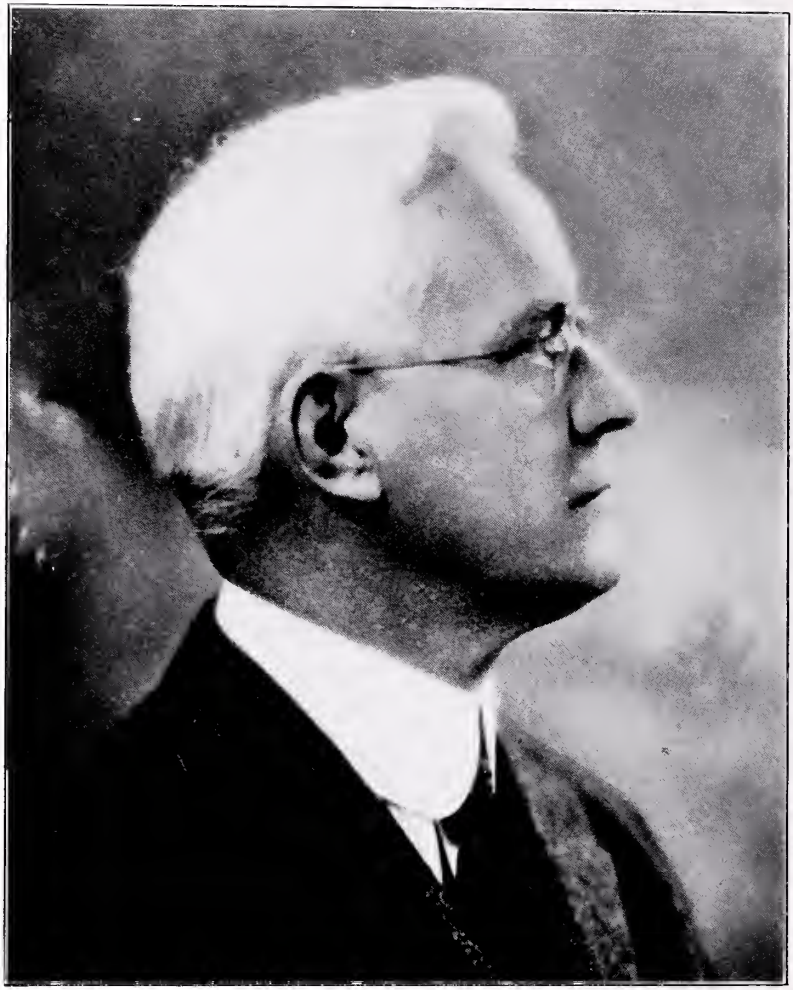

Figure 3 Dr C. Stuart Gager, director of the Brooklyn Botanic Garden. Centenary speaker on "The New York State Museum: One Hundred Years Young"

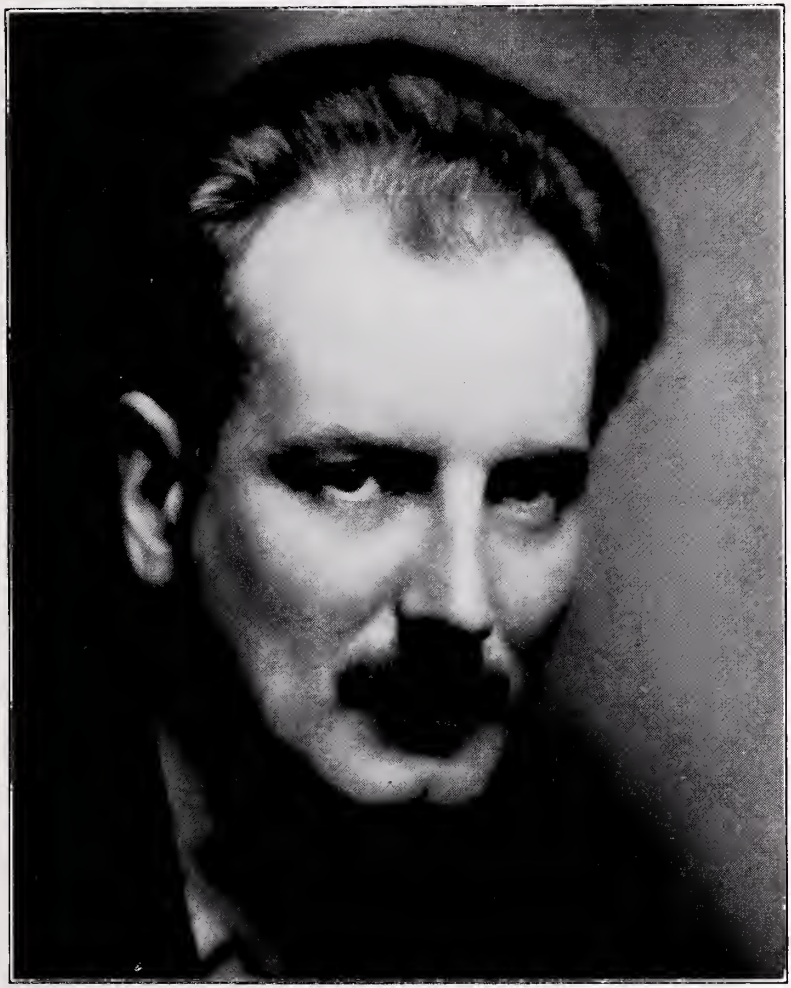

Figure 4 Lewis Mumford, author of "Technics and Civilization," and "The Culture of Cities." Centenary speaker on "Regional Survey for Citizenship"

Figure 5 Dr Arthur E. Morgan, chairman, Tennessee Valley Authority. Centenary speaker on "The Relation of Electricity to Social Policy."

Figure 6 Waldemar Kaempffert, science editor, New York Times. Centenary speaker on "Science and Democracy."

The present trail to Marcy most used diverges from the Opalescent up Feldspar brook to Marcy by way of Lake Tear, which is probably the reason neither Redfield's map nor his account mentions this tiny but highest body of water in the State. The party reached the summit of Mount Marcy at 10 a.m. on August 5, 1837. Throughout the journey barometric measurements were made for altitude and checked with instruments located at Albany and Syracuse. An altitude of 5467 feet was determined for Marcy, although subsequent surveys have shown the correct altitude to be 5344 feet.

A fitting climax was the designation of the peak as Mount Marcy, in honor of the Governor under whom the Survey was initiated. Tahawas is often said to be the Indian name of the mountain, but it may be doubted if that name was ever applied by the Indians to that peak alone. Mr Redfield's name is commemorated by another peak near Marcy, and the name John A. Dix, then Secretary of State, by Mount Dix, several miles distant from Marcy. It must not be forgotten that Mr Dix was most instrumental in formulating the plans for the Geological Survey. Archibald McIntyre's memory is honored by Mount McIntyre, located to the northeast of Lake Colden, and which was ascended by the party on August 8th, after their descent from Marcy. On August 7th they had visited Avalanche lake. From the summit of Mount McIntyre the party descended to the valley of the Ausable, perhaps not far from the present location of the Adirondack Lodge Club on Heart lake, where they camped for the night. On August 9th they made their way in a downpour of rain through the Great Notch (Indian Pass) to Lake Henderson and back to the McIntyre settlement on Lake Sanford, having been gone seven days. A trip through Indian Pass is difficult enough in fair weather; what must it have been in a downpour of rain without vestige of trail?

This mountain climbing expedition focuses attention upon the Geological Survey of New York, a most important and momentous undertaking at that period and which has left a deep imprint upon the subsequent scientific work of the State. One of the immediate results was the organization of the State Cabinet of Natural History as a repository for the collections accumulated, and in 1871 the "Cabinet" became the "Museum of Scientific and Practical Geology and General Natural History." James Hall, who had been curator of the "Cabinet" since 1865, became the first director of what is today designated as the New York State Museum.

The outstanding characters in this mountain party, as time showed, were James Hall and John Torrey. Ebenezer Emmons, born in 1799, was already a teacher in the Rensselaer School at Troy, when James Hall entered the institution and became one of Emmons' pupils. Hall, who was born at Hingham, Mass, in 1811, was graduated in 1832. At about this time Emmons went to Williams College as professor of chemistry, and his selection as a member of the Geological Survey was doubtless due to the influence of General Stephen Van Rensselaer. James Hall lived until 1898 and is regarded as the leading paleontologist of his time.

John Torrey was born in 1796 and was already eminent in chemistry, mineralogy and botany. It is perhaps in the science of botany that he is best known. Through some error Torrey's name is sometimes given in connection with this trip as "Asa Torrey," a mistake which should not be allowed to persist. It came about perhaps from the close association of John Torrey with Asa Gray, another and perhaps even greater botanist.

Another outgrowth of the Geological and Natural History Survey was the formation of a State Department of Agriculture, the earliest reports of which—those connected with the State Geological Survey—were written by Emmons.

Cf. High Spots, Magazine of the Adirondack Mountain Club, v. 14, no. 3. p. 1–48, 1937; 27th Ann. Rep't N. Y. State Conservation Dep't, p. 57–59. Legis. Doc. (1938) no. 38, 1938.

SUMMARY OF THE ACTIVITIES OF THE YEAR

1 The archeological study collection has been put in better condition; an index to pertinent literature has been in preparation; and certain exhibits have been cleaned. The cataloging, storage and care of the Historic Collection have been continued and the collection improved. The quality of the new materials added to this collection constantly improves.

2 Progress has been made on a bibliography of the flora of the State, and through Works Progress Administration workers photographic prints have been made of the botanical negatives, and these prints have been mounted on cards for convenient reference. The collection has also been greatly improved. Field work has been continued on the flora of Columbia county. The vegetational map and report of Cattaraugus county have been completed, the first of the county vegetational maps in the State. Through cooperation with the Monroe County Planning Board a vegetational map is in preparation for Monroe county, with the assistance of Works Progress Administration workers.

3 Field and laboratory studies of various insect pests of the fields, forests and garden have been continued, with special emphasis on mosquito control on Long Island and about Albany. Attention has been given to the Pales and allied weevils and to the European pine shoot moth.

4 Field and laboratory work have been continued on the collection of mining and quarry statistics and the developments of oil and natural gas. A popular report on the geology of the Lake George region is nearing completion. Progress has been made on the reports on the Willsboro and Indian Lake quadrangles in the Adirondack region.

5 The monograph on the graptolites is progressing, and the field work on the stratigraphy and reports on the Catskill, Kaaterskill and Coxsackie quadrangles, including the glacial geology is nearing completion. Studies of other quadrangles are in process, including the Randolph, Salamanca, Cattaraugus, Schunemunk, Oriskany, Morrisville, Wellsville, Clyde and Sodus Bay areas.

6 Zoological studies have been continued on bank, barn and cliff swallows by the banding method. The birds of Washington Park at Albany have been studied for several years and a report is nearing completion. A report has been completed on the rate of growth and temperature of the barn swallow. The study of the mammals of Rensselaer county has been continued. A summary has been prepared of many years of observation on the birds of Allegany State Park. Progress has been made on a report on bird song.

7 Certain administrative problems have required special attention. With the recent development of the Division of State Planning, the State Museum has given special attention to the orientation of the natural resources in relation to planning. A scientific study of the natural resources is one of the fundamental necessities in sound public planning and the 100 years accumulation of data on that subject should be intelligently utilized.

8 About 20 cooperative projects have been conducted with such agencies as state departments, universities, colleges, museums and federal bureaus and with individuals. All have been mutually advantageous, and several have already resulted in printed reports.

9 Through Works Progress Administration Project No. 50,470, much valuable assistance has been provided, for which there was no provision in the State Museum budget, including the preparation of catalogs and indexes, photographic work, inventory of publications, care of the historic collections, binding of books and periodicals, collection of ground water field data, and architectural drawings of historic buildings.

COOPERATION WITH STATE AND OTHER ORGANIZATIONS

As has been emphasized in recent Annual Reports, the large amount of unemployment involving technical, scientific and clerical workers has made available a certain amount of W.P.A. help. This appeared to be a rare chance not only to perform a public service but to permit the Museum to do a great amount of work long in arrears because of the limited budget. Certain local planning boards

continue to call urgently for fundamental physical and biological surveys and special studies, but this help can not be provided at present on account of the limited Museum facilities. As a result a relatively small amount of such work has been done.

In spite of these conditions many W.P.A. workers on other projects have called on the State Museum for assistance on these projects.

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

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

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

3 New York State Conservation Department. The Director of the State Museum is a member of the State Council of Parks. 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. The Allegany School of Natural History is conducted in the Allegany State Park by the Buffalo Society of Natural Sciences. The State Museum has continued to cooperate in this and conducts scientific studies of park problems in this park.

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

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

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

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

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

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

10 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.

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

12 Dana Natural History Society, Albany, N. Y. Cooperation on a lecture on birds to Albany school children on Bird Day, April 8, 1938, by Edward Avis.

13 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.

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

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

16 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.

17 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.

18 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.

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

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

21 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.

22 Works Progress Administration (W.P.A.). 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 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 National 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 extra funds recently passed the Legislature but was vetoed. The fundamental importance of the local

natural resources and the relative advantages of geographic position are physical facts which are fundamental in sound public planning, although this is not always 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.

The completed vegetational map of Cattaraugus county and the one in process in Monroe county 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. The State Museum has also cooperated in conducting the Allegany School of Natural History in the Allegany State Park for the past ten years, and has conducted scientific and economic studies of the natural resources in this park. The results of many of these studies have been published and others are in preparation. Important cooperative entomological experiments have been conducted by the State Entomologist, of the Museum staff, with the Westchester County Park Commission and with the Long Island State Park Commission, in connection with the mosquito control problem in relation to wild life on the tidal marshes.

RELATION OF THE MUSEUM EXHIBITS TO SCHOOLS AND COLLEGES

(Figure 7)

That the schools and colleges show an increasing appreciation of the value of objective teaching is a healthy sign of advance. This has not been the result of a sudden spurt but one that appears to be of gradual and normal growth. Book learning and laboratory methods have long been utilized, but excursions to the fields and

forests, to historical, industrial and governmental sites and to public museums have been of much slower development. The excellent and increasing custom of making school excursions by bus or train to the State Capital and to Washington is one that deserves every encouragement. Properly conducted excursions will open up many vistas to the young, expanding mind.

The number of classes of school children and college students which visit the State Museum shows a general increase. During the past year the number of classes was 387, with a total attendance of 11,697, and a class average of 30. For the preceding year the number of classes was 402 and the total number was 12,444. The attendance of the past 11 years, as recorded by the Museum guide, is as follows:

Year	*No. classes*	*No. students*	*No. counties*
1927–28	200	5 500	13
1928–29	175	4 750	21
1929–30	235	6 308	25
1930–31	264	7 128	30
1931–32	253	6 726	28
1932–33	309	7 981	31
1933–34	301	8 769	28
1934–35	333	8 364	36
1935–36	445	12 315	39
1936–37	402	12 444	38
1937–38	387	11 697	41

Most of the classes from a distance are from high schools. The following 41 counties were represented: Delaware, Schenectady, Albany, Schoharie, Rensselaer, Washington, Saratoga, Fulton, Cayuga, Dutchess, Greene, Montgomery, St Lawrence, Essex, Ulster, Suffolk, Chenango, Otsego, Rockland, Columbia, Herkimer, Sullivan, Tompkins, Oneida, Broome, Genesee, Hamilton, Steuben, Lewis, Wayne, Erie, Cattaraugus, Niagara, Chautauqua, Chemung, Madison, Oswego, Warren, Jefferson, New York and Ontario.

The number of classes from each county is shown on the map (figure 7). This shows, as might be anticipated, that the largest number came from the vicinity of the capital district, and within about 50 miles of Albany. The number of classes from the rural districts declined but the total number of pupils from the central schools increased. Massachusetts and Vermont had six classes and Pennsylvania three.

Teachers reported that the business recession reduced the number of visitors. In some instances special funds were raised for trips.

Monthly Class Attendance 1936–38

	Classes 1936–37	*Classes 1937–38*	*Attendance 1936–37*	*Attendance 1937–38*
October	33	29	983	802
November	20	22	374	711
December	15	11	1 020	344
January	21	17	550	373
February	16	20	495	497
March	64	47	2 324	1 443
April	44	48	1 125	1 453
May	99	94	3 179	3 303
June	90	99	2 394	2 771
	402	387	12 444	11 697

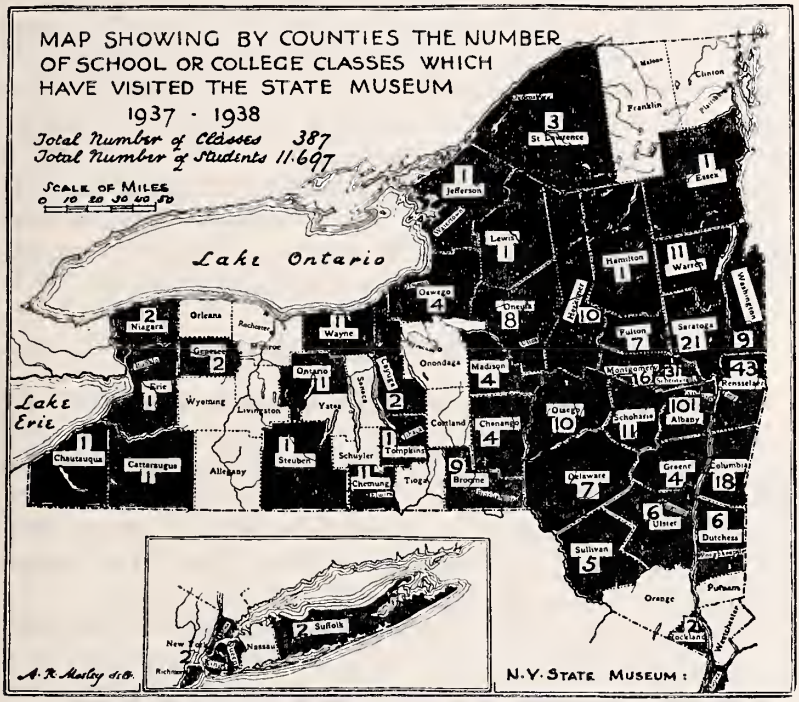

Figure 7 Map of New York State showing by counties the number of school or college classes which visited the State Museum during 1937–38.

Requests continue to come from teachers, school officials and individuals, seeking assistance in the determining or naming of natural history specimens, as well as requests for small collections for teaching purposes. Properly trained teachers could readily prepare valuable teaching collections and build up local school museums that would be of much value. The initiative for this should come from the teachers colleges and normal schools. Funds for such material are a legitimate educational expense. A risk that often accompanies free commercial samples is inaccurate sales propaganda.

As in past years, the Museum staff aided the Department Editor in the preparation of the Bird and Arbor Day issues of the Bulletin to the Schools. The Museum also cooperates with the Dana Natural History Society in giving a lecture to the school children on birds. This year it was given by Edward Avis on April 8th.

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

For the past ten years the State Museum has cooperated with the Buffalo Society of Natural Sciences in conducting an outdoor school —the Allegany School of Natural History in the Allegany State Park, an area of 65,000 acres and the third largest of the New York State parks. The plan for this school originated with the Director of the State Museum and had his general educational supervision for nine years, and also the substantial scientific and financial support of the State Museum. Now that it is well established and has shown the educational use that can be made of state parks, it is time for the State Museum to concentrate on other lines of activity.

MUSEUM ATTENDANCE

Although it is not possible to count the attendance to the exhibition halls, nor to distinguish between those on business errands and those who come for consultation, careful estimates are made and school classes are counted, so that it is known that in normal times the exhibition halls have about 200,000 visitors annually. At the bottom of the depression this number declined about 40,000. The estimated attendance for the present year is about 182,000.

A few years ago an effort was made to learn what was the possible ratio between the attendance of a museum and the population of the city in which it was located. The ratio ran as high as 856 per cent. The New York State Museum with an attendance of 200,000 a year and a population of Albany of about 120,400 gives a percentage of 166. This would place the State Museum at 15 in the rating of 105 museums listed—a very good rating. Undoubtedly this high percentage is due to the large number of automobile tourists who visit Albany during the summer months.

For a number of years the Museum was closed on Sunday, but it has been open during the summer months in recent years.

Between July 4, 1937, and September 12, inclusive, 17 Sundays and three holidays, the attendance for the summer season was 18,742. From May 29, 1938, to June 26, 1938, five Sundays and one holiday, the attendance was 3891. The total attendance for 16 Sundays and three holidays for the summer season was 17,616.

The largest attendance is during July and August, when it is estimated the visitors reach 35,000 to 40,000 a month. This is the tourist season and a large part of the attendance is from outside the State.

INFORMATION AND PUBLICITY

A large public looks to the State Museum as a bureau of information on the natural resources of the State. This results in an extensive correspondence and many 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 aspects of the work of the Museum.

There are a considerable number of requests for public lectures, but with our limited travel funds and without official automobiles, not many invitations can be accepted, even when expenses are provided. During the past year members of the staff have given ten lectures, talks or hearings, reaching about 900 persons.

CONDITION OF EXHIBITION HALLS

The problem of the leaky skylights continues as a permanent problem in the halls of Geology and Paleontology, necessitating special care to protect the exhibits. The leaks in the Zoology Hall disfigured the ceiling. In October the floors in the hall of Zoology were cleaned and a new clear finish applied; this is a decided improvement. During August and September new skylight shades were installed in the halls of Geology and Paleontology. These have been needed for years, and reduce greatly the excessive summer heat. It is very desirable that the leaks in the roof be completely controlled in order to keep these expensive new shades clean and unstained. In July the wild flower plates on exhibition were covered with cellophane and are greatly improved. Brass hand rails have been installed on six of the stairways and will help to make them safer, particularly for children. The water from the leaky roof and the normal wear of the cases call for considerable work on the part of the painter in order to keep the cases in proper condition.

The lighting of the labels of the Iroquois Indian Groups has never been satisfactory and calls for a thoroughly modern treatment.

PRINTING AND PUBLICATIONS

"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.

1937 Thirty-first Report of the Director. N. Y. State Mus. Bul., 313:1–140

Cannon, Ralph S.

1937 Geology of the Piseco Lake Quadrangle. N. Y. State Mus. Bul., 312:1–107

Emerson, F. W.

1937 A Botanical Survey of Big Basin in the Allegany State Park. N. Y. State Mus. Handbook, 17:89–150

Gallagher, David

1937 Origin of the Magnetite Deposits at Lyon Mountain, N. Y. N. Y. State Mus. Bul., 311:1–85

Gordon, R. B.

1937 The Botanical Survey of the Allegany State Park, N. Y. State Mus. Handbook, 17:23–88

1937*a* A Botanical Survey of the Southwestern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17:199–247

1937*b* A Botanical Survey of the Northern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17:287–328

1937*c* The Relation of Vegetational Surveys to a State Park Management Policy. N. Y. State Mus. Handbook, 17:329–82

Hicks, L. E.

1937 A Botanical Survey of the Eastern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17:249–86

Kenoyer, L. A.

1937 A Botanical Survey of a Portion of the Allegany State Park. N. Y. State Mus. Handbook, 17:151–97

Newland, D. H.

1938 The Landslide on the Boquet River near Willsboro, N. Y. N. Y. State Mus. Cir., 20:1–7

Saunders, A. A.

1937 Suggestions Concerning Policies for the Allegany State Park. N. Y. State Mus. Handbook, 17:383–98

Stoner, Dayton

1937 Records of Bird Temperatures. N. Y. State Mus. Cir., 19:1–16

1938 New York State Records for the Common Dolphin, *Delphinus delphis.* N. Y. State Mus. Cir., 21:1–16

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

The need of funds to reprint various State Museum publications is one that continues to be a very serious problem. Frequent requests are made for publications that are out of print and can not be supplied. So little has been done to meet this need that it would require $25,000 to reprint the publications for which there is 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 more than 12 years. Elsewhere I have discussed certain phases of this problem ("Suggestions for a Printing Policy for the New York State Museum." *The Museum News,* v. 11, p. 7–8, 1935.) The reprinting of the bird plates, the wild flower volumes and certain Museum handbooks is an aspect of the problem that calls for careful study and a progressive policy.

PHOTOGRAPHY AND DRAFTING

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

The older negatives, photographs, drawings and maps are by degrees being systematized, indexed, and the older negatives placed in better envelops which protect them from dust and injury. During the past year Works Progress Administration workers have helped substantially in advancing this work. At present the botanical and entomological negative collections have been completely reorganized, and prints have been made and mounted on cards for ready use. This has been a very great improvement.

The death of the photographer and draftsman, Edwin J. Stein, on January 7, 1938, made a vacancy for the remainder of the fiscal year, and greatly interfered with the work in all offices. Mr Stein was a skilled workman. He began work for the State Museum in December 1924.

HISTORIC COLLECTIONS AND ALLIED MATTERS

(Figures 8–11)

"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 routine clerical work on the Historical Collection has been materially improved since the new steel filing cases were secured last year.

An outstanding addition to the collection was the bequest from the William Bayard Van Rensselaer Estate, through Mrs William B. Van Rensselaer, of a very old bronze cannon and a stained glass window. Regarding this cannon (figure 8), A. J. F. van Laer, archivist, of the Division of Archives and History, wrote under date of December 22, 1930, as follows:

Mrs Van Rensselaer very kindly asked me to examine the cannon, which I did this noon. The inscription reads: *Assuerus Koster me fecit Amstelredami 1630.* Assuerus Koster, b.1604, d.1661, was a well-known gun and bell founder of Amsterdam. He was the son of Gerrit Koster, who from 1606 until his death in 1618, was the official gun founder of the city of Amsterdam. Assuerus Koster made a contract with the city in 1626 to execute all the city orders promptly and cheaply. He married in 1627, Vreda van Boecholt and in that year, and again in 1645, is referred to as a *stadts (ge) schutgieter* (city gun founder.) He was succeeded in that capacity by his eldest son, Gerrit Koster, who held the position until his death in 1679.—*Oud Holland,* 1898, 16: 170–72.

The stained glass window is reported to have been in the Van Rensselaer Manor House.

Other representative examples from the Historical Collection are shown in figures 9–11.

TEMPORARY ART LOAN EXHIBITS

(Figure 12)

The visiting public welcomes new Museum exhibits. It was therefore with enthusiasm that the State Museum sought loans from the Works Progress Administration of the Federal Art Project in New York City, through Mrs Audrey McMahon, assistant director. The first of this series was from the Photography Division, and

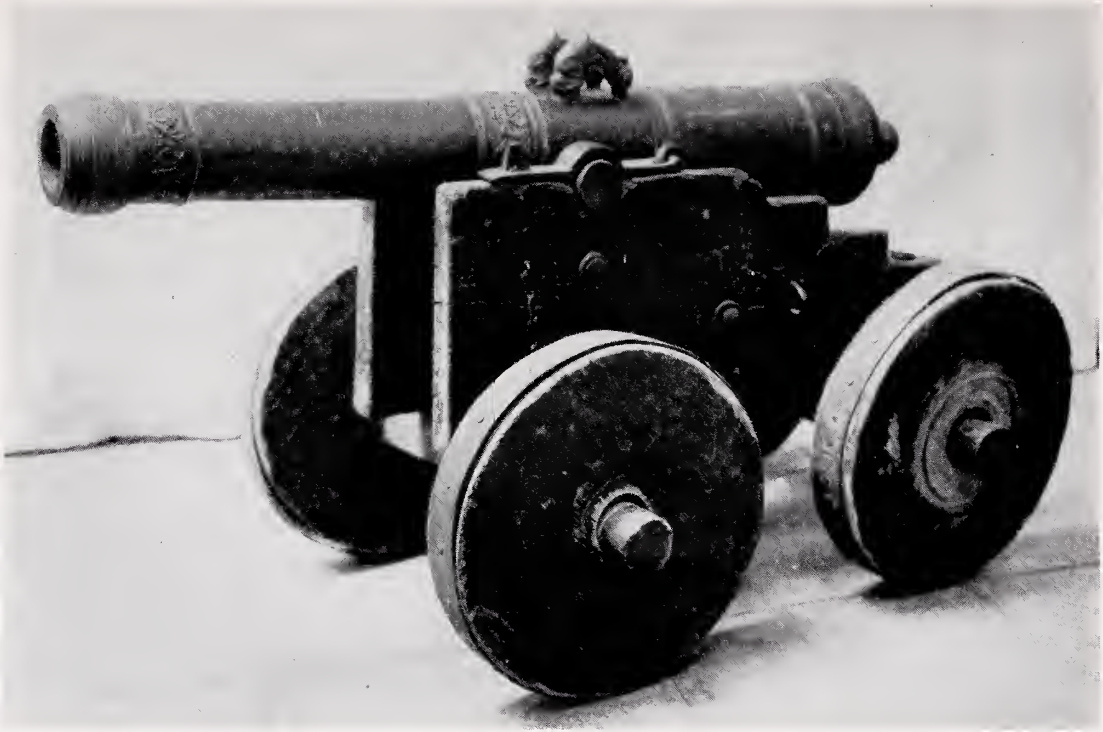

Figure 8 Van Rensselaer cannon, bequeathed to State Museum by Mrs William Bayard Van Rensselaer. This cannon was cast in 1630 in Holland and obtained shortly after by Patroon Kiliaen Van Rensselaer for use on the manorial estate, Rensselaerwyck. Photograph by N. E. Baldwin.

Figure 9 Engraved flip glass. Historical Collection of State Museum. Photograph by N. E. Baldwin.

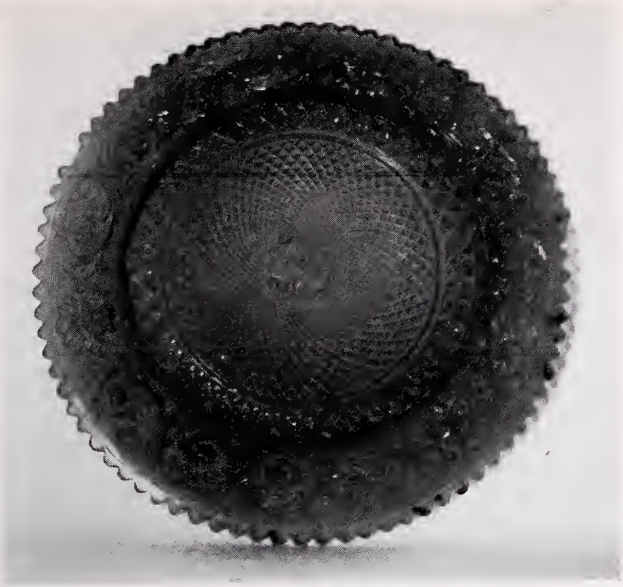

Figure 10 Blue glass sandwich plate. Historical Collection of State Museum. Photograph by N. E. Baldwin.

Figure 11 Blue and white coverlet, woven in Delhi, N. Y., 1844. Donated to the Historical Collection by Esther Karst, DeBruce, Sullivan county, N. Y. Photograph by N. E. Baldwin.

Figure 12 Temporary photographic exhibit of "Changing New York," by Miss Berenice Abbott, Works Progress Administration, Federal Art Loan. Photograph by N. E. Baldwin.

consisted of 50 photographs on "Changing New York" by Berenice Abbott, an outstanding photographer. The following is from a press notice dated June 21, 1938 by Mr W. L. Lassiter, who prepared the exhibit in the State Museum of this remarkable series:

"'Changing New York,' the series from which the prints were selected, seeks to embody in photographs a permanent record of the constantly changing city, its varied life and multifarious activities. The value of such a document is that from it those in the future can read the history of our time in vivid, visual images. When the record is completed, the photographs will be deposited in the Museum of the City of New York, as well as in other public institutions to which they will be allocated by the Federal Art Project.

"The series 'Changing New York' when exhibited in New York City brought great praise to the artist; and the public apparently realized the importance of this documentary evidence of the contemporary city. The historian saw its value from the standpoint of a record, while it aroused in the artist and scientist the greatest interest because it showed what could be done with the camera by such an artist.

"The photographer is Berenice Abbott, internationally known camera artist. Before entering this field, Miss Abbott studied painting and sculpture in Berlin and Paris. Seeing the possibilities of elevating photography into the realm of fine art, she forsook the palette and brush and used the camera as the medium to record what she saw. For six years in her Paris studio, the world's famous personages came to be photographed, but when she returned to New York for a visit in 1929, Miss Abbott was impressed by the rapid transformation of New York since her departure as a student in 1923. Her interest changed in the subjects to be photographed, and she determined to set about the task of photographing ever-changing New York, because she recognized it as the outstanding scene of the modern world. She returned to Paris to close her studio and came back to New York.

"Without delay, she began her work of recording the new and the old here and there, along the streets and waterfronts of the city. She worked independently until the economic depression forced unemployment, and thus provided her with help for this project through the Works Progress Administration and the Museum of the City of New York."

Appreciative accounts of Miss Abbott's artistic and "documentary" photography may be found in the following:

Abbott, Berenice

1939 Changing New York. Photographs by Berenice Abbott: Explanatory Text by Elizabeth McCausland. 307p. New York. 1939.

Anonymous

1938 A Woman Photographs the Face of a Changing City. Life, vol. 4, p. 40–45.

McCausland, Elizabeth

1935 The Photography of Berenice Abbott. Trend, vol. 3, no. 3, p. 15–21.

Newhall, Beaumont

1938 Documentary Approach to Photography. Parnassus, vol. 10, p. 2–6.

Reilly, Rosa

1938 Berenice Abbott Records Changing New York. Pop. Photography, vol. 3, p. 8–10; 94–96.

For several years the State Museum has been building up a collection illustrating the industrial arts, including the history of photography in this State. This collection today includes daguerreotypes, negatives, prints, cameras, lenses, studio equipment and a particularly valuable series of "documentary" photographs of the life and activities of the Shakers, largely by William F. Winter of Schenectady.

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 Department. One member of each council shall be appointed yearly to serve for a term of five years beginning with

the first day of October next following the ending of the term to which each respectively, is to succeed, except that an appointment to fill a vacancy created otherwise than by the expiration of a term shall be for the unexpired term. The deans of the dental, pharmacy and veterinary medical schools shall, respectively, act as similar councils for dental, pharmacy and veterinary medical interests.

There was no meeting of the Council called this year.

SUMMARY OF THE ACTIVITIES OF THE SCIENTIFIC STAFF

(Figures 13–22)

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

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

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

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

Archeology and History. Noah T. Clarke, State Archeologist, has in addition to the regular office routine, prepared a special bibliography on New York Indians in order to facilitate correspondence. Additional attention to the duplicate collection has improved its condition. On account of ill health of the State Archeologist the field survey of private collections has been delayed.

W. L. Lassiter, Temporary Curator of History, as has been the regular procedure for many years, devoted July and August to cataloging, recording, caring for and storing the Historic Collection. He has also rearranged the temporary historic and art exhibits. The relief assistance available has materially advanced in this work.

Botany. Dr H. D. House, State Botanist, reports no important changes in the reports of the flora of the Newcomb or Oneida Lake reports. Progress has been made on the bibliography of the flora of the State (figures 13, 14).

Mrs Elsie G. Whitney, Assistant State Botanist, who had been working on the preparation of a handbook on ferns, resigned September 15, 1937. The position has not been filled.

Through Works Progress Administration workers a series of prints of the photographic negatives has been prepared. These prints have been mounted on cards and are now readily available for the first time. The herbarium has also been materially improved by relief assistance.

Dr Robert B. Gordon, Temporary Botanist, completed his report on the ecological mapping of the vegetation of Cattaraugus county. This is the first county map of the kind completed for this State.

Dr Rogers McVaugh, Temporary Botanist, has continued his study of the flora of Columbia county.

Norman Taylor, Temporary Botanist, made field studies of the salt marsh vegetation on Long Island in relation to the ditching conducted in mosquito control work. A preliminary report has been published, and the full report is completed.

Entomology. Dr R. D. Glasgow, State Entomologist, has continued his studies of various insect pests of the fields, gardens and forests, and has given special attention to the mosquito control problem because of the availability of relief labor, particularly about New York City, on Long Island and about Albany.

He has continued his studies of the Pales and related weevils injurious to pine plantations, and his studies of the European pine shoot moth.

Doctor Glasgow has supervised relief workers engaged in organizing, printing and indexing the negatives devoted to insects, listing on cards the office collection of literature, translating pertinent foreign literature, and summarizing the literature on mosquito control.

Doctor Glasgow has also given much time to assisting in the supervision of the Works Progress Administration Project No. 50,470, because of his previous extensive experience with relief projects. Much of this work has been of general permanent value to the State Museum as a whole.

K. F. Chamberlain, Assistant State Entomologist, has continued his work on the transferring of the insect collection to the new insect boxes and steel cabinets. The condition of the collection has thus been greatly improved.

Geology. Dr D. H. Newland, State Geologist, began a revised study of the limestones in the southern counties, Orange, Ulster and Greene, but because of the depression this project was temporarily suspended.

Figure 13 Cotton grass (*Eriophorum virginianum* var. *album*), a sedge which in mature fruit, looks like white flowers from a distance. Swamp near New London, Oneida county. Photograph by H. D. House.

Figure 14 Eastern prickly pear, in flower (*Opuntia humifusa* Raf.). Taken July 1, 1938, near Lake Glenerie, Ulster county. Photograph by H. D. House.

Doctor Newland, assisted by Henry Vaughan, Temporary Geologist, continued for the third season, field work on the geology and mineralogy of the Lake George region. This study is to serve as the basis for a popular handbook on the geology and mineralogy of the region. Because of the large number of summer visitors in that region and the lack of a satisfactory popular account of its minerals, it is believed that such a handbook will meet a real need.

Doctor Newland, assisted by C. A. Hartnagel, Assistant State Geologist, has continued the long-standing cooperative preparation of a biennial report on the mining and quarry production for the State.

Since this cooperative project was begun about 30 years ago the industries have expanded about four times. At the same time more detailed information is required, so that without a corresponding increase in funds for the State Museum, this additional work has become a serious problem. No one questions the value of these industrial statistics, and increased funds are now needed for this work.

C. A. Hartnagel, Assistant State Geologist, has as usual given special attention to oil and gas development within the State, and is completing a report on the Randolph mammoth.

Dr A. F. Buddington, Temporary Geologist, completed his report on the Precambrian geology of the Willsboro quadrangle.

Mrs Medora H. Krieger, Temporary Geologist, completed her field work on the geology of the Indian Lake quadrangle.

The geological report on the Childwold quadrangle in the Adirondacks, conducted in cooperation with the Geology Department of the University of Rochester, was suspended for the season.

Paleontology. Dr Rudolf Ruedemann, State Paleontologist, has continued his work on the report on the geology of the Catskill quadrangle. John H. Cook is completing his report on the glacial geology of the same quadrangle. George H. Chadwick has not completed his part of the report on the Catskill and the Kaaterskill quadrangles made in cooperation with Doctor Ruedemann. The completion of the report is mainly dependent on the publication of a revised topographic map of the quadrangle.

Doctor Ruedemann's monograph on the Graptolites and their stratigraphy is still in preparation. With his part of the Catskill quadrangle report completed, this monograph will receive increased attention.

Dr Winifred Goldring, Assistant State Paleontologist, has completed the field work on the geology of the Coxsackie quadrangle

(figures 15–18), and John H. Cook has completed the field work on the glacial geology for this area. Doctor Goldring has continued her studies of Devonian stratigraphy. The coral reef paper has been completed and is ready for publication.

C. F. Kilfoyle has continued the cataloging of the Clarke collection of pamphlets, and has brought to date the catalog of types of fossils, including over 3500 unpublished cards.

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

Dr Gordon I. Atwater, Temporary Geologist, has not completed his report on the revision of the geology of the Salamanca quadrangle.

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, has completed his report on the geology of the Wellsville quadrangle, studied in cooperation with Colgate University.

Dr Tracy Gillette, of the University of Rochester, who has been making the cooperative study with the Geology Department of the University of Rochester of the Clyde and Sodus Bay quadrangles, has completed his general report.

Zoology. Dr Dayton Stoner, State Zoologist, has continued his prolonged studies of the bank, barn and cliff swallows, by the banding method, in the vicinity of Oneida lake and near Albany. The study of the birds in Washington Park, Albany, is nearing completion (figures 19–20).

A report has been completed on the rate of growth and the temperature of the barn swallow.

Dr Wallace Craig, Temporary Ornithologist, has made progress on a report on bird song.

The care of the exhibits, the storage collections, the files and indexes constitutes a time-consuming but essential duty. Several temporary exhibits have been prepared (figures 21, 22).

Figure 15 An overthrust fault, along the famous "Logan Line," which is supposed to extend from Canada, through Vermont and New York. The massive limestone (Lower Cambrian, Schodack) above resting upon shale and sandstone (Middle Devonian, Normanskill), near Schodack Landing, N. Y. Photograph by E. J. Stein.

Figure 16 Exposure of thin-bedded Schodack limestone (Lower Cambrian) near Schodack Landing, N. Y. Photograph by E. J. Stein.

Figure 17 Massive joint blocks of Onondaga limestone (Upper Devonian) showing the irregular rough chert seams. Near Roberts hill, Coxsackie quadrangle. Photograph by E. J. Stein.

Figure 18 Massive Coeymans limestone (Lower Devonian) in the foreground, weathered along the joint cracks into huge blocks, overlaid in background by limestone with large black characteristic chert seams. Deans Mills, Coxsackie quadrangle. Photograph by E. J. Stein.

Figure 19 Inspecting the interior of a bank swallow burrow by means of a beam of light flashed from the sun with a mirror. Tagged burrows bear band numbers of the birds. The nets are placed over the burrow openings to catch the birds as they emerge. Albany, N. Y. 1938. Photograph by Dayton Stoner.

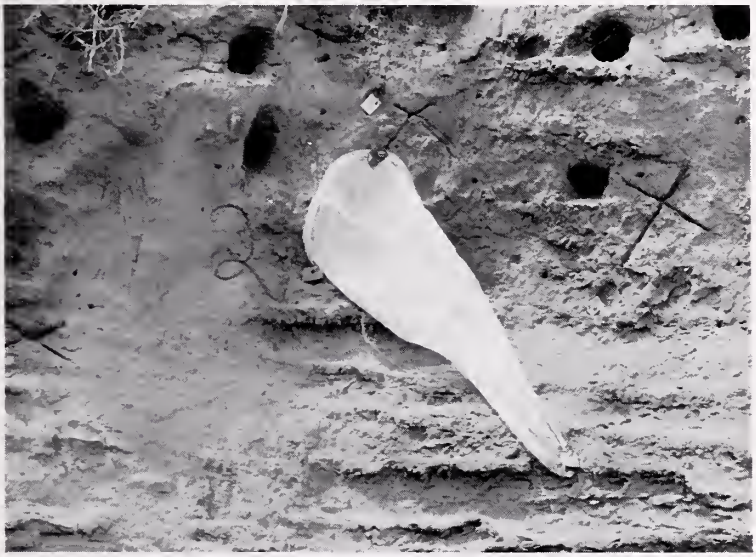

Figure 20 Gauze bag in place over the mouth of a bank swallow burrow awaiting the emergence of the bird. After the swallow has been banded it is freed to resume its normal activities. The marks on the bank at the burrow entrances have been made in connection with studies on homing. Albany, N. Y. 1938. Photograph by Dayton Stoner.

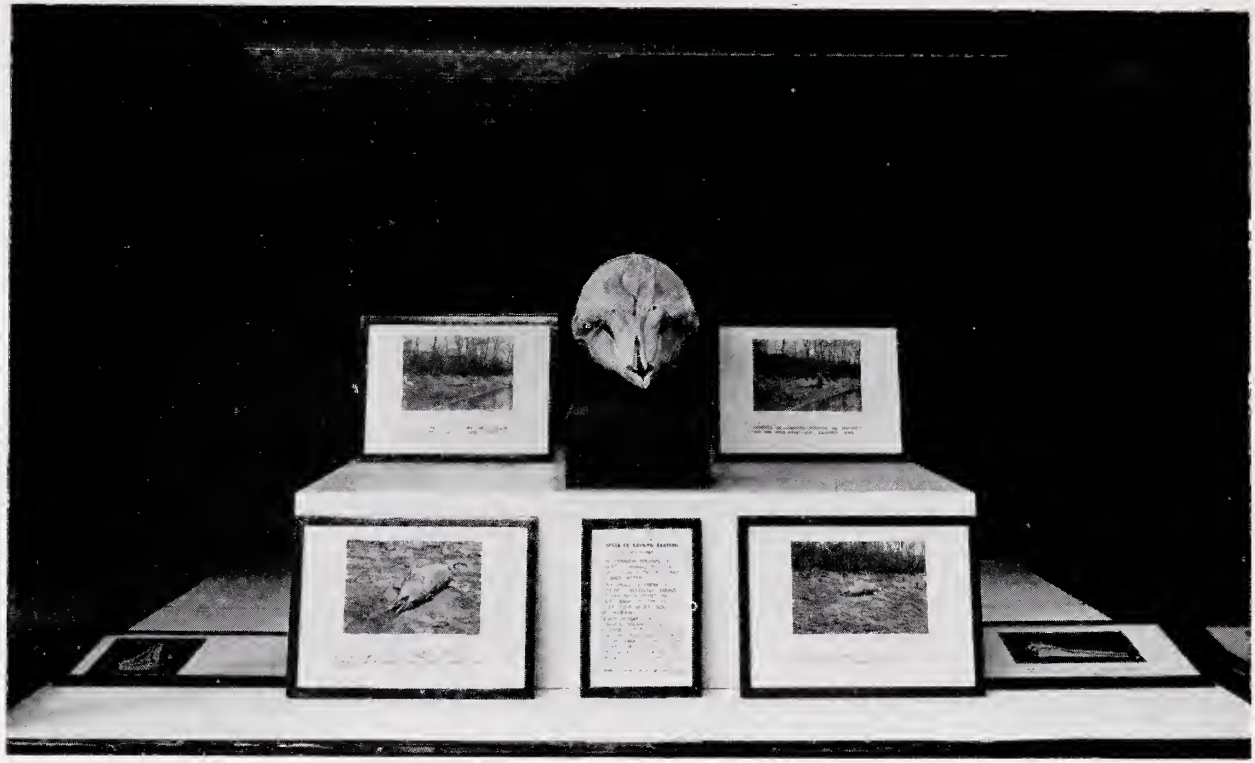

Figure 21 Front view of temporary exhibit showing skull of common dolphin found on west shore of the Hudson river four miles south of Albany, October 1936. Photograph by E. J. Stein.

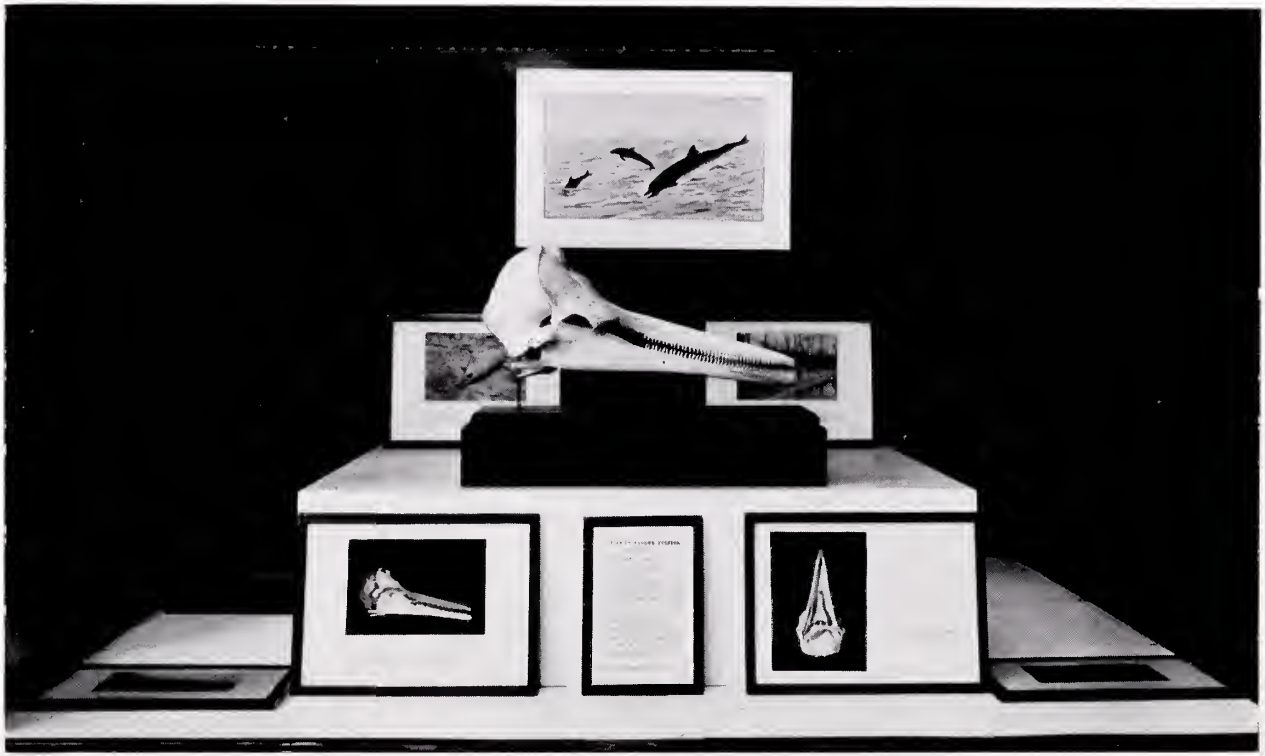

Figure 22 East view of temporary exhibit of common dolphin skull. This animal was found dead on the west bank of the Hudson river four miles south of Albany, October 1936. Photograph by E. J. Stein.

W. J. Schoonmaker, Assistant State Zoologist, has continued his study of the habits of the woodchuck, and his survey of the mammals of Rensselaer county.

Aretas A. Saunders, Temporary Ornithologist, working in the Allegany State Park, has continued his extensive studies of the birds of this park. His report, Studies of Breeding Birds in the Allegany State Park, is printed as a Museum bulletin, and his report on the Summer Birds of the Allegany State Park has been completed and awaits publication.

RETIREMENT OF DR RUDOLF RUEDEMANN

The following is the press release on the retirement of Doctor Ruedemann on November 1, 1937:

Dr Rudolf Ruedemann, whose 38 years of service to the New York State Museum have brought him and the Museum international recognition, has retired as State Paleontologist, Commissioner of Education, Frank P. Graves, announced today.

Doctor Ruedemann began his service to the State in March 1899, when he was appointed Assistant Paleontologist. He has been State Paleontologist since 1926. During this period his extensive and important investigations earned for him a worldwide reputation as one of the leading scientists in the fields of geology and paleontology. Among his important contributions is a study of the geology of the capital district; and in recent years he has been engaged in a study of the area about Catskill. For many years he has been working on an extensive monograph on the Graptolites of North America and also has supervised a comprehensive work on the geology of North America. He is the author of a number of other important studies including: Guelph Fauna of New York (with J. M. Clarke), Graptolites of New York, Cephalopoda of Champlain Basin, Eurypterida of New York (with J. M. Clarke), Lower Siluric Shales of Mohawk Valley, Paleontologic Contributions, The Existence and Configuration of Precambrian Continents, Utica and Lorraine Formations of New York, Some Silurian Faunas of New York, and also many pamphlets and articles in scientific journals on geological and paleontological subjects.

Doctor Ruedemann was born in Goergenthal, Germany, October 16, 1864. He received the degree of doctor of philosophy at Jena University in 1887 and also studied at the University of Strassburg 1887–92, serving as assistant in geology at the university during that same period. Coming to this country in 1892, he taught science in the high schools at Lowville and Dolgeville until his appointment to the staff of the New York State Museum in 1899.

Doctor Ruedemann is a fellow of the American Association for the Advancement of Science; he was vice president in 1916 of the Geological Society of America; and was vice president in 1911 and president in 1916 of the Paleontological Society of America. In

1928 he was honored by election to the National Academy of Sciences, membership of which is limited to 140 scientists in this country. He is also a member of the Halle Akademie der Naturforsche in Germany.

DEATH OF HARRY S. PECK

Dr John M. Clarke, former Director of the State Museum, appointed Harry S. Peck Honorary Curator of Minerals on March 23, 1922. Doctor Newland has prepared the following statement:

Harry S. Peck, Honorary Curator of Mineralogy, New York State Museum, 1922–37. He was the son of Dr Charles H. Peck, State Botanist of the State Museum, and Mary S. Peck. He was born May 4, 1862, and died December 8, 1937. He was an enthusiastic student of mineralogy in his mature years, and through a wide personal acquaintance with collectors in the eastern colleges and museums, was able to assemble an extensive array of unusual specimens from all parts of the world. By his donations the New York State Museum was notably enriched in its displays.

GENERAL ADMINISTRATIVE PROBLEMS

SCIENCE IN RELATION TO MODERN LIFE

The complexity of modern life is so pronounced that extreme specialization is a prevalent condition. This has its advantages and disadvantages. The problem for an institution is to steer a middle course and not lose its perspective. Periodically it is therefore desirable for both institutions and individuals to reorient themselves as a means of determining relative values. The present economic and social depression has threatened scientific work, and at the same time there is need more than ever for the application of the scientific method. At the present time with the babble of advice it is particularly urgent that we review some of the significant efforts that have been made in orienting science in modern life. To assist in this process a paper has been prepared which is intended to serve as a guide to some of the representative and outstanding literature on this subject. This paper is entitled "Selected References on the Relation of Science to Modern Life," and is found on pages 79–96.

HISTORICAL POLICIES

In the last Annual Report attention was again called to the need of revised or new policies on certain historic matters intimately related to the work of the State Museum as follows:

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.* Mus. Bul. 288, p. 51–56. 1931.)

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.* Mus. Bul. 313, p. 123–36.)

WORLD'S FAIR OF 1939

Plans are now under way for a World's Fair in New York City in 1939, to commemorate the 150th anniversary of the founding of the government of the United States and of the inauguration of George Washington.

The Centennial of 1876 at Philadelphia, the World's Fair of 1893 at Chicago, the Pan-American Exposition at Buffalo in 1901, the Universal Exposition at St Louis in 1904 and the Century of Progress Fair at Chicago in 1933 and 1934 provided opportunity for public museums to acquire the collections and the exhibits at the close of these fairs. The United States National Museum is an outgrowth of the Centennial of 1876, and the Field Museum of Natural History, of the World's Fair of 1893, and are well-known examples of the influence of such expositions. Some of the best exhibits in the New York State Museum were the outcome of such fairs. For example, the large relief map of the State was made for the World's Fair of 1893, and the Pan-American Exposition in 1901 at Buffalo was the source of several economic exhibits in the hall of geology.

In order to make any satisfactory utilization of such exhibits and materials, however, the already overcrowded condition of the State Museum points emphatically to the necessity of planning more definitely for the long proposed new Memorial State Museum Building. Valuable and extensive exhibits can not be acquired from such a source unless special and adequate storage quarters are provided.

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

STATE MUSEUM STORAGE SPACE

When the State Education Building was built, although it was intended to house the State Museum, no adequate provision was made for modern storage facilities and space. Research and educational exhibits in the natural sciences require collections of 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 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 only means inferior 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 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 calls for that 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 has been 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 St Agnes School, behind the Education Building, and to move the contents of Room 5 into this abandoned school building. (*Cf.* Jour. of Regents Meeting Jan. 8, 1938, p. 380.) The collections which were moved into the school during 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.

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, 1937, to June 30, 1938, follows:

APPROPRIATIONS AND FUNDS FOR FISCAL YEAR

(July 1, 1937 to June 30, 1938)

Appropriations

(Less enforced savings)

Salaries:	
Administrative staff	$ 9 120 00
Permanent scientific staff	35 140 00
Temporary expert services	2 700 00
Scientific assistants	5 320 00
Clerical, labor etc.	10 440 00
Total salaries	$62 720 00
Equipment and supplies	$ 3 000 00
Traveling (of which $275 was made available for out-of-State travel)	2 600 00
Printing	5 000 00
Total budget	$73 320 00

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.

Staff:

Administrative officers	2
Permanent scientific staff	11
Technical and clerical assistants	11
Part-time employes	8
Total staff	32

Salary schedules, 1937–38:

Administrative	$3 120 to $6 000
Scientific professional staff	$1 860 to $4 660
Technical assistants (nonprofessional grade)	$1 660 to $2 000

Hours and vacation:

Hours of work a week, 36¾

Vacation allowance 22 working days, and all legal holidays.

NEEDS OF THE STATE MUSEUM

(Figure 23)

THE GENERAL FINANCIAL PROBLEM

The State Museum moved into its present quarters in the State Education Building in 1912. After 20 years, in 1932, a careful comparison was made of its financial status during that interval. The results were very significant, as they showed a salary increase of about $25,000 in 20 years. Equipment, supplies and traveling and temporary expert services increased about $1300 in 16 years! The staff 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 museum and similar scientific and educational agencies all over the United States underwent unprecedented expansion. Likewise, within the State, while other educational agencies were expanding and new ones being developed, the State Museum did not maintain

Figure 23 Staff of New York State Museum. Six members not present. May 1935.

normal growth, but actually showed a relative decline. The neighboring state of Pennsylvania expended for its geologic work alone $67,500; Illinois, $125,000; and California, $63,000 in a single year, and the 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 administrative agencies at Albany frequently need scientific and technical assistance and cooperation which can best and quickest be furnished by an agency at Albany.

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

THE CURRENT FINANCIAL PROBLEM

As shown by the financial summary, the budget for the past fiscal year was about $73,000 and reduced by enforced savings. 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 Works Progress Administration relief agencies, which have furnished 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, however, it is at once apparent that a budget of $73,000 is inadequate to cover an up-to-date, statewide scientific survey of the natural resources.

RESEARCH FELLOWSHIPS

Cooperative research with various industries has often been found to be mutually advantageous. Such cooperation may be conducted by several methods. A method that deserves particular commendation is the establishment of research fellowships. By this method the cooperating agency would finance the work of capable research assistants or fellows, who work under the supervision of a member of the State Museum staff, on some problem in which the cooperator is particularly interested. The results of such studies should be published by the State Museum and thus made public.

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.

TEMPORARY STORAGE SPACE

Pending the construction of a new State Museum Memorial Building the problem of temporary storage for collections is becoming more acute every year. The hallways or corridors have been utilized for storage because there was no adequate provision made for storage when the Education Building was planned; yet this has been discouraged for various reasons. The crowded condition of the storerooms is a menace to the collections, and the materials can not be consulted and used, although there is frequent need of this. See also pages 61–63.

DONATIONS TO THE STATE MUSEUM

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

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

2 Historical collections of objects illustrating the history of New York 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, 1938, or based, at least in part, on the Museum collections, or made in cooperation with the State Museum, follow:

Adams, Charles C.

1937 New York State Museum. In 33d Ann. Rep't of the Education Department, v. 1, p. 313–17

1937*a* 31st Report of the Director of the Division of Science and State Museum. N. Y. State Mus. Bul., 313:1–140

1937*b* A Chronological Sketch of the History of the New York State Museum (Introductory Note). N. Y. State Mus. Bul., 313:85–86

Cannon, Ralph S.

1937 Geology of the Piseco Lake Quadrangle. N. Y. State Mus. Bul., 312:1–107

Cattell, J. McKeen

1938 The Centenary of the New York State Museum. Sci. Monthly, 46:95–98

Clarke, N. T.

1937 Chronological Sketch of the Archeological Work of the State Museum. N. Y. State Mus. Bul., 313:105–10

Emerson, F. W.

1937 A Botanical Survey of Big Basin in the Allegany State Park. N. Y. State Mus. Handbook, 17:89–150

Gager, C. Stuart

1938 The New York State Museum. Sci. Monthly, 46:71–79

Gallagher, David

1937 Origin of the Magnetite Deposits at Lyon Mountain, N. Y. N. Y. State Mus. Bul., 311:1–85

Glasgow, R. D. & Chamberlain, K. F.

1937 Sketch of the Entomological Work of the State Museum and Its Antecedents. N. Y. State Mus. Bul., 313:96–101

Goldring, Winifred

1937 Cryptozoon: Plant Nature and Distribution. In "On the Origin of the Saratoga Mineral Waters" by W. Goldring, R. Ruedemann and O. Baudisch. Science, 86:530

1938 An Upper Devonian Species of Aorocrinus. Carnegie Mus. Ann., 27:109–12

Gordon, R. B.

1937 The Botanical Survey of the Allegany State Park. N. Y. State Mus. Handbook, 17:23–88

1937*a* A Botanical Survey of the Southwestern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17: 199–247

1937*b* A Botanical Survey of the Northern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17:287–328

1937*c* The Relation of Vegetational Surveys to a State Park Management Policy. N. Y. State Mus. Handbook, 17:329–82

Hartnagel, C. A.

1937 General Administrative Chronology of the State Geological and Natural History Survey, State Cabinet of Natural History and the State Museum. N. Y. State Mus. Bul., 313:86–88

1938 The Medina and the Trenton of Western New York. Amer. Ass'n Petroleum Geologists Bul., 22:79–99

Hartnagel, C. A. & Adams, C. C.

1937 Sketch of the History and Art Collections of the State Museum. N. Y. State Mus. Bul., 313:110–21

Hicks, L. E.

1937 A Botanical Survey of the Eastern Section of the Allegany State Park. N. Y. State Mus. Handbook, 17:249–86

House, H. D.

1937 Chronological Sketch of the Botanical Work of the State Museum and Its Antecedents. N. Y. State Mus. Bul., 313:92–96

Kenoyer, L. A.

1937 A Botanical Survey of a Portion of the Allegany State Park. N. Y. State Mus. Handbook, 17:151–97

Newland, D. H.

1938 The Landslide on the Boquet River near Willsboro, N. Y. N. Y. State Mus. Cir., 20:1–7

Newland, D. H. & Brown, H. J.

1937 Gypsum, in Industrial Minerals and Rocks. Chapter 19. Amer. Inst. Mining and Metallurgical Engineers Bul., 283:353–74

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

1938 Oil and Gas in New York in 1937. Amer. Inst. Mining and Metallurgical Engineers Bul., 127:460–65

Ruedemann, Rudolf

1937 Observations on Excitation of Fireflies by Explosives. Science, 86:222, 223

1937*a* Different Views Held on the Origin of the Saratoga Mineral Waters. In "On the Origin of the Saratoga Mineral Waters" by W. Goldring, R. Ruedemann and O. Baudisch. Science, 86:530, 531

Ruedemann, Rudolf, & Newland, D. H.

1937 Brief Sketch of the Geological Work of the State Museum. N. Y. State Mus. Bul., 313:89–92

Saunders, A. A.

1937 Suggestions Concerning Policies for the Allegany State Park. N. Y. State Mus. Handbook, 17: 383–98

Smith, Dorothy U.

1937 Historic War Vessels in Lake Champlain and Lake George. N. Y. State Mus. Bul., 313: 123–36

Stoner, Dayton

1937 Records of Bird Temperatures. N. Y. State Mus. Cir., 19:1–16

1937*a* Historical Outline of the Zoological Work of the State Museum. N. Y. State Mus. Bul., 313:101–5

1937*b* A Six-Year-Old Bank Swallow. Bird-Banding, 8: 175–76 (with L. C. Stoner)

1937*c* Three Returns of a Bank Swallow. Science, 86:469–70

1938 American Egret the Upper Hudson River. The Auk, 55:119–21

1938*a* *Craspedacusta* near Albany, N. Y. Science, 87:188–89

1938*b* The American Egret in the Albany Region. Univ. of State of New York Bulletin to the Schools, 24, no. 13:119–21

1938*c* The English Sparrow and Highway Mortality. The Wilson Bul., 50:63–64 (with L. C. Stoner)

1938*d* Great Gray Owl from New York State. The Auk, 55:279–80

1938*e* New York State Records for the Common Dolphin, *Delphinus delphis*. N. Y. State Mus. Cir., 21:1–16

MUSEUM ACCESSIONS FOR THE YEAR

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

1 By donation: objects presented to the Museum.

2 By exchange: for other Museum materials etc.

3 By purchase: payment from the Museum budget.

4 By the staff: collected by the staff during official duties of any kind.

5 By transfer, from other state departments or other divisions of the State Government, as provided by law.

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

BY DONATION

Antemann, Elizabeth, Albany, N. Y.
Starling, Albany, N. Y.

Arnold, Elisha J., Albany, N. Y.
Old steelyards
Butter sampler
Old Lincoln spigot
Old carpenter's adz

Aspinwall, Mrs F. E., Buechel, Ky.
9 historical Shaker books
Old school book "Second Reader"
Old English grammar
Shaker photograph of Sister Aurelia White
Shaker-made needle case

Aspinwall, Dr Franklin E., Miami, Fla.
64 articles to General Historical and Medical History Collection

Avery, Thurman, Albany, N. Y.
Starling, Albany, N. Y.

Bacon, Dr L. C., St Paul, Minn.
Old hooded cradle
Old physician's saddle bag
Old saddle bag and holsters
Revolutionary cannon ball
Wheat from Revolutionary storehouse
Grooved ax, Red Hook, N. Y.

Baker, Mrs Arnold, jr, Albany, N. Y.
Old high bicycle
Cyclist prize medals

Ball, John R., Evanston, Ill.
Specimen of *Cryptozoon undulatum,* Ellenboro, Wis.

Barbour, Dr Thomas, Cambridge, Mass.
Great gray owl (mounted), St Lawrence county, N. Y.

Barnum, R. E., Watervliet, N. Y.
Framed photograph of Revolutionary Block House
Service Record of Men of Onondaga County in Civil War

Beardslee, Dr H. C., Perry, Ohio
Specimen of *Biovularia olivacea* (Wright) Kam., Florida

Beaver, Mrs Helen, Sanborn, N. Y. (Tuscarora Reservation)
Iron kettle (once owned by General Lafayette)
Photograph of Mrs Helen Beaver

Bradt, Paul, Washington, D. C.
Itacolumite flexible sandstone from Gap, N. C.

Burnham, John B., Essex, N. Y.
Numerous samples of wollastonite, Willsboro, N. Y.

Bump, Gardiner, Albany, N. Y.
Murine opossum, Albany, N. Y.
Virginia opossum, Delmar, N. Y.

Cantine, Mrs Martin, Saugerties, N. Y., through Frank M. Thomas, Catskill, N. Y.
35 miscellaneous arrowpoints

Carter, Dr Grace A.B., Rochester, N. Y.
Specimen of plant from Monroe county

Clement, R. L., West Hempstead, Long Island, N. Y.
Specimens of the Pepper Maggot (*Conosema electa* Say), Melville, Long Island, N. Y.
Specimens of Horse Nettle showing work of Pepper Maggot, Melville, Long Island, N. Y.

Cohen, Joseph, Albany, N. Y.
Specimens of Abbott's Sphinx caterpillars (*Sphecodina abbotti* Swains), Albany, N. Y.

Connecticut Valley Historical Society, Springfield, Mass.
Photographic portrait of Governor Bouck of New York State

Cook, David B., Albany, N. Y.
19 specimens of plants from northern and western New York

Cooley, Dr M. E., South Hadley, N. H.
Autunite from Grafton Center, N. H.
Autunite, montmorillonite, feldspar from Grafton Center, N. H.

Cornell, George D., Campbell, N. Y.
Crinoid, Campbell, N. Y.

Crawford, G. I., London, England
Water-fleas, England

Crockett, Dr R. A., Oneida, N. Y.
9 specimens of plants from central New York

Cullison, James L., Knoxville, Tenn.
13 graptolites from Tennessee

De Shaw, E. R., Delmar, N. Y.
Woodcock, Delmar, N. Y.

Dobbin, Frank, Shushan, N. Y.
157 specimens of plants from the southern United States

Finster, R. E., Schenectady, N. Y.
Nest of Baltimore oriole, Schenectady, N. Y.

Follett, Louis A., Saratoga Springs, N. Y.
Stone knife and unfinished celt, Saratoga county, N. Y.

Frederick, A. C., Albany, N. Y.
Specimen of butterfly (*Incisalia polios* Ck. & Wat.), Clarksville, N. Y.

Gattie, E. H., Albany, N. Y.
Specimen of Luna moth (*Tropaea luna* L.), Lake Luzerne, N. Y.

Glenn, J. A., Albany, N. Y., through Dr James Vander Veer, Albany, N. Y.
4 negatives of old medical instruments

Goldmark, Pauline, Hartsdale, N. Y.
Specimens of carpenter ant (*Camponotus herculeanus* L.), Hartsdale, N. Y.

Greeley, Dr John R., Elsmere, N. Y.
Silver lamprey, Coveville, N. Y.
2 eastern ruffed grouse, Reedsville, N. Y.

Greene, Mrs Frederick Stuart, Albany, N. Y.
Specimens of unicorn beetle (*Dynastes tityus* L.), Warrenton, Va.

Hagelstein, Robert, New York, N. Y.
8 specimens of Myxomycetes

Hawver, G. E., Coxsackie, N. Y.
Block of wood from U. S. Frigate "Constitution"

Hewitt, Mrs Bessie, North Elba, N. Y.
Specimen of tiger moth (*Apantesis parthenice* Kby.), North Elba, N. Y.
Specimen of sawyer beetle (*Monochamus marmorator* Kby.), North Elba, N. Y.

Hill, Mrs E. D., Schenectady, N. Y.
Wedding suit of W. W. Hill
4 Indian splint baskets

Hooker, Dr H. Lyman, New York, N. Y.
Glasses of Chauncey M. Depew

Hubbell, P. M., Albany, N. Y.
Specimens of Abbott's sphinx caterpillars (*Sphecodina abbotti* Swains), Albany, N. Y.

Jameson, Dr Edwin M., Saranac Lake, N. Y.
6 old medical instruments

Jones, Frank F., Webster, N. Y.
Part of mammoth tooth found in 1906 in gravel bed at Glen Edith, N. Y.

Jones, Dr L. R., Madison, Wis.
2 specimens of fungi from Wisconsin

Kearsing, Randall, Albany, N. Y.
Specimens of chersis sphinx caterpillars (*Sphinx chersis* Hbn.), Albany, N. Y.

Kennedy, E. L., Troy, N. Y.
Slug, Troy, N. Y.

Kennison, Mary, Cedar Hill, N. Y.
Specimen of walking-stick (*Diapheromera femorata* Say), Cedar Hill, N. Y.

Kimm, S. C., Herkimer, N. Y.
Old handmade shingles

King, Albert H., Speculator, N. Y.
5 specimens of plants from Hamilton county

Knobloch, Irving W., Red House, N. Y.
18 specimens of plants from western New York

Lassiter, William L., Albany, N. Y.
Memorial poem to Eldress Anna Case

Lawrence, Harry, Accord, N. Y.
10-inch millstone used for grinding spices

Lucas, Ralph, Albany, N. Y.
Old carbon arc light
Old cow bell
Old hand-dipped candles

MacMillan, Mrs C., Schenectady, N. Y.
Specimen of dobson fly (*Corydalis cornuta* L.), Schenectady, N. Y.

Magill, William, Guilderland, N. Y.
Fragments of glass from the Guilderland, N. Y., Glass House

Maln, Carl, Albany, N. Y.
Specimen of swallowtail butterfly (*Papilio asterius* Cram.), Albany, N. Y.

Matthews, W. A., Rochester, N. Y.
73 specimens of plants from western New York

McBride, Thomas, Troy, N. Y.
Specimens of elm lead beetle (*Galerucella luteola* Mull.), Troy, N. Y.

McVaugh, Dr Rogers, Kinderhook, N. Y.
360 specimens of plants from western New York

Miller, Mrs John Post, Oswego, N. Y.
Specimens of oak spangle galls (*Cecidomyia poculum* O. S.), Oswego, N. Y.

Morrill, Frederick, Albany, N. Y.
Specimen of harvest fly (*Tibicen* sp.), Albany, N. Y.

Mynter, Kenneth H., Hudson, N. Y.
Broken celt; 3 hammerstones; broken point; stone gouge; broken stone gouge; 3 blades; 138 miscellaneous points; stone knife; fragment steatite; 4 netsinkers; 5 rubbing stones; 2 white clay bowls; 1 blank; pecked stone; 2 drills; 5 spearpoints; 1 quart arrowpoint fragments; 5 quarts of fragments of chipped implements, from seven-mile radius of Hudson, N. Y.

Myers, Charles, Lathams Corners, N. Y.
Southern bald eagle, Lathams Corners, N. Y.

New York State College of Agriculture, Ithaca, N. Y.
620 specimens of plants from New York State

Nickerson, Egra, Pequaket, N. H.
Bundle of flax plants

Nolan, Blanche M., Saratoga Springs, N. Y.
Robin (partial albino), Saratoga Springs, N. Y.
Whitetail deer (mounted head), Newcomb, N. Y.
Wooden mortar; curved wooden pestle; wooden stirring paddle, Saratoga county, N. Y.
Report upon U. S. Geographical Surveys West of One Hundredth Meridian; vol. 4, Paleontology, 1877

Ostrander, Edwin, Guilderland, N. Y.
Spearpoint, Guilderland, N. Y.

Paris, Dr Russel C., Hudson Falls, N. Y.
17 medical history objects

Phillips, Saul, Albany, N. Y.
Tarantula, Albany, N. Y.

Phillips, Walter S., Rochester, N. Y.
8 specimens of plants from western New York

Potter, Catharine Eights Boies, Whitehall, N. Y.
37 additional historical objects and memorabilia to the Rear Admiral William Parker Potter, Sarah W. Potter and Catharine Eights Boies Potter Collection

Preiss, H. A., Albany, N. Y.
Specimens of ants (*Lasius interjectus* Mayr.), Albany, N. Y.

Rau, George, White Plains, N. Y.
Paratype of *Pseudococcus cuspidatae* Rau., East Rutherford, N. J.

Rundell, Charles, Chatham, N. Y.
Granite from north of Gloversville, N. Y.

Sanderson, W. E., Loudonville, N. Y.
4 eastern turkeys (juv.)
Ring-necked pheasant, Loudonville, N. Y.
6 embryonic beavers, Essex county, N. Y.
2 cottontail rabbits, Loudonville, N. Y.
Skull of white-footed mouse, Albany, N. Y.

Sawyer Brothers, Webster, N. Y.
Fragment of tusk found associated with mammoth teeth at Glen Edith, N. Y.

Schafer, Alice P., Albany, N. Y.
Brown creeper, Albany, N. Y.

Schlepese, Frank, Albany, N. Y.
Specimen of harvest fly (*Tibicen lyricen* Deg.), Albany, N. Y.

Scott, Arthur, Albany, N. Y.
Specimen of tropical cockroach (*Nyctoborus noctivagus* Rehn.) from bananas, Albany, N. Y.

Seymour, George W., Keuka Park, N. Y.
Specimen of *Petalostemum purpureum*, Elmira, N. Y.

Smith, Jay L., Chester, N. Y.
Dakeite (fluorescent), pure nodular masses, Red Desert, Wyo.

Smith, Mary K., Gatlimburg, Tenn.
3 specimens of plants from Tennessee

Snyder, Mrs I., Altamont, N. Y.
Robin, Altamont, N. Y.

Socony-Vacuum Oil Co., Inc., Albany, N. Y.
44 samples of petroleum and petroleum products
4 diagrams to illustrate distribution, production and methods of refining petroleum

Spenle, F., Kingston, N. Y.
Head of copperhead, Kingston, N. Y.

Springsteen, L. W., Binghamton, N. Y.
60 cuttings from well to Potsdam sandstone, Conquest, N. Y.

Starker, John, Albany, N. Y.
Cedar waxwing, Albany, N. Y.

Stevens, Sister Rosetta, North Family, Mount Lebanon, N. Y.
3 old Shaker pamphlets

Stoner, Mrs Lillian, Albany, N. Y.
Cliff swallow, Altamont, N. Y.
English sparrow, Albany, N. Y.

Terwilliger, Mrs B. H., Ellenville, N. Y., through Mrs C. W. Harris, Ellenville, N. Y.
100 specimens of lichens collected in 1908

Thomas, Wilfred, Catskill, N. Y.
Old hand-wrought nail
Old string of brass beads
Old pewter spoons

Tice, Albert, Sayville, N. Y.
Jumping spider, Sayville, N. Y.

Truesdell, Mrs Hobart G., Albany, N. Y.
2 specimens of quartz crystals
Concretionary limestone, probably from Florida

Ubaghs, G., Liége, Belgium
7 graptolites, Belgium

Van Rensselaer, Estate of Mrs William Bayard, Albany, N. Y.
Cannon from Van Rensselaer Manor House
Stained glass window from Van Rensselaer Manor House

Vickers, R. J., Cohoes, N. Y.
Pectoral sandpiper, Albany, N. Y.

Williams, J. B., Albany, N. Y.
Jumping spider, Albany, N. Y.

Williams, Paul, Schenectady, N. Y.
House mouse, Albany, N. Y.

Wilson, A. Eugene, Guilderland, N. Y.
Iron mushroom ventilators
Iron castings
Confederate five-dollar note
Fragments of glass from the Guilderland, N. Y., Glass House
Documentary History of New York State

Wingate, Milton, Guilderland, N. Y.
Old bullet mold
Old powder flask
4 gun flints

Wood, Bessie, Troy, N. Y.
Ring-billed gull, Tomhannock Reservoir, N. Y.
Magnolia warbler

Woodhouse, W. Mitchell, Olean, N. Y.
Cone-in-cone structure, from shore of Lake Erie

BY EXCHANGE

Gray Herbarium, Cambridge, Mass.
100 specimens of plants (Century VIII, Plantae Exsicates Grayanae)

BY PURCHASE

Arnold, Elisha J., Albany, N. Y.
Old box stove

Button, Henry V., Waterford, N. Y.
Old friction electric machine

Denslow, Dr H. M., Hartford, Conn.
3500 mounted specimens of Orchidaceae (North American orchids)

Hill, Mrs E. D., Schenectady, N. Y.
Handwoven white bedspread

Nininger Laboratory, Denver, Colo.
Polished section of meteorite (pallasite), Springwater, Saskatchewan, Can.

Thomas, Wilfred, Catskill, N. Y.
11 historical objects

Tyrell, George, Bleecker, N. Y.
Dugout canoe, Mountain Lake, N. Y.

Ward's Natural Science Establishment, Rochester, N. Y.
Fossil fish, fluorescent (Caturus), Solenhofen, Bavaria

Western Mineral Exchange, Seattle, Wash.
2 specimens of gaylussite from Olympic Peninsula

BY THE STAFF

Adams, Dr Charles C., Albany, N. Y.
Starling, Albany, N. Y.
Gray squirrel, Albany, N. Y.
Several hundred specimens of fossils from various localities in the Helderberg mountains, N. Y.

Chamberlain, K. F., Albany, N. Y.
666 specimens of miscellaneous beetles, from Slingerlands, Albany, Altamont, Karner, Meadowdale and Wemple Station, N. Y.
1404 specimens of miscellaneous insects, New Lebanon, N. Y.

De Meur, Anna J., Albany, N. Y.
Big brown bat, Albany, N. Y.

Glasgow, Dr R. D., Albany, N. Y.
14 specimens of Hydrophilid beetle (*Hydrobius globosus* Say); 5 specimens of Hydrophilid beetle (*Paracymus* sp.); 2 specimens Dytiscid beetle (*Agabus seriatus* Say); 4 specimens of Dytiscid beetle (*Hydroporus dilatatus* Fall), specimen of Dytiscid beetle (*Hydroporus* sp.), North Elba, N. Y.
Many specimens of miscellaneous aquatic insects, North Elba, N. Y.
Many specimens of European pine shoot moth, *Rhyacionia buoliana* Hubner, larvae, pupae, and eggs, from White Plains, Valhalla and Armonk, N. Y.

Goldring, Dr Winifred, Albany, N. Y.
150 specimens of fossils from various localities in the Helderberg mountains, N. Y.

Hartnagel, C. A., Albany, N. Y.
45 specimens of anthracite from state quarry at Canajoharie, N. Y.
Calcareous tufa from Chittenango Gorge, N. Y.
Taonurus caudagalli from Esopus formation at Springfield Center, N. Y.

House, Dr H. D., Albany, N. Y.
Specimens of balsam galls (*Cecidomyia balsamicola* Lint.), East Poestenkill, N. Y.

Kilfoyle, C. F., Albany, N. Y.
9 specimens of Annelida, Grant Hollow, N. Y.
193 graptolites, Deep kill near Grant Hollow, N. Y.
203 graptolites, Mount Merino near Hudson, N. Y.

Newland, Dr D. H., Albany, N. Y.
12 specimens of allanite from Smith mine, Mineville, N. Y.
Calcareous tufa from Ilion, N. Y.

Stoner, Dr Dayton, Albany, N. Y.
Fresh-water jelly-fish, Loudonville, N. Y.
Skull of ring-necked pheasant, Columbiaville, N. Y.
Downy woodpecker, Stuyvesant, N. Y.
2 northern cliff swallows, Altamont, N. Y.
2 English sparrows (juv.), Altamont, N. Y.
Eastern chipmunk, Voorheesville, N. Y.

BY TRANSFER

New York State Conservation Department, Albany, N. Y.
Collection of fishes from 1937 survey of the Allegany and Chemung watersheds

GIFTS TO INSTITUTIONS

Berry, Professor Willard E., Duke University, Durham, N. C.
Collection of 18 fossils

Boy Scout Troup, through A. F. Kansteiner, St Louis, Mo.
15 specimens of rocks and minerals

Colgate University, Syracuse University, Rensselaer Polytechnic Institute and the R. R. Ritchie Museum ("Petrified Gardens") of Saratoga Springs
Many structural and fossil specimens from the Museum storeroom

Glynn High School, through Allen McNamee, Valatie, N. Y.
10 specimens of rocks and minerals.

Graf, Frank J., Flint, Mich.
Specimen of Gouverneur marble

Hymes, James L., Director of Camp Talcott, Y.M.C.A. of New York, N. Y.
Collection of 19 fossils

Knox College, Galesburg, Ill., through Professor David M. Delo
Collection of graptolites

Loesch, LaVonne, Melville, N. D.
Collection of 4 fossils

Ploger, Dr L. W., Syracuse University, Syracuse, N. Y.
2 specimens of *Dictyonema flabelliforme*
2 partial specimens of Gilboa fossil tree trunks

Root, Dr Towner B., Colgate University, Hamilton, N. Y.
Polished specimen of *Cryptozoon proliferum*

Siegele, Harry, Bergenfield, N. J.
6 specimens of rocks and minerals

Young Men's Christian Association, through James L. Hymes, New York, N. Y.
25 rocks and minerals

SELECTED REFERENCES ON THE RELATION OF SCIENCE TO MODERN LIFE

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

New York State Museum

Science in Relation to the State and Society

In the field of government, those dedicated to the advancement of scientific research face conditions and problems similar to those in the field of economics. The general purpose of investigations in the broad domain of political science is to make public agencies more appropriate instruments of social control and social progress. Thus conceived, government research must take account of constantly changing conditions and changing sets of facts; and, if it has due regard for conditions and facts, it must draw its conclusion from them rather than from a body of immutable principles.

Harold G. Moulton

Scientists see very clearly how, if politicians were more intelligent, if business men were more disinterested and had more social responsibility, if governments were more fearless, far-sighted and flexible, our knowledge could be more fully and quickly used to the great advantage of the standard of life and health—the long lag could be avoided, and we should work for social ends. *Sir Josiah Stamp*

CONTENTS

Introduction

The Scientific Method and the Study of Processes

Orientation of Science in Human Affairs

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INTRODUCTION

The unprecedented and widespread economic, social and political confusion throughout the world has caused a great number of public officials, scientists and other students to make careful mental inventories of their ideas, and to attempt a reorientation of the practical results of their own work, in order to determine what substantial contribution they may make toward improving the conditions of life.

As a result of this special stimulus and activity an extensive literature has grown up, which is widely scattered and often relatively inaccessible to many who are seriously interested in this general situation. Fundamentally this is the problem of the application of the scientific attitude and method to the solution of the practical human problems, so well expressed by John Dewey.

A recent author (Harding '39, p. 249) has stated very truly that "Science should have full equality with financial and administrative agencies in directing human affairs, but only when scientists are

no longer the economic and social illiterates they tend to be today." (*Cf.* Science, N.S., 89: 207–12. 1939.) To which it should be added that the financial and administrative agencies are generally equally illiterate of pertinent science! The scientist needs first to orient himself and to put his own house in order, before advising all the world what to do. As has been well said, a citizen and a scientist may be "politically a Republican, religiously a Baptist, fraternally an Elk, medically a follower of osteopathy, educationally a sixth-grader, economically a small property holder, and emotionally an admirer of J. P. Morgan" (Freeman). This means that it is becoming an essential part in the training and experience of a scientist to orient himself in society if his work is to have the most constructive influence. Otherwise the advantages which science and invention make possible will be diverted into private channels or utilized for antisocial purposes rather than be made to contribute the maximum toward the general welfare. Today scientists are so numerous that they tend to represent a large sample of the population. (*Cf.* quotation from Ritchie '23.) It is futile to expect that all scientists will be able to orient themselves and their work, but it is very desirable that by a division of labor and cooperation, a sufficient number will do so, and thus qualify as leaders in directing human affairs. As Dr. A. D. Little ('28, p. 252) has said of Franklin: "His remarkable career should refute forever the fallacy, which, unfortunately, is still current, that the man of science is temperamentally unfitted for the practical business of life."

In order to aid in this orienting process the present paper has been prepared. I hope that with these references a serious minded person will be able to find a vast amount of significant thought and experience of the utmost practical value. To facilitate their usefulness the lists of references are roughly classified and supplemented by cross references; giving first the literature on the scientific method, emphasizing the process point of view, the dynamics of change, the condition of stress, the process of adjustment to pressure, and the relative equilibrium which closes any particular cycle; secondly, listing the literature dealing with the orientation of science and scientists in human affairs, and the applications of science to society; and finally, grouping together the literature on cultural values of science and nature, a phase calling for greater emphasis if we are to appreciate fully and take advantage of our natural and social advantages.

The basal assumptions used in this selection are that the scientific method is the best method of solving human problems, and that an

enlightened democracy furnishes the most favorable intellectual and emotional climate for the application of the scientific method to human problems. These assumptions represent the culmination of practical human wisdom. As Whitman has said, "We are apt to contrast the extreme of instinct and intelligence to emphasize the blindness and inflexibility of the one and the consciousness and freedom of the other. It is like contrasting the extremes of light and dark and forgetting all the transitional degrees of twilight. . . . Instinct is blind; so is the highest human wisdom blind. The distinction is one of degree. There is no absolute blindness on the one side, and no absolute wisdom on the other."

Therefore our main choice of method is to make the best possible guess and try: this is the method of trial and experiment.

THE SCIENTIFIC METHOD AND STUDY OF PROCESSES

Science and Democracy

1 One of the only two articles that remain in my creed of life is that the future of our civilization depends upon the widening spread and deepening hold of the scientific habit of mind; and that the problem of problems in our education is therefore to discover how to mature and make effective this scientific habit. Mankind so far has been ruled by things and by words, not by thought, for till the last few moments of history, humanity has not been in possession of the conditions of secure and effective thinking. Without ignoring in the least the consolation that has come to men from their literary education, I would even go so far as to say that only the gradual replacing of a literary by a scientific education can assure to man the progressive amelioration of his lot.

Scientific method is not just a method which it has been found profitable to pursue in this or that abstruse subject for purely technical reasons. It represents the only method of thinking that has proved fruitful in any subject—that is what we mean when we call it scientific. It is not a peculiar development of thinking for highly specialized ends; it is thinking so far as thought has become conscious of its proper ends and of the equipment indispensable for success in their pursuit.

If ever we are to be governed by intelligence, not by things and by words, science must have something to say about what we do, and not merely about how we may do it most easily and economically. And if this consummation is achieved, the transformation must occur through education, by bringing home to men's habitual inclination and attitude the significance of genuine knowledge and the full import of the conditions requisite for its attainment.

2 The other "article" is faith in democracy as a social mode of life.

—*John Dewey*

A clear-cut idea of the meaning of the scientific method and experience in its application are so fundamental in science that it seems strange that it receives relatively so little attention in our scientific literature and in the educational system. Its essential method can almost be boiled down to—the best guess and try! But intelligent guessing involves a background of general ideas that calls for careful preparation. Some students advocate that scientific work ends with the analysis of the problem, and others that the object of analysis

is merely preliminary to laying a foundation for synthesis and its application to human affairs. The great synthetic conceptions of science have only begun to be assimilated by society, and great numbers of intelligent people live almost completely beyond their conscious influence.

Even in the important literature on the scientific method it is seldom that one finds any adequate emphasis on the fundamentals of the *process* approach to the solution of problems, and for that reason emphasis is here placed on that aspect. The annotated bibliography on research methods by Culver ('36) includes much of the important literature published since 1920.

Adams, Charles C.

1913 Guide to the Study of Animal Ecology. 183p. New York

Emphasis throughout on the process approach to scientific problems. *Cf.* Keyes '98; Van Hise '04; C. C. Adams '15 and '18–'19, and George '38.

1915 An Outline of the Relations of Animals to Their Inland Environments. Bul. Ill. State Lab. of Nat. Hist., 11:1–32. Reprinted in Smithsonian Report for 1917, p. 515–42, 1919

Emphasis on the process standpoint.

1918–19 Migration as a Factor in Evolution: Its Ecological Dynamics. American Naturalist, 52:465–90, 1918, and 53:55–78, 1919

Processes emphasized.

Allard, H. A.

1932 The Field Naturalist in the Final Interpretations of Life. Science, n.s., 75:460–61

Bancroft, Wilder D.

1911 A Universal Law. Science, n.s., 33:159–79

Important from the process point of view. *Cf.* Pike '23.

1928 The Methods of Research. Rice Inst. Pamphlet, 15:165–352

Discusses the guesser and the accumulator in research.

Barry, Frederick

1927 The Scientific Habit of Thought. 358p. New York

Boucher, Walter H.

1936 The Concept of Natural Law in Geology. Science, n.s., 84:491–98

Carlson, A. J.

1931 Science and the Supernatural. Science, n.s., 73:217–25

Chamberlain, T. C.

1897 The Method of Multiple Working Hypotheses. Jour. Geol., 5:837–48

Cf. Chamberlain '06.

1904 The Method of the Earth Sciences. Pop. Sci. Monthly, 66:66–75. Inter. Cong. of Arts and Sciences, St Louis, 4:477–87

Very important papers and worthy of careful study. *Cf.* Chamberlain '97.

Culver, Mrs Dorothy (Campbell)

1936 Methodology of Social Science Research: A Bibliography. 159p. Univ. of Calif.

Dewey, John

1910 Science as a Subject-Matter and as Method. Science, n.s., 31:121–27

A brief outstanding statement. *Cf.* quotation at head of this section.

1938 Logic: The Theory of Inquiry. 546p. New York

Cf. Mill '81.

Fisher, R. A.

1937 The Design of Experiments; 2d ed. 260p. Edinburgh

Follett, M. P.

1924 Creative Experience. 303p. New York

Discovery in the social field.

Friend, Julius W. & Feibleman, James

1939 Society and the Future of Science. Social Frontier, 5:171–73

Cf. Stevens '39.

George, William H.

1938 The Scientist in Action. A Scientific Study of His Methods. 354p. New York

Research is viewed as a human behavior activity; it is a process of selection, and the product is an art, designed from the selected materials. Here is the agent, its activity or processes, and finally its products—the various sciences. Outstanding. *Cf.* Keyes '98; Sullivan '24 and '34.

Gilbert, G. K.

1886 The Inculcation of Scientific Method by Example, with an illustration drawn from the Quaternary Geology of Utah. Amer. Jour. Sci., (3) 31:284–99

Cf. Gilbert '87

1887 Special Processes of Research. Amer. Jour. Sci. (3) 33:452–73

Gilfillan, S. C.

1935 Inventing the Ship. 294p. Chicago

The social element in invention. *Cf.* National Resources Committee Report on "Technological Trends," and on "Research," and Gilfillan '35*a*.

1935*a* The Sociology of Invention. 185p. Chicago

Jevons, S.

1879 Principles of Science; 3d ed. 786p. London

Kallen, Horace M.

1937 Freedom and Scientific Method. Social Frontier, 4:16–19

Keyes, C. R.

1898 The Genetic Classification of Geological Phenomena. Jour. Geol., 6:809–15

Particularly valuable for its discussion of the process conception. The best that I have seen. Worthy of special attention by biologists and sociologists. *Cf.* C. C. Adams '13, '15, '18–19.

Levy, H.

1933 The Universe of Science. 224p. New York

Science as a human product.

Lotka, A. J.

1925 Elements of Physical Biology. 460p. Baltimore.

MacDonald, William

1923 The intellectual Worker and His Work. 351p. London

MacDougal, Robert

1905 On the Discrimination of Critical and Creative Attitudes. Jour. Philos. Psy. and Sci. Methods, 2:287–93

Cf. George '98.

Mill, J. S.

1881 A System of Logic, Ratiocinative and Inductive: Being a Connected View of the Principles of Evidence and the Methods of Scientific Investigation; 8th ed. 659p. New York

Cf. Dewey '38.

National Resources Committee

1937 Technological Trends and National Policy, Including the Social Implications of New Inventions. 388p.

Cf. Harding '31, '39.

1938 Research: A National Resource. 255p. (Subcommittee on Research; C. H. Judd, W. F. Ogburn and E. B. Wilson)

A very valuable report.

Pike, F. H.

1923 Adaptation Considered as a Special Case under the Theorem of Le Chatelier. Ecology, 4:129–34

Cf. Bancroft '11.

Planck, Max

1933 Where Is Science Going? With a Preface by Albert Einstein. (Translated and edited by James Murphy) 224p. London

Richtmyer, F. K.

1935 Borderlands in Science. Science, n.s., 82:379–82

Ritchie, A. D.

1923 Scientific Method. An Inquiry into the Character and Validity of Natural Laws. 204p. New York

"Philosophers who write about Science and scientists who write about Philosophy are too often preoccupied with the scientific theories and discoveries of the moment to the detriment of both their Science and their Philosophy. No single mind can contain the whole of the results of modern scientific investigation, so that any man's opinion on most topics is bound to be superficial and based on hearsay. Outside his special province the opinions of the specialist are no better than those of anybody else."

Schickele, Rainer

1937 Economics of Agricultural Land Use Adjustments. 1 Methodology in Soil Conservation and Agricultural Adjustment Research. Iowa Agr. Exp't Sta. Research Bul., 209:337–423

A concrete example of cooperative research that merits special attention. *Cf.* Follet '24.

Spillman, W. J. & Lang, Emil

1924 The Law of Diminishing Returns. 178p. Yonkers, N. Y.

Stevens, S. S.

1939 Psychology and the Science of Science. Psychological Bul., 36:221–63

Cf. Friend and Feibelman '39.

Strong, T. B., *ed.*

1906 Lectures on the Method of Science. 249p. Oxford

Authors: Thomas Case, Francis Gotch, C. S. Sherrington, W. F. R. Weldon, W. McDougall, A. H. Fison, Richard C. Temple, W. M. Flinders Petrie and T. B. Strong.

Van Hise, C. R.

1902 The Training and Work of a Geologist. Science, n.s., 16:321–34

1904 The Problems of Geology. Jour Geol., 12:589–616; Inter. Cong. Arts and Sciences, St Louis, 4:525–48. 1906

An excellent discussion of the energy, agent and process method of investigation. I have seen no similar discussion applied to biological or sociological subjects. *Cf.* Keyes '98.

Weidlein, E. R. & Hamor, W. A.
1936 Glances at Industrial Research. 238p. New York
Research as applied to private industry. *Cf.* Harding '31, '39.

Westaway, F. W.
1919 Scientific Method. Its Philosophy and its Practice. New Edition. 426p. London

Young, Kimball
1924 The Need of Integration of Attitudes among Scientists. Sci. Monthly, 18:291–305

ORIENTATION OF SCIENCE IN HUMAN AFFAIRS

To study life we must consider three things: First, the orderly sequence of external nature; second, the living organism and the changes which take place in it; and, third, that continuous adjustment between these two sets of phenomena which constitutes life.—*W. K. Brooks, 1899.*

The following selection of titles covers a large field including writings by scholars and scientists, but all bearing on the relation of science to man's permanent problem—the continuous adjustment to nature and to his man-made environment. Cross references will assist in following allied ideas and criticisms.

The emphasis placed on ecological orientation, the processes of change, both economic and social, is in line with recent advances in the field of human ecology.

Adams, Brooks
1913 The Theory of Social Revolutions. 240p. New York
Cf. Ogburn '23; Edwards '27; Symes and Travers '34; Brinton '38.

Adams, Charles C.
1935 The Relation of General Ecology to Human Ecology. Ecology, 16:316–35
1938 A Note for Social-Minded Ecologists and Geographers. Ecology, 19:500–2. Reprinted in The Planners' Journal, v. 5; no. 1:6–7, 1939

Alihan, Milla A.
1938 Social Ecology. A Critical Analysis. 267p. New York
A unique study of the concepts of human ecology. *Cf.* Rice '31; Bews '35.

American Historical Association Commission on Social Studies
1934 Conclusions and Recommendations of the Commission. Amer. Hist. Ass'n Com. 168p. New York
Cf. Curti '35.

Ball, Carleton R.
1926 Personnel, Personalities and Research. Sci. Monthly, 23:33–45
1938 Federal, State, and Local Administrative Relationships in Agriculture. Bur. Pub. Administration, Univ. of Calif., 1:1–461; 2:463–1139
Cf. p. 1–46 on the principles and practice of cooperation.

Bernal, J. D.
1935 If Industry Gave Science a Chance. Harpers Magazine, 170:257–68
Cf. also "The Frustration of Science," 1935.

1939 The Social Function of Science. 482p. New York
An important study for comparison with Huxley '35; Little '28; Harding '31; Lynd '39 and Nomad '39.

Bews, J. W.

1935 Human Ecology. 312p. London

A valuable early attempt at a general human ecology. *Cf.* Thomson and Geddes '31; and Wells, Huxley and Wells '34; Alihan '38.

1937 Life as a Whole. 347p. London.

A further expansion of Bews '35.

Bodenheimer, F. S.

1938 Problems of Animal Ecology. 183p. Oxford Univ. Press

Brinton, Crane

1938. The Anatomy of Revolution. 326p. New York

Cf. B. Adams '13.

Brooks, A. H.

1922 The Scientist in the Federal Service. Jour. Wash. Acad. of Sci., 12:73–115

Bryan, P. W.

1933 Man's Adaptation of Nature. Studies of the Cultural Landscape. 386p. New York

Cf. Forde '34; White and Renner '36; Bews '35.

Burgess, E. W.

1935 Social Planning and the Mores. Selected Papers Amer. Social Soc., p. 1–18

Conservative factors in social change; after Sumner's criterions.

Bush, Vannevar

1937 The Engineer and His Relation to Government. Science, n.s., 86:87–91

Cattell, J. McK.

1922 The Organization of Scientific Men. Sci. Monthly, 14:567–77.

Chapman, R. N.

1931 Animal Ecology. With Especial Reference to Insects. 464p. New York

Conklin, Edwin G.

1937 Science and Ethics. Science, n.s., 86:595–603

Coon, Horace

1938 Money to Burn. What the Great American Philanthropic Foundations Do with Their Money. 352p. New York

Cf. Lindeman '36; Hollis '38

Cottrell, F. G.

1937 The Social Responsibility of the Engineer. Science, n.s., 85:529–33; 553–56

Curti, Merle

1935 The Social Ideas of American Educators. Amer. Hist. Ass'n Comm. Report of the Commission on the Social Studies Part 10. 548p. New York

Cf. '34 Conclusions and Recommendations of the same commission.

Dreiser, Theodore

1932 Tragic America. 435p. New York

Edwards, L. P.

1927 The Natural History of Revolution. 229p. Chicago

Cf. B. Adams '13; Brinton '38.

Elton, Charles

1927 Animal Ecology. 207p. London

Flanders, Ralph E.

1931 Engineering, Economics, and the Problem of Social Well-Being. The Engineer's View. Mechanical Engineering, 53:99–104

Cf. Mitchell '31.

Forde, C. Daryll

1934 Habitat, Economy and Society. A Geographical Introduction to Ethnology. 500p. London

Furnas, C. C.

1936 The Next Hundred Years. The Unfinished Business of Science. 434p. New York

Gilbert, Chester G. & Pogue, Joseph E.

1918 Coal: The Resource and Its Full Utilization. U. S. Nat. Mus. Bul., 102, Pt 4, 27p.

1918*a* Petroleum: A Resource Interpretation. U. S. Nat. Mus. Bul., 102, Pt 6, 76p.

1919 The Energy Resources of the United States: A Field for Reconstruction. U. S. Nat. Mus. Bul., 102, v. 1, 165p.

Gruenberg, Benjamin C.

1935 Science and the Public Mind. 196p. New York

Haldane, J. B. S.

1933 Science and Human Life. 287p. New York

Harding, T. Swann

1931 The Degradation of Science. 386p. New York

Presents much evidence of the antisocial utilization of science. *Cf.* Sayles '30, for somewhat comparable conditions in the arts.

1939 Putting Science to Work. Jour. of Social Philos., 4:237–51

A valid criticism of scientists who are not oriented in modern society. The relation of technical advances to unemployment is stressed. Scientists should concern themselves with the social consequences of their work.

Hill, A. V.

1934 The International Status and Obligations of Science. Sci. Monthly, 38:146–56

Immunity in science secured by not meddling "with morals and politics." Yet he approves what T. H. Huxley did for the freedom of thought! *Cf.* Harding '31.

Hjort, Johan

1920 The Unity of Science. 176p. London

1935 Human Activities and the Study of Life in the Sea. An Essay on Methods of Research and Experiment. Geogr. Review, 25:529–64

1938 The Human Value of Biology. 241p. Cambridge, Mass.

Hogben, Lancelot T.

1937 Retreat from Reason. 102p. New York

A vigorous plea for the application of science to human problems.

Hollis, E. V.

1938 Philanthropic Foundations and Higher Education. 365p. New York

Cf. Lindeman '36; Coon '38.

Huxley, Julian S.

1935 Science and Social Needs. 287p. New York

A survey of British research in relation to social welfare.

Hynning, Clifford J.

1939 State Conservation of Resources. National Resources Committee. 116p. Washington, D. C.

Jennings, H. S.

1930 The Biological Basis of Human Nature. 384p. New York

1937 Biology and Social Reform. Jour. Soc. Phil., 2:155–66

Joerg, W. L. G.

1935 Geography and National Land Planning. Geogr. Review, 25:177–208

Kaempffert, Waldemar B.

1934 The Coordination of the Physical and Social Sciences. Carnegie Mag., 8:74–82

1938 Science and Democracy. Univ. of the State of New York Bul., 1143:59–64

Leith, C. K.

1931 World Minerals and World Politics. A Factual Study of Minerals in Their Political and International Relations. 213p. New York

Cf. Leith '33; Little '21; Gilbert and Pogue '18; Tryon and Eckel '32.

1938 Mineral Valuations of the Future. 116p. Amer. Inst. Min. and Metal. Eng. New York

Leith, C. K., *chairman,* **Bain, H. Foster & Marshall, S. M.** (*editorial committee*)

1933 Elements of a National Mineral Policy. 162p. The Mineral Inquiry. New York

Authors: W. P. Rawles, W. H. Voskuil, Howard N. Eavenson, C. Terry Duce, Stewart M. Marshall, Arthur Norman, J. E. Orchard, J. W. Frey, Thomas T. Read, J. W. Furness, Alex. Skelton, C. Reinold Noyes, D. F. Hewett, Percy E. Barbour, Rufus S. Tucker, Henry Kittredge Norton, Earl Oliver and C. Minot Weld.

Leyburn, James G.

1935 Frontier Folkways. 291p.

Human pioneering as a process.

Lindeman, E. C.

1936 Wealth and Culture. A Study of One Hundred Foundations and Community Trusts During the Decade 1921–1930. 135p. New York

Cf. Coon '38; Hollis '38, Lundberg '37.

1938 The Utilization of Human Resources. Plan Age, 4:74–91

Little, A. D.

1921 Natural Resources in Their Relation to Military Supplies. Smithsonian Report for 1919, p. 211–37

1928 The Handwriting on the Wall. A Chemist's Interpretation. 287p. Boston

Relation of research to industry.

Lundberg, Ferdinand

1937 America's 60 Families. 544p. New York

Cf. Myers '36.

Lynd, Robert S.

1939 Knowledge for What? The Place of Social Science in American Culture. 268p. Princeton, N. J.

A vigorous plea for the application of the social sciences.

Merriam, John C.

1930 The Significance of the Border Area Between Natural and Social Sciences. (In "The New Social Science," edited by Leonard D. White, p. 28–39. Chicago: Univ. of Chicago Press, 1930).

Also Merriam '38*a*, p. 2426–434.

1934 Some Responsibilities of Science with Relation to Government. Science, n.s., 80:597–601

1938 Application of Science in Human Affairs. Carnegie Inst. of Wash. Supplementary Publications, no. 42, 11p.

Also Merriam '38*a*, p. 2426–134.

Mitchell, Wesley C.

1931 Engineering, Economics, and the Problem of Social Well-Being. The Economist's View. Mechanical Engineering, 53:105–10

Cf. Flanders '31. A frank discussion of the inefficiency of our present economic system.

1939 Science and the State of Mind. Science, n.s., 89:1–4

1939a The Public Relations of Science, ns., 90:599–607

Mitchell, Wesley C., *ed.*

1936 What Veblen Taught. Selected Writings of Thornstein Veblen. 503p. New York

Moulton, F. R.

1937 Science and Society. Science, n.s., 86:387–91

A program for the American Association for the Advancement of Science Meetings.

Moulton, H. G.

1938 Science and Society. Science, n.s., 87:173–79

Mumford, Lewis

1938 Regional Survey for Citizenship. Univ. of the State of New York Bul., 1143:37–47

1938*a* The Culture of Cities. 586p. New York

Cf. C. C. Adams '38.

Myers, Gustavus

1936 History of the Great American Fortunes. 732p. Modern Library. New York

Cf. Lundberg '37.

National Resources Committee

1935 Regional Factors in National Planning. 223p.

Committee on Regional Planning. J. M. Gaus, Jacob Crane, M. E. Dimlock and G. T. Renner.

1937 Technological Trends and National Policy, 1937. 388p.

Committee on Technology: W. F. Ogburn, J. C. Merriam and E. C. Elliott. Chapters by Ogburn, Gilfillan, Stein and Weintraub. Influence of inventions, resistance to their utilization and relation to unemployment. *Cf.* Harding '39.

Nomad, Max (Pseudonym for Max Podolsky)

1939 Apostles of Revolution. 467p. Boston

Cf. B. Adams '13; Edwards '27; Symes and Travers '34; Brinton '38.

Odum, Howard W. & Jocher, Katharine

1929 An Introduction to Social Research. 488p. New York

Discusses methods of study in the social sciences.

Ogburn, William F.

1923 Social Change: With Respect to Culture and Original Nature. 365p. New York

1934 Trends in Social Science. Science, n.s., 79:257–62

Ogburn, William F. & Goldenweiser, Alexander, *eds.*

1927 The Social Sciences and Their Interrelations. 506p. New York

Ogg, Frederic A.

1928 Research in the Humanistic and Social Sciences. Report of a Survey Conducted for the American Council of Learned Societies. 454p. New York

Perkins, George W.

1921 The Present Economic and Social Conditions as Results of Applied Science and Invention. Roosevelt Wild Life Bul., 1:52–60

A business man's recognition of the relation of science and invention to society.

Rice, Stuart A., *ed.*

1931 Methods in Social Science. 822p. Chicago

Authors: McQuilkin DeGrange, Frank Knight, W. Y. Elliott, George E. G. Catlin, Philip Klein, Porter R. Lee, R. M. Ogden, Johannes Mattern, Max Sylvius Handman, Robert E. Park, Heinrich Klüver, Calvin P. Stone, Leon E. Truesdell, William F. Ogburn, Joseph Peterson, K. C. McMurry, V. C. Finch, Raoul Blanchard, A. L. Kroeber, Robert H. Lowie, Leslie Spier, Sidney B. Fay, Edward Sapir, Floyd H. Allport and Dale A. Hartman, Merle E. Curti, Carl Stephenson, William L. Langer, Henry E. Bourne, Jean Pommier, Francis A. Christie, Ferdinand Schevill, Henry Pirenne, Stuart A. Rice, Harold D. Lasswell, Z. Clark Dickinson, Floyd N. House, Kimball Young, E. H. Sutberland, Robert S. Woodworth, Hubert R. Kemp, Fay-Cooper Cole, Raymond T. Bye, John D. Black, Henry Schultz, John Maurice Clark, L. L. Thurstone, J. E. Coover and Franklin Fearing.

A critical study of representative literature as examples of method.

Schuster, Arthur

1907 International Science. Smithsonian Report for 1906, p. 493–514

1915 The Common Aims of Science and Humanity. Science n.s., 42:397–413

Smith, Elliott D.

1931 Engineering Encounters Human Nature. Mechanical Engineering, 53:1–4

Cf. Mitchell '31.

Smuts, J. C.

1926 Holism and Evolution. 362p. New York

Soddy, Frederick

1920 Science and Life. 299p. London

Stamp, Josiah

1936 The Impact of Science Upon Society. Science n.s., 84:235–39

See Stamp '37.

1937 The Science of Social Adjustment. 174p. London

Stamp '36 is an extract from this book.

Stein, Clarence S. *(Chairman)*

1926 Report of Commission of Housing and Regional Planning to Governor Alfred E. Smith. May 7, 1926. 82p. Albany

An outstanding report on regional planning.

Symes, Lillian, & Travers, Clement

1934 Rebel America. 392p. New York

Cf. B. Adams '13; Edwards '27; Brinton '38; Nomad '39.

Taylor, Griffith

1936 Environment and Nation. Geographical Factors in the Cultural and Political History of Europe. 571p. Chicago

1937 Environment, Race and Migration. 483p. Chicago

Thomson, J. A., & Geddes, Patrick

1931 Life: Outlines of General Biology; 2v. 1515p. New York

Thomson, *Sir* **J. Arthur** (Planned and arranged by the late)

1934 Science Today. The Scientific Outlook on World Problems Explained by Leading Exponents of Modern Scientific Thought. 398p. London

Tryon, F. G., & Eckel, E. C., *eds.*

1932 Mineral Economics. 311p. New York

Authors: H. F. Bain; E. C. Eckel; J. R. Finlay; J. W. Frey; J. W. Furness; D. F. Hewett; C. E. Julihn; C. K. Leith; L. Logan; G. F. Loughlin; R. S. McBride; T. T. Read; E. B. Swanson; F. G. Tryon and F. E. Berquist.

Veblen, Thornstein

1934 The Engineers and the Price System. 169p. New York

Wadsworth, F. L. O.

1929 The Alleged Scarcity of Research Men. Science, n.s., 69:355–56

Watson, David L.

1938 Scientists are Human. With a Foreword by John Dewey 249p. London

Discusses science as a human behavior product. *Cf.* George '38; Lynd '39.

Weidlein, Edward R.

1937 A World of Change. Science, n.s., 86:249–55

Weidlein, E. R., & Hamor, W. A.

1936 Glances at Industrial Research. 238p. New York

Representative of research as applied to private industry. *Cf.* Harding '31, '39.

Wells, H. G.

1931 The Work, Wealth and Happiness of Mankind. v. 1:1–454; v. 2:457–924. Garden City, N. Y.

Reprinted 1936 under title, "The Outline of Man's Work and Wealth." 760p. Garden City.

1938 World Brain. 194p. New York

Proposal for a central coordinating center.

Wells, H. G., Huxley, J. S. & Wells, G. P.

1934 The Science of Life. 1514p. New York

White, C. L. & Renner, G. T.

1936 Geography. An Introduction to Human Ecology. 790p. New York

White, L. D., *ed.*

1930 The New Social Science. 132p. Chicago

Authors: R. M. Hutchins, W. C. Mitchell, A. M. Bartholdy, J. C. Merriam, M. C. Winternitz, Sir William Beveridge, H. G. Moulton, Célestin Bouglé, Franz Boas, Beardsley Ruml, C. Judson Herrick, E. B. Wilson.

A number of outstanding volumes of essays by groups of British and American authors can be most conveniently grouped as follows:

Whither Mankind. A Panorama of Modern Civilization. Edited by Charles A. Beard. 408p. New York. 1928

Authors: Charles A. Beard, Hu Shih, Hendrik Willem van Loon, Bertrand Russell, Julius Klein, Sidney and Beatrice Webb, Howard Lee McBain, Emil Ludwig, C. E. A. Winslow, Havelock Ellis, George A. Dorsey, James Harvey Rohinson, Lewis Mumford, John Dewey, Stuart Chase, Everett Dean Martin, Carl Van Doren.

Our Changing World-View. 172p. Johannesburg, South Africa. 1932.

1 Some Recent Scientific Advances in Their Bearing on Philosophy. p. 3–14. Lieut.-General the Right Honourable J. C. Smuts
2 The Material World—Yesterday and To-Day. p. 17–31. Prof. J. P. Dalton
3 Evolution-Design or Accident? p. 35–47. Dr Robert Broom
4 Man at the Cross-roads. p. 51–70. Prof. John F. V. Phillips
5 Psychology in Perspective. p. 73–88. I. D. MacCrone
6 Literature in the Machine Age. p. 91–100. Prof. J. Y. T. Greig
7 The Holistic Attitude in Education. p. 103–14. Prof. T. J. Haarhoff
8 Our Changing Economic World. p. 117–36. Prof. C. S. Richards
9 Africa in Re-making. p. 139–54. Prof. S. H. Frankel
10 Old Truths and New Discoveries. p. 157–72. Prof. R. F. Alfred Hoernlé

The Contributions of Science to Increased Employment. Sci. Monthly, 38:297–309. New York

1 Science Makes Jobs. p. 297–300. K. T. Compton
2 Science and Industry. p. 301–302. F. B. Jewett
3 The Service of Science. p. 303–307. R. A. Millikan
4 Scientific Developments and Their Application. p. 307–309. W. D. Coolidge

O. D. Young, p. 309. "In America obsolescence—not wear-out—has been the thing which has kept our people at work and at the same time has produced more and better things at less cost for us all to use.

"Science is the mother of obsolescence, and to the extent we paralyze it we will limit employment, wages and our standard of living."

Cf. Harding '31, '39; Nat. Resources Committee, "Technological Trends," 1937.

The Frustration of Science. 144p. New York. 1935

1 Foreword. p. 7–9. Frederick Soddy
2 Science and Agriculture. p. 13–29. Sir Daniel Hall
3 Aviation. p. 30–41. J. G. Crowther
4 Science and Industry. p. 42–78. J. D. Bernal
5 Medicine. p. 79–97. Prof. V. H. Mottram
6 The Invention of Sterility. p. 98–114. Dr Enid Charles
7 Bacterial Welfare. p. 115–128. P. A. Gorer
8 The Frustration of Science. p. 129–144. Prof. P. M. S. Blackett

Scientific Progress. 210p. New York. 1936

1 The Man and the Universe. p. 11–32. Sir James Jeans
2 The Progress of Physical Science. p. 39–77. Sir William Bragg
3 The Electricity in the Atmosphere. p. 79–100. Prof. E. V. Appleton
4 Progress in Medical Science. p. 101–140. Prof. E. Mellanby
5 Human Genetics and Human Ideals. p. 141–173. Prof. J. B. S. Haldane
6 Science and its Relation to Social Needs. p. 175–210. Prof. Julian Huxley

Human Affairs. 360p. London. 1937

1 Editorial. The Editors. p. 1–18. R. B. Cattell, J. Cohen, R. M. W. Travers
2 Society as a Biological Experiment. p. 19–35. Prof. J. B. S. Haldane
3 Psychological Needs. p. 36–54. Prof. D. Katz
4 Economic Planning. p. 55–71. Dr A. S. J. Baster
5 Psychology in the Industrial Life of the Nation. p. 72–89. E. Chambers
6 Race and Modern Society. p. 90–106. Lord Raglan
7 Eugenics and Social Progress. p. 107–22. Dr C. P. Blacker
8 Medical Progress and Society. p. 123–39. Sir Henry Brackenbury
9 Education, and the Sciences of Human Nature. p. 140–65. Dr R. B. Cattell
10 Sociology and Human Affairs. p. 166–80. Prof. M. Ginsberg
11 Eros in Contemporary Life. p. 181–98. Dr Havelock Ellis
12 Anthropology as the Basis of Social Science. p. 199–252. Prof. B. Malinowski
13 Neurosis and Civilization. p. 253–77. Dr Emanuel Miller
14 Present Trends in the Building of Society. (Translation by H. Lewis) p. 278–300. Prof. K. Manneheim
15 Science and Legislation. p. 301–18. The Earl of Listowel
16 Philosophy and the Social Sciences. p. 319–46. Prof. W. McDougall

THE CULTURAL VALUE OF NATURE AND SCIENCE

In the preceding part of this paper emphasis has been placed upon the application of the scientific method and attitude of mind toward the practical problems of society, with particular attention to the process of orientation and adjustment. The following section will be devoted to the emphasis on the cultural aspect of the process of response to the broad conditions of life, including man's response

to the esthetic and emotional qualities of nature. In spite of our social limitations no country has produced a group of authors dealing with nature equal to Thoreau, Muir, W. Hamilton Gibson and John C. Van Dyke, who have with such consummate skill blended science, literature and art.

To assume that analysis is the only aspect of scientific study would be a fundamental error, because analysis and synthesis are both essential to insure the progress of science and to secure its best contributions to human welfare. These two different attitudes of mind are seldom equally developed or balanced in one individual. The analytical aspect is more conspicuous in scientific literature, and the synthetic in the more comprehensive studies, scientific, literary and art aspects. The synthetical approach calls for considerable imaginative ability and grades into the artistic construction of theories and hypotheses, in the appreciation of the beauty in nature, and finally in both thought and in action.

The selection following is intended to indicate the varied responses that are made by authors, showing in several instances the interdependence and interpenetration of science and art, with special reference to American conditions. I have not listed the writings of Thoreau, Hudson, Beebe and Burroughs as they are too well known to be given in detail. A sample only is given of Muir. Emphasis is placed on two neglected authors—W. Hamilton Gibson and John C. Van Dyke—and to the writings of an interpretative naturalist, John C. Merriam, on the appreciation of nature.

Adams, Charles C.

1910 The Relation of Field Excursions to the Activities of Local Museums. Proc. Amer. Ass'n Museums, 4:112–24. 1910

Reprinted in N. Y. State Mus. Bul., 284:43–60, 1929.

1921 Delights of the Wild Forest Trail. N. Y. State Service Mag. 5:100–3

1925 The Relation of Wild Life to the Public in National and State Parks. Roos. Wild Life Bul., 2:370–401

1925*a* Ecological Conditions in National Forests and in National Parks. Sci. Monthly, 20:561–93

Adams, Henry

1918 The Education of Henry Adams. 519p. New York

An example of a personal response to our economic and social conditions. *Cf.* Josephson '30.

Adams, John C.

1901 William Hamilton Gibson. Artist–Naturalist–Author. 275p. New York

Cf. W. Hamilton Gibson.

Cornish, Vaughan

1935 Scenery and the Sense of Sight. 111p. Cambridge, England

Downing, E. R.

1922 A Naturalist in the Great Lakes Region. 328p. Chicago

A good popular account of the local natural history of a region.

Findlay, Alexander

1925 The Appeal of Science to the Community. Science, n.s., 62:357–63

Foerster, Norman

1923 Nature in American Literature. Studies in the Modern View of Nature. 324p. New York

Cf. Foerster '28; Hicks '24; West '39.

1928 The Reinterpretation of American Literature. Some Contributions toward the Understanding of Its Historical Development. 271p. New York

Cf. Parrington.

Gibson, W. Hamilton

1882 Pastoral Days or Memories of a New England Year. 153p. New York

Gibson is one of the most fascinating combinations of artist and naturalist. *Cf.* J. C. Adams '01.

1887 Happy Hunting-Grounds: A Tribute to the Woods and Fields. 202p. New York

1891 Strolls by Starlight and Sunshine. 194p. New York

1893 Sharp Eyes: A Rambler's Calendar of Fifty-two Weeks among Insects, Birds, and Flowers. 322p. New York

"Sharp Eyes" and "Eye Spy" illustrate his appreciation and skill in portraying beauty in miniature.

1895 Our Edible Toadstools and Mushrooms and How To Distinguish Them. 337p. New York

1897 Eye Spy: Afield with Nature among Flowers and Animate Things. 264p. New York

1900 My Studio Neighbors. 245p. New York

Gregory, *Sir* Richard

1938 Cultural Contacts of Science. Fifth Elihu Root Lecture, Carnegie Inst. of Wash. 56p. Washington, D. C.

Hicks, Philip M.

1924 The Development of the Natural History Essay in American Literature. 167p. Univ. of Pa.

Cf. Foerster '23.

Josephson, Matthew

1930 Portrait of the Artist as American. 308p. New York

The experience of Melville, Henry James, Henry Adams is well known, but the allied experience of the scientist has not been studied. What about Veblen and Sullivan?

Cf. H. Adams '18; Sullivan '24; Morrison '35; Wright '32.

La Follette, Suzanne

1929 Art in America. 361p. New York

Art in relation to social conditions.

Merriam, John C.

1927 Inspiration and Education in National Parks. Nat. Parks Bul., v. 9, no. 53, p. 3–5, July 1927

Also Merriam '38*a*, p. 2172–176.

At present Merriam is the outstanding American naturalist advocating the cultural value of science and the appreciation of nature. Several papers are listed, and all by him are reprinted in Merriam '38*a*.

1929 The Contribution of Science toward the Appreciation of Nature. Buffalo Soc. of Nat. Sci. 68th Ann. Rep't, 1929, p. 7–12

Also Merriam '38*a*, p. 2178–185.

1929*a* Natural Phenomena as a Source of Inspiration in Education. Educational Record, 10:272–76

Also Merriam '38*a*, p. 2186–190.

1929*b* Reports on Studies of Educational Problems in National Parks. Individual Reports of Members of the Committee on Educational Problems in National Parks, p. 17–23, 25–29, Nov. 27, 1929. Privately printed, Washington, 1929

Also Merriam '38*a*, p. 2192–222.

1931 The Living Past. 144p. New York
1931*a* The Unity of Nature as Illustrated by the Grand Canyon. Univ. of Arizona Inaugural Bul., June 1931; Sci. Monthly, 33:227–34
Also Merriam '38*a*, p. 2225–3544.
1932 The Search for Spiritual Leadership. Torch Magazine (Buffalo). 5:3–6
Also Merriam '38*a*, p. 2039–44.
1933 Spiritual Values and the Constructive Life. (In "The Obligation of Universities to the Social Order," edited by Henry Pratt Fairchild, p. 317–31.) New York. New York University Press
Also Merriam '38*a*, p. 2051–60.
1933*a* Crater Lake. A Study in Appreciation of Nature. Amer. Mag. of Art, v. 26, no. 8, p. 357–61, Aug. 1933
Also Merriam '38*a*, p. 2321–326.
1935 Ultimate Values of Science. Carnegie Inst. of Wash. Supplementary Publications, no. 15, 8p.
Also Merriam '38*a*, p. 2104–115.
1936 Science and Human Values. New York. The American Institute. 11p.
Also Merriam '38*a*, p. 2116–123.
1938 Influence of Science upon Appreciation of Nature. Univ. of the State of New York Bul., 1143:11–21; Carnegie Inst. of Wash. Supplementary Publications, no. 44. 11p. Nov. 21, 1938
Also Merriam '38*a*, p. 2327–337.
1938*a* Published Papers and Addresses of John Campbell Merriam. Carnegie Inst. of Wash. Pub. No. 500, v. 4, p. 1947–2672. 1938

Morrison, Hugh

1935 Louis Sullivan. 391p. New York
Cf. Sullivan '24; Whitaker '34.

Muir, John

1904 Our National Parks. 370p. New York
Outstanding in his appreciation of nature in combination with the scientific attitude.
1904*a* The Mountains of California. 381p. New York

Mumford, Lewis

1924 Sticks and Stones. A Study of American Architecture and Civilization. 238p. New York
Cf. Sullivan '24; Morrison '35; Whittaker '34; and Wright '32.
1926 The Golden Day; A Study in American Literature and Culture. 283p. New York
1931 The Brown Decades. 266p. New York
1938 The Culture of Cities. 586p. New York
Cf. C. C. Adams '38.

Parrington, V. L.

1927–30 Main Currents in American Thought. An Interpretation of American Literature from the Beginnings to 1920. v. 1, 413p. 1927 v. 2, 493p. 1927. v. 3, 429p. 1930
An ecological interpretation. *Cf.* Foerster '28.

Ritter, William E.

1911 Feeling in the Interpretation of Nature. Pop. Sci. Monthly, 79:126–36

Robinson, J. H.

1921 The Mind in the Making. The Relation of Intelligence to Social Reform. 235p. New York
1923 The Humanizing of Knowledge. 117p. New York

Rourke, Constance

1938 Charles Scheeler. Artist in the American Tradition. 203p. New York
Cf. Josephson '30.

Sarton, George

1931 The History of Science and the New Humanism. 178p. New York
1936 The Study of the History of Science. 75p. Cambridge, Mass.

Saunders, A. A.

1929 Bird Song. N. Y. State Mus. Handbook, 7:1–202
1932 Bird Song (In Braille for the blind). 2v.

The edition of the preceding for the blind, distributed by the Congressional Library.

Sayler, Oliver M.

1930 Revolt in the Arts: A Survey of the Creation, Distribution and Appreciation of Art in America. 351p. New York

Advocates (p.1–172) the collaboration of the arts with science in the interpretation of life. Chapters by many authors.

Cf. Harding '31.

Shannon, H. J.

1935 The Book of the Seashore. The Life Experiences of a Naturalist on the Beach. 281p. Garden City

A fine example of a local natural history which appreciates the broader modern dynamic outlook.

Sullivan, Louis H.

1924 The Autobiography of an Idea. 330p. New York

An artist's approach through architecture and engineering to the scientific method and to a new synthesis.

1934 Kindergarten Chats, on Architecture, Education and Democracy. Edited by Claude E. Bragdon. 256p. Washington, D. C.

A keen appreciation of nature, a plea for independent thinking in architecture; ideas of general application.

Sullivan's ('24, '34) appreciation and devotion to nature, growth, development and natural functions led him to extend these conceptions to human constructions and thus to functional architecture, and its applications to all other activities.

Cf. Sullivan '24; H. Adams '18; Josephson '30; Morrison '35; and Sayler '30; Whitaker '34; Wright '32.

West, Herbert F.

1939 The Nature Writers. A Guide to Richer Reading. 155p. Brattleboro, Vt.

Cf. Foerster '23; Hicks '24.

Van Dyke, J. C.

1904 Nature for Its Own Sake. First Studies in Natural Appearances. 292p. New York

The writings of Van Dyke and W. Hamilton Gibson combine art and science in a unique manner.

1906 The Opal Sea. Continued Studies in Impressions and Appearances. 262p. New York
1916 The Mountain. Renewed Studies in Impressions and Appearances. 234p. New York
1920 The Grand Canyon of the Colorado. Recurrent Studies in Impressions and Appearances. 218p. New York
1922 The Open Spaces. Incidents of Nights and Days under the Blue Sky. 272p. New York
1922*a* The Desert. Further Studies in Natural Appearances. 233p. New York
1926 The Meadows. Familiar Studies of the Commonplace. 245p. New York

Whitaker, Charles H.

1934 The Story of Architecture. From Rameses to Rockefeller. 360p. New York

Cf. Sullivan '24, '34; Morrison '35;

Wright, Frank L.

1932 An autobiography. 371p. New York

Cf. Sullivan '24, '34; Morrison '35; Josephson '30; Whitaker '34.

LIST OF THE OFFICIAL PUBLICATIONS OF THE NEW YORK STATE MUSEUM

By Clinton F. Kilfoyle

Technical Assistant in Paleontology

New York State Museum

INTRODUCTORY NOTE

For many years a list of the publications of the New York State Museum has been very greatly needed. This list includes the publications of the antecedents of the Museum under various names, such as the State Cabinet of Natural History, and the New York State Geological and Natural History Survey, which was established by the Legislature on April 15, 1836.

The offices of the State Entomologist and the State Botanist were consolidated with the State Museum, and therefore their earlier reports are here included. The long period covered by this list has involved many different policies of public printing, and for that reason certain details are given that otherwise would not be needed.

In earlier State Museum Bulletins, lists of the publications were printed, which were prepared by Mr Jacob Van Deloo, then Secretary of the State Museum. This older list has been brought up to date by Mr Clinton F. Kilfoyle, Technical Assistant in Paleontology.

A very careful index to the publications previous to 1902 was published as follows:

Ellis, Mary

1903 Index to Publications of the New York State Natural History Survey and the New York State Museum, 1837–1902. N. Y. State Mus. Bul., 66:1–653. 1903.

The publications of the State Museum are regularly distributed by exchange to libraries and institutions through the New York State Library which, like the State Museum, is a part of the State Education Department, and communications concerning exchanges should be addressed to the Director of the State Library, Albany, N. Y.

Communications for sale copies of the publications should be addressed directly to the New York State Museum, Albany, N. Y.

Great numbers of the various publications are out of print, have been for many years, and can not be supplied. These can be secured only from secondhand book dealers.

It is unfortunate that at the present time it is not possible to indicate just what publications are available, and also to indicate prices. Mimeographed price lists may be obtained for current available publications.

The status of geological mapping has been published recently:

Goldring, Winifred

1939 Report on Geological Mapping of Sedimentary Rocks (Exclusive of Grenville) and Glacial Areas in New York State. N. Y. State Mus. Bul., 317: 119–31

Newland, D. H.

1939 Geological Mapping of New York State. The Precambrian Formations. N. Y. State Mus. Bul., 317: 133–37

Historical sketches of the State Museum may be found in the following:

By the State Museum Staff

1937 A Chronological Sketch of the History of the New York State Museum. N. Y. State Mus. Bul., 313:85–121

1939 A Summary of the Accomplishments and Functions of the New York State Museum During the Past Century, 1836–1936. N. Y. State Mus. Bul., 317:69–118

The preceding and the list of publications thus give a very concise sketch of the work and accomplishments of the State Museum for its first century.

Charles C. Adams
Director, New York State Museum

May 17, 1939

Geological and Natural History Survey Annual Reports 1837–1841

The annual reports of the original Survey were published as Assembly doc. 1837, no. 161; 1838, no. 200; 1839, no. 275; 1840, no. 50; 1841, no. 150.

Museum annual reports 1847–1917. Of the report for 1918 only volumes 2 and 3 were published.

These reports are made up of the reports of the Director, Geologist, Paleontologist, Botanist and Entomologist, and museum bulletins and memoirs, issued as advance sections of the reports.

Director's annual reports 1903–04–date

1st, 1903–04. 138p. 1905
2d, 1904–05. 102p. 23 pls. 1906
3d, 1905–06. 186p. 41 pls. 1907
4th, 1906–07. (Bul. 121) 212p. 63 pls. Aug. 1908
5th, 1907–08. (Bul. 133) 234p. 39 pls. map. Aug. 1909
6th, 1908–09. (Bul. 140) 230p. 41 pls. 2 maps. 4 charts, June 1910
7th, 1909–10. (Bul. 149) 280p. il. 42 pls. April 1911
8th, 1910–11. (Bul. 158) 218p. 49 pls. April 1912
9th, 1911–12. (Bul. 164) 214p. 50 pls. Mar. 1913
10th, 1912–13. (Bul. 173) 158p. il. 29 pls. Nov. 1914
11th, 1913–14. (Bul. 177) 174p. il. 33 pls. Oct. 1915
12th, 1914–15. (Bul. 187) 192p. il. 58 pls. 5 maps. July 1916
13th, 1915–16. (Bul. 196) 308p. il. 50 pls. maps. April 1917
14th, 1916–17. (Bul. 207–208) 211p. il. maps. Mar.–Apr. 1918
15th, 1917–18. (Bul. 219–220) 309p. il. 43 pls. Mar.–Apr. 1919
16th, 1918–19. (Bul. 227–228) 146p. il. maps. Nov.–Dec. 1919

17th, 1920–21. (Bul. 239–240) 209p. il. maps. Nov.–Dec. 1920
18th, 1922. (Bul. 251) 221p. il. 50 pls. map. Mar. 1924
19th, 1923. (Bul. 253) 136p. il. 7 pls. July 1924
20th, 1924. (Bul. 260) 142p. il. June 1925
21st, 1925. (Bul. 267) 109p. il. 10 pls. April 1926
22d, 1926–27. (Bul. 279) 68p. 19 figs. Jan. 1929
23d, 1927–28. (Bul. 284) 82p. 25 figs. Dec. 1929
24th, 1928–29. (Bul. 288) 124p. 42 figs. July 1931
25th, 1929–30. (Bul. 293) 111p. 24 figs. June 1932
26th, 1930–31. (Bul. 298) 57p. 17 figs. April 1933
27th, 1931–32. (Bul. 301) 62p. 13 figs. Mar. 1934
28th, 1932–33. (Bul. 304) 94p. 26 figs. May 1935
29th, 1933–34. (Bul. 306) 98p. 35 figs. May 1936
30th, 1934–35. (Bul. 310) 146p. 47 figs. Feb. 1937
31st, 1935–36. (Bul. 313) 140p. 27 figs. Oct. 1937
101st, 1936–37. (Bul. 317) 150p. 47 figs. Feb. 1939

These reports cover those of the State Geologist and of the State Paleontologist and since 1922 the reports of the State Entomologist. Since 1925 the reports of the State Botanist have also been included. Bound also with the Museum reports of which they form a part.

Geologist's annual reports 1881–1903

In 1898 the paleontologic work of the State was made distinct from the geologic and was reported separately from 1899-1903. The two departments were reunited in 1904 and are now reported in the Director's report.

Reports 1–4, 1881–84, were published only in separate form. Of the 5th report 4 pages were reprinted in the 39th museum report, and a supplement to the 6th report was included in the 40th museum report. The 7th and subsequent reports are included in the 41st and following museum reports, except that certain lithographic plates in the 11th report (1891) and 13th (1893) are omitted from the 45th and 47th museum reports.

Paleontologist's annual reports 1899–1903

See first note under Geologist's annual reports.

Bound also with museum reports of which they form a part. Those for 1901–3 were issued as bulletins. In 1904 combined with the Director's report.

Entomologist's annual reports on the injurious and other insects of the State of New York 1882–1921

Reports 3–33 bound also with museum reports 40–46, 48–71 of which they form a part. From 1898–1921 these reports were issued as bulletins. In 1922 combined with the Director's report. *Cf. also* p. 121.

Botanist's annual reports 1867–1924

Bound also with museum reports 21–71 of which they form a part; the first Botanist's report appeared in the 21st museum report and is numbered 21. Reports 21–24, 29, 31–41 were not published separately. From 1901–1924 these reports were issued as bulletins. In 1925 combined with the Director's report.

Descriptions and illustrations of edible, poisonous and unwholesome fungi of New York have also been published in volumes 1 and 3 of the 48th (1894) museum report and in volume 1 of the 49th (1895), 51st (1897), 52d (1898), 54th (1900), 55th (1901), in volume 4 of the 56th (1902), in volume 2 of the 57th (1903), in volume 4 of the 58th (1904), in volume 2 of the 59th (1905), in volume 1 of the 60th (1906), in volume 2 of the 61st (1907), 62d (1908), 63d (1909), 64th (1910), 65th (1911), v. 2 of the 66th (1912) reports. The descriptions and illustrations of edible and unwholesome species contained in the 49th, 51st and 52d reports have been revised and rearranged, and, combined with others more recently prepared, constitute Museum Memoir 4.

Museum bulletins 1887–date. 8v. (1) *geology, economic geology, paleontology, mineralogy;* (2) *general zoology, archeology, miscellaneous;* (3) *botany;* (4) *entomology.*

Bulletins are grouped in the list on the following pages according to divisions.

The divisions to which bulletins belong are as follows:

1 Zoology
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11 Economic Geology
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43 Zoology
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Bulletins are also found with the annual reports of the museum as follows:

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Museum handbooks 1927-date. (1) *Geology, economic geology, paleontology, minerology;* (2) *general zoology, archeology, miscellaneous;* (3) *botany;* (4) *entomology;* (5) *history and art.*

Handbooks are grouped in the list on the following pages according to divisions. The divisions to which handbooks belong are as follows:

1 Geology
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GEOLOGY AND PALEONTOLOGY

Museum Bulletin No. 14 Kemp, J. F. Geology of Moriah and Westport Townships, Essex Co., N. Y., with notes on the iron mines. 38p. il. 7pl. 2 maps. Sept. 1895.

19 Merrill, F. J. H. Guide to the Study of the Geological Collections of the New York State Museum. 164p. 119pl. map. Nov. 1898.

21 Kemp, J. F. Geology of the Lake Placid Region. 24p. 1pl. map. Sept. 1898.

34 Cumings, E. R. Lower Silurian System of Eastern Montgomery County; Prosser, C. S. Notes on the Stratigraphy of Mohawk Valley and Saratoga County, N. Y. 74p. 14pl. map. May 1900.

39 Clarke, J. M.; Simpson, G. B. & Loomis, F. B. Paleontologic Papers 1 72p. il. 16pl. Oct. 1900.

Contents: Clarke, J. M. A Remarkable Occurrence of *Orthoceras* in the Oneonta Beds of the Chenango Valley, N. Y.

—— *Paropsonema cryptophya;* a Peculiar Echinoderm from the Intumescenszone (Portage Beds) of Western New York.

—Dictyonine Hexactinellid Sponges from the Upper Devonic of New York.

— The Water Biscuit of Squaw Island, Canandaigua Lake, N. Y.

Simpson, G. B. Preliminary Descriptions of New Genera of Paleozoic Rugose Corals.

Loomis, F. B. Siluric Fungi from Western New York.

42 Ruedemann, Rudolf. Hudson River Beds near Albany and Their Taxonomic Equivalents. 116p. 2pl. map. Apr. 1901.

45 Grabau, A. W. Geology and Paleontology of Niagara Falls and Vicinity. 286p. il. 18pl. map. Apr. 1901.

48 Woodworth, J. B. Pleistocene Geology of Nassau County and Borough of Queens. 58p. il. 8pl. map. Dec. 1901.

49 Ruedemann, Rudolf; Clarke, J. M. & Wood, Elvira. Paleontologic Papers 2. 240p. 13pl. Dec. 1901.

Contents: Ruedemann, Rudolf. Trenton Conglomerate of Rysedorph Hill.

Clarke, J. M. Limestones of Central and Western New York Interbedded with Bituminous Shales of the Marcellus Stage.

Wood, Elvira. Marcellus Limestones of Lancaster, Erie Co., N. Y.

Clarke, J. M. New *Agelacrinites.*

—— Value of *Amnigenia* as an Indicator of Fresh-water Deposits during the Devonic of New York, Ireland and the Rhineland.

52 Clarke, J. M. Report of the State Paleontologist 1901. 280p. il. 10pl. map. 1 tab. July 1902.

56 Merrill, F. J. H. Description of the State Geologic Map of 1901. 42p. 2 maps. tab. Nov. 1902.

63 Clarke, J. M. & Luther, D. D. Stratigraphy of Canandaigua and Naples Quadrangles. 78p. map. June 1904.

65 Clarke, J. M. Catalogue of Type Specimens of Paleozoic Fossils in the New York State Museum. 848p. May 1903.

69 —— Report of the State Paleontologist 1902. 464p. 52pl. 7 maps. Nov. 1903.

77 Cushing, H. P. Geology of the Vicinity of Little Falls, Herkimer Co. 98p. il. 15pl. 2 maps. Jan. 1905.

80 Clarke, J. M. Report of the State Paleontologist 1903. 396p. 29pl. 2 maps. Feb. 1905.

81 Clarke, J. M. & Luther, D. D. Watkins and Elmira Quadrangles. 32p. map. Mar. 1905.

82 —— Geologic Map of the Tully Quadrangle. 40p. map. Apr. 1905.

83 Woodworth, J. B. Pleistocene Geology of the Mooers Quadrangle. 62p. 25 pl. map. June 1905.

84 —— Ancient Water Levels of the Champlain and Hudson Valleys. 206p. il. 11pl. 18 maps. July 1905.

90 Ruedemann, Rudolf. Cephalopoda of Beekmantown and Chazy Formations of Champlain Basin. 224p. il. 38pl. May 1906.

92 Grabau, A. W. Guide to the Geology and Paleontology of the Schoharie Region. 314p. il. 26pl. map. Apr. 1906.

95 Cushing, H. P. Geology of the Northern Adirondack Region. 188p. 15pl. 3 maps. Sept. 1905.
96 Ogilvie, I. H. Geology of the Paradox Lake Quadrangle. 54p. il. 17pl. map. Dec. 1905.
99 Luther, D. D. Geology of the Buffalo Quadrangle. 32p. map. May 1906.
101 —— Geology of the Penn Yan-Hammondsport Quadrangles. 28p. map. July 1906.
106 Fairchild, H. L. Glacial Waters in the Erie Basin. 88p. 14pl. 9 maps. Feb. 1907.
107 Woodworth, J. B.; Hartnagel, C. A.; Whitlock, H. P.; Hudson, G. H.; Clarke, J. M.; White, David & Berkey, C. P. Geological Papers. 388p. 54pl. map. May 1907.
Contents: Woodworth, J. B. Postglacial Faults of Eastern New York.
Hartnagel, C. A. Stratigraphic Relations of the Oneida Conglomerate.
—— Upper Siluric and Lower Devonic Formations of the Skunnemunk Mountain region.
Whitlock, H. P. Minerals from Lyon Mountain, Clinton Co.
Hudson, G. H. On Some Pelmatozoa from the Chazy Limestone of New York.
Clarke, J. M. Some New Devonic Fossils.
—— An Interesting Style of Sand-filled Vein.
—— Eurypterus Shales of the Shawangunk Mountains in Eastern New York.
White, David. A Remarkable Fossil Tree Trunk from the Middle Devonic of New York.
Berkey, C. P. Structural and Stratigraphic Features of the Basal Gneisses of the Highlands.
111 Fairchild, H. L. Drumlins of New York. 60p. 28pl. 19 maps. July 1907.
114 Hartnagel, C. A. Geologic Map of the Rochester and Ontario Beach Quadrangles. 36p. map. Aug. 1907.
115 Cushing, H. P. Geology of the Long Lake Quadrangle. 88p. 20pl. map. Sept. 1907.
118 Clarke, J. M. & Luther, D. D. Geologic Maps and Descriptions of the Portage and Nunda Quadrangles including a map of Letchworth Park. 50p. 16pl. 4 maps. Jan. 1908.
126 Miller, W. J. Geology of the Remsen Quadrangle. 54p. il. 11pl. map. Jan. 1909.
127 Fairchild, H. L. Glacial Waters in Central New York. 64p. 27pl. 15 maps. Mar. 1909.
128 Luther, D. D. Geology of the Geneva-Ovid Quadrangles. 44p. map. Apr. 1909.
135 Miller, W. J. Geology of the Port Leyden Quadrangle, Lewis County, N. Y. 62p. il. 11pl. map. Jan. 1910.
137 Luther, D. D. Geology of the Auburn-Genoa Quadrangles. 36p. map. Mar. 1910.
138 Kemp, J. F. & Ruedemann, Rudolf. Geology of the Elizabethtown and Port Henry Quadrangles. 176p. il. 20pl. 3 maps. Apr. 1910.
145 Cushing, H. P.; Fairchild, H. L.; Ruedemann, Rudolf & Smyth, C. H. Geology of the Thousand Islands Region. 194p. il. 62pl. 6 maps. Dec. 1910
146 Berkey, C. P. Geologic Features and Problems of the New York City (Catskill) Aqueduct. 286p. il. 38pl. maps. Feb. 1911.
148 Gordon, C. E. Geology of the Poughkeepsie Quadrangle. 122p. il. 26pl. map. Apr. 1911.
152 Luther, D. D. Geology of the Honeoye Wayland Quadrangles. 30p. map. Oct. 1911.
153 Miller, William J. Geology of the Broadalbin Quadrangle, Fulton-Saratoga Counties, New York. 66p. il. 8pl. map. Dec. 1911.
154 Stoller, James H. Glacial Geology of the Schenectady Quadrangle. 44p. 9pl. map. Dec. 1911.
159 Kemp, James F. The Mineral Springs of Saratoga. 80p. il. 3pl. Apr. 1912.
160 Fairchild, H. L. Glacial Waters in the Black and Mohawk Valleys. 48p. il. 8pl. 14 maps. May 1912.

162 Ruedemann, Rudolf. The Lower Siluric Shales of the Mohawk Valley. 152p. il. 15pl. Aug. 1912.
168 Miller, William J. Geological History of New York State. 130p. 43pl. 10 maps. Dec. 1913.
169 Cushing, H. P. & Ruedemann, Rudolf. Geology of Saratoga Springs and Vicinity. 178p. il. 20pl. map. Feb. 1914.
170 Miller, William J. Geology of the North Creek Quadrangle. 90p. il. 14pl. Feb. 1914.
171 Hopkins, T. C. The Geology of the Syracuse Quadrangle. 80p. il. 20pl. map. July 1914.
172 Luther, D. D. Geology of the Attica and Depew Quadrangles. 32p. map. Aug. 1914.
182 Miller, William J. The Geology of the Lake Pleasant Quadrangle. 56p. il. 10pl. map. Feb. 1916.
183 Stoller, James H. Glacial Geology of the Saratoga Quadrangle. 50p. il. 12pl. map. Mar. 1, 1916.
185 Martin, James C. The Precambrian Rocks of the Canton Quadrangle. 112p. il. 20pl. map. May 1, 1916.
189 Ruedemann, Rudolf. Paleontologic Contributions from the New York State Museum. 225p. il. 36pl. Sept. 1916.
191 Cushing, H. P. Geology of the Vicinity of Ogdensburg. 64p. il. 6pl. map. Nov. 1916.
192 Miller, William J. Geology of the Blue Mountain Quadrangle. 68p. il. 11pl. map. Dec. 1916.
193 —— The Adirondack Mountains. 97p. il. 30pl. 2 maps. Jan. 1917.
195 Fairchild, H. L. Postglacial Features of the Upper Hudson Valley. 22p. map. Mar. 1, 1917.
209–210 Fairchild, H. L. Pleistocene Marine Submergence of the Hudson, Champlain and St Lawrence Valleys. 75p. il. 25pl. maps. May–June 1918.
211–212 Miller, W. J. Geology of the Lake Placid Quadrangle. 104p. il. 23pl. map. July–Aug. 1918.
213–214 —— Geology of the Schroon Lake Quadrangle. 102p. il. 14pl. map. Sept.–Oct. 1918.
215–216 Stoller, J. H. Glacial Geology of the Cohoes Quadrangle. 49p. il. 2pl. map. Nov.–Dec. 1919.
217–218 Chadwick, George H. Paleozoic Rocks of the Canton Quadrangle. 60p. il. 12pl. map. Jan.–Feb. 1919.
221–222 Clarke, John M. Organic Dependence and Disease. Their origin and significance. 113p. 105 figs. May–June 1919.
225–226 Berkey, C. P. & Rice, Marion. Geology of the West Point Quadrangle. 152p. 56pl. map. Sept.–Oct. 1919.
229–230 Kemp, James F. Geology of the Mount Marcy Quadrangle. 86p. 25pl. map. Jan.–Feb. 1920.
241–242 Hartnagel, C. A. & Bishop, S. C. The Mastodons, Mammoths and Other Pleistocene Mammals of New York State. 110p. il. 25pl. Jan.–Feb. 1921.
245–246 Miller, W. J. Geology of the Luzerne Quadrangle. 66p. il. 11pl. map. May–June 1921.
255 —— Geological History of New York State. 148p. il. 43pl. 10 maps. Nov. 1924. *Revision of Bulletin 168.*
256 Fairchild, H. L. The Susquehanna River in New York and Evolution of Western New York Drainage. 99p. il. 39pl. map. Jan. 1925.
258 Ruedemann, Rudolf. The Utica and Lorraine Formations of New York. Part 1, Stratigraphy. 175p. il. 7pl. May 1925.
259 Cushing, H. P. & Newland, D. H. Geology of the Gouverneur Quadrangle. 122p. il. 14pl. map. May 1925.
261 Kemp, James F. & Alling, Harold L. Geology of the Ausable Quadrangle. 126p. il. 12pl. map. June 1925.
262 Ruedemann, Rudolf. The Utica and Lorraine Formations of New York. Part 2, No. 1; Systematic Paleontology. 171p. il. 13pl. June 1925.
265 —— Some Silurian (Ontarian) Faunas of New York. 134p. il. 24pl. June 1925.

269 Smyth, C. H., jr. & Buddington, A. F. Geology of the Lake Bonaparte Quadrangle. 106p. 24pl. map. June 1926.
270 Holzwasser, F. Geology of the Newburgh Quadrangle. 95p. il. 39pl. map. June 1926.
271 Miller, W. J. Geology of the Lyon Mountain Quadrangle. 101p. il. 13pl. map. June 1926.
272 Ruedemann, Rudolf. The Utica and Lorraine Formations of New York. Part 2, No. 2, Systematic Paleontology. 227p. il. 28pl. August 1926.
280 Brigham, Albert Perry. Glacial Geology and Geographic Conditions of the Lower Mohawk Valley. A Survey of the Amsterdam, Fonda, Gloversville and Broadalbin Quadrangles. 133p. 12 figs. map. February 1929.
281 Slater, George; Smith, Burnett; Bryant, William L.; Ruedemann, Rudolf; Buddington, A. F. Geological and Paleontological Papers. 110p. 47 figs. April 1929.
Contents: Slater, George. The Structure of the Drumlins Exposed on the South Shore of Lake Ontario.
Smith, Burnett. Recent Finds of Quaternary Mammals at Syracuse, New York.
Smith, Burnett. Influence of Erosion Intervals on the Manlius-Helderberg Series of Onondaga County, New York.
Bryant, William L. New or Little Known Fossil Fishes from the Hamilton Shales of New York.
Bryant, William L. A New *Coccosteus* from the Portage Shales of Western New York.
Ruedemann, Rudolf. Note on *Oldhamia* (*Murchisonites*) *occidens* (Walcott).
Buddington, A. F. Granite Phacoliths and Their Contact Zones in the Northwest Adirondacks.
285 Ruedemann, Rudolf & Cook, J. H. Geology of the Capital District (Albany, Cohoes, Troy and Schenectady Quadrangles); with a Chapter on Glacial Geology. 218p. 79 figs. map. cross-sections. Dec. 1930.
286 Hudson, G. H.; Hudson, G. H. & Cushing, H. P.; Newland, D. H.; Smith, Burnett; von Engeln, O. D.; Ruedemann, Rudolf; Bryant, William L. Geological Papers. 157p. 28 figs. July 1931.
Contents: Hudson, G. H. The Faults Systems of the Northern Champlain Valley, New York.
—— & Cushing, H. P. The Dike Invasions of the Champlain Valley, New York.
Newland, D. H. An Occurrence of Peridotite near Ogdensburg, New York.
Smith, Burnett. Notes on the Clintonville Dikes, Onondaga County, New York.
von Engeln, O. D. A Preglacial or Interglacial Gorge near Seneca Lake, New York.
Ruedemann, Rudolf. Age and Origin of the Siderite and Limonite of the Burden Iron Mines near Hudson, New York.
Bryant, William L. Supplementary Note on *Coccosteus angustus.*
290 Balk, Robert. Geology of the Newcomb Quadrangle. 106p. 38 figs. 4 maps. profile series. Oct. 1932.
291 Trainer, David W. jr. The Tully Limestone of Central New York. 43p. 13 figs. 5 maps. Oct. 1932.
294 Wedel, Arthur Albert. Geologic Structure of the Devonian Strata of South-Central New York. 74p. map. Nov. 1932.
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7 —— First Report on the Iron Mines and Iron Ore Districts in the State of New York. 78p. map. June 1889.
10 —— Building Stone in New York. 210p. map, tab. Sept. 1890.
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12 Ries, Heinrich. Clay Industries of New York. 174p. il. 1pl. map. Mar. 1895.
15 Merrill, F. J. H. Mineral Resources of New York. 240p. 2 maps. Sept. 1895.
17 —— Road Materials and Road Building in New York. 52p. 14pl. 2 maps. Oct. 1897.
30 Orton, Edward. Petroleum and Natural Gas in New York. 136p. il. 3 maps. Nov. 1899.
35 Ries, Heinrich. Clays of New York; Their Properties and Uses. 456p. 140pl. map. June 1900.
44 —— Lime and Cement Industries of New York; Eckel, E. C. Chapters on the Cement Industry. 332p. 101pl. 2 maps. Dec. 1901.
61 Dickinson, H. T. Quarries of Bluestone and Other Sandstones in New York. 114p. 18pl. 2 maps. Mar. 1903.
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119 —— & Kemp, J. F. Geology of the Adirondack Magnetic Iron Ores with a Report on the Mineville-Port Henry Mine Group. 184p. 14pl. 8 maps. Apr. 1908.
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143 —— Gypsum Deposits of New York. 94p. 20pl. 4 maps. Oct. 1910.
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178 —— Mining and Quarry Industry of New York 1914. 88p. Nov. 1915.
181 —— The Quarry Materials of New York. 212p. 34pl. Jan. 1916.
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201 Smyth, C. H., jr. Genesis of the Zinc Ores of the Edwards District, St Lawrence County, N. Y. 32p. 12pl. Sept. 1, 1917.
203–204 Colony, R. J. High Grade Silica Materials for Glass, Refractories and Abrasives. 31p. il. Nov.–Dec. 1917.
223–224 Newland, D. H. The Mineral Resources of the State of New York. 315p. il. 3 maps. July–August 1919.
249–250 Colony, R. J. The Magnetite Iron Deposits of Southeastern New York. 161p. il. 15pl. maps. Sept.–Oct. 1921.

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275 Alling, Harold L. The Geology and Origin of the Silurian Salt of New York State. 139p. 20 figs. April 1928.
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295 Newland, D. H. & Hartnagel, C. A. 1. Mining and Quarry Industries of New York State for 1927 to 1929. 2. Review of the Natural Gas and Petroleum Developments in New York State. 184p. 2 page maps. Feb. 1932.
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311 Gallagher, David. Origin of the Magnetite Deposits at Lyon Mountain, N. Y. 85p. 17 figs. July 1937.
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10 Brewer, Chas. jr. Oil and Gas Geology of the Allegany State Park, 1931. 22p. map and chart. May 1933.
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12 Newland, D. H. The Prospects for Gold Discoveries in New York State. 6p. Feb. 1933.

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58 Whitlock, H. P. Guide to the Mineralogic Collections of the New York State Museum. 150p. il. 39pl. 11 models. Sept. 1902.
70 —— New York Mineral Localities. 110p. Oct. 1903.
98 —— Contributions from the Mineralogic Laboratory. 38p. 7pl. Dec. 1905.

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Museum Bulletin No. 1 Marshall, W. B. Preliminary List of New York Unionidae. 20p. Mar. 1892.
9 —— Beaks of Unionidae Inhabiting the Vicinity of Albany, N. Y. 30p. 1pl. Aug. 1890.
29 Miller, G. S. jr. Preliminary List of New York Mammals. 124p. Oct. 1899.
33 Farr, M. S. Check List of New York Birds. 224p. Apr. 1900.
38 Miller, G. S. jr. Key to the Land Mammals of Northeastern North America. 106p. Oct. 1900.
40 Simpson, G. B. Anatomy and Physiology of *Polygyra albolabris* and *Limax maximus* and Embryology of *Limax maximus*. 82p. 28pl. Oct. 1901.
43 Kellogg, J. L. Clam and Scallop Industries of New York. 36p. 2pl. map. Apr. 1901.

51 Eckel, E. C. & Paulmier, F. C. Catalogue of Reptiles and Batrachians of New York. 64p. il. 1pl. Apr. 1902.
Eckel, E. C. Serpents of Northeastern United States.
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60 Bean, T. H. Catalogue of the Fishes of New York. 784p. Feb. 1903.
71 Kellogg, J. L. Feeding Habits and Growth of *Venus mercenaria*. 30p. 4pl. Sept. 1903.
88 Letson, Elizabeth J. Check List of the Mollusca of New York. 116p. May 1905.
91 Paulmier, F. C. Higher Crustacea of New York City. 78p. il. June 1905.
130 Shufeldt, R. W. Osteology of Birds. 382p. il. 26pl. May 1909.
252 Bishop, S. C. A Revision of the Pisauridae of the United States. 140p. il. 37pl. May 1924.
264 Crosby, C. R. & Bishop, S. C. Studies in New York Spiders. Genera *Ceratinella* and *Ceraticelus*. 71p. 12pl. June 1925.
268 Bishop, Sherman C. Notes on the Habits and Development of the Mudpuppy. *Necturus maculosus* (Rafinesque). 60p. 11pl. May 1926.
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Contents: Crosby, C. R. & Bishop, S. C. Revision of the Spider Genera *Erigone, Eperigone* and *Catabrithorax* (*Erigoneae*)
Seeley, Ralph M. Revision of the Spider Genus *Tetragnatha*.
314 Allen, Elsa G. The Habits and Life History of the Eastern Chipmunk, *Tamias striatus lysteri*. 122p. 43 figs. Sept. 1938.
318 Saunders, A. A. Studies of Breeding Birds in the Allegany State Park. 160p. 77 figs. Dec. 1938.

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8 Harper, Francis & Harper, Jean Sherwood; Fraleigh, Lucy B. 176p. 34 figs. 1929.
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Harper, F. Notes on Mammals of the Adirondacks.
Fraleigh, Lucy B. The Habits of Mammals at an Adirondack Camp.
16 Saunders, A. A. Ecology of the Birds of Quaker Run Valley, Allegany State Park, New York. 174p. 68 figs. 1936.

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18 Stoner, Dayton. Ten Years' Returns from Banded Bank Swallows. 21p. 8 figs. Jan. 1937.
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There is also issued in portfolio form, a set of the 106 colored plates published in the two volumes of the Birds of New York.

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6 —— Cut-worms. 38p. il. Nov. 1888.

13 —— San José Scale and Some Destructive Insects of New York State. 54p. 7pl. Apr. 1895.

20 Felt, E. P. Elm Leaf Beetle in New York State. 46p. il. 5pl. June 1898. *See* 57.

23 —— 14th Report of the State Entomologist 1898. 150p. il. 9pl. Dec. 1898.

24 —— Memorial of the Life and Entomologic Work of J. A. Lintner Ph.D. State Entomologist 1874-98; Index to Entomologist's Reports 1-13. 316p. 1pl. Oct. 1899.
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26 —— Collection, Preservation and Distribution of New York Insects. 36p. il. Apr. 1899.

27 —— Shade Tree Pests in New York State. 26p. il. 5pl. May 1899.

31 —— 15th Report of the State Entomologist 1899. 128p. June 1900.

36 —— 16th Report of the State Entomologist 1900. 118p. 16pl. Mar. 1901.

37 —— Catalogue of Some of the More Important Injurious and Beneficial Insects of New York State. 54p. il. Sept. 1900.

46 —— Scale Insects of Importance and a List of the Species in New York State. 94p. il. 15pl. June 1901.

47 Needham, J. G. & Betten, Cornelius. Aquatic Insects in the Adirondacks. 234p. il. 36pl. Sept. 1901.

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57 —— Elm Leaf Beetle in New York State. 46p. il. 8pl. Aug. 1902.
This is a revision of Bulletin 20 containing the more essential facts observed since that was prepared.

59 —— Grapevine Root Worm. 40p. 6pl. Dec. 1902.
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68 Needham, J. G. *& others.* Aquatic Insects in New York. 322p. 52pl. Aug. 1903.

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79 —— Mosquitos or Culicidae of New York. 164p. il. 57pl. tab. Oct. 1904.

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97 Felt, E. P. 20th Report of the State Entomologist 1904. 246p. il. 19pl. Nov. 1905.

103 —— Gipsy and Brown Tail Moths. 44p. 10pl. July 1906.

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109 —— Tussock Moth and Elm Leaf Beetle. 34p. 8pl. Mar. 1907.

110 —— 22d Report of the State Entomologist 1906. 152p. 3pl. June 1907.

124 —— 23d Report of the State Entomologist 1907. 542p. il. 44pl. Oct. 1908.

129 —— Control of Household Insects. 48p. il. May 1909.

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136 —— Control of Flies and Other Household Insects. 56p. il. Feb. 1910.
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141 Felt, E. P. 25th Report of the State Entomologist 1909. 178p. il. 22pl. July 1910.

147 —— 26th Report of the State Entomologist 1910. 182p. il. 35pl. Mar. 1911.
155 —— 27th Report of the State Entomologist 1911. 198p. il. 27pl. Jan. 1912.
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175 —— 29th Report of the State Entomologist 1913. 258p. 16pl. April 1915.
180 —— 30th Report of the State Entomologist 1914. 336p. il. 19pl. Jan. 1916.
186 —— 31st Report of the State Entomologist 1915. 215p. il. 18pl. June 1, 1916.
194 —— Household and Camp Insects. 84p. il. Feb. 1, 1917.
198 —— 32d Report of the State Entomologist 1916. 276p. il. 8pl. June 1, 1917.
200 —— Key to American Insect Galls. 310p. il. 16pl. Aug. 1917.
202 —— 33d Report of the State Entomologist 1917. 240p. il. 12pl.
231–232 —— 34th Report of the State Entomologist for 1918. 288p. il. 1921.
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257 Felt, E. P. Key to the Gall Midges. 239p. il. 8pl. February 1925.
274 Felt, Ephraim Porter; Viereck, Henry L.; Curran, C. H. Entomological Papers. 216p. 38 figs. April 1928.
Contents: Felt, E. P. Insects and Health.
—— Dispersal of Insects by Air Currents.
—— Three Japanese Beetles New to New York State.
—— Observations and Notes on Injurious and Other Insects of New York State.
Viereck, H. L. A Report on the Hymenoptera of the New York State Museum.
Curran, C. H. New Eastern Species of *Medeterus.*
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Contents: Metcalf, C. L. Black Flies and Other Biting Flies of the Adirondacks.
—— & Sanderson, W. E. Control of Biting Flies in the Adirondacks.
292 Betten, Cornelius; Kjillgren, Blenda L.; Orcutt, Alfred W.; Davis, Mrs Marion B. The Caddis Flies or Trichoptera of New York State. 576p. 61 figs. 67 pls. Dec. 1934.
316 Glasgow, R. D.; Taylor, Norman; Richards, A. Glenn, jr. Entomological Papers. 185p. 43 figs. Sept. 1938.
Contents: Glasgow, R. D. Mosquitoes and Wild Life as Interrelated Problems in Human Ecology.
Taylor, Norman. A Preliminary Report on the Salt Marsh Vegetation of Long Island, New York.
Richards, A. Glenn, jr. Mosquitoes and Mosquito Control on Long Island, New York, with Particular Reference to the Salt Marsh Problem.

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6 Glasgow, R. D. The White Birch Leaf—Mining Sawfly in New York Forests. 3p. Mar. 1931.
17 Felt, E. P. & Chamberlain, K. F. The Occurrence of Insects at Some Height in the Air, Especially on the Roofs of High Buildings. 70p. 4 figs. Dec. 1935.

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Museum Bulletin No. 2 Peck, C. H. Contributions to the Botany of the State of New York. 72p. 2 pls. May 1887.
8 —— Boleti of the United States. 98p. Sept. 1889.
25 —— Report of the State Botanist 1898. 76p. 5 pl. Oct. 1899.
28 —— Plants of North Elba. 206p. map. June 1899.
54 —— Report of the State Botanist 1901. 58p. 7pl. Nov. 1902.
67 —— Report of the State Botanist 1902. 196p. 5pl. May 1903.
75 —— Report of the State Botanist 1903. 70p. 4pl. 1904.
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167 —— Report of the State Botanist 1912. 138p. 4pl. Sept. 1913.
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188 House, H. D. Report of the State Botanist 1915. 118p. il. 4pl. Aug. 1, 1916.
197 —— Report of the State Botanist 1916. 122p. 11pl. May 1, 1917.
205–206 —— Report of the State Botanist 1917. 169p. 23pl. Jan.–Feb. 1918.
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233–234 —— Report of the State Botanist for 1919. 73p. 1pl. May–June 1920.
243–244 —— Report of the State Botanist for 1921. 98p. March–April 1921.
254 —— Annotated List of the Ferns and Flowering Plants of New York State. 759p. September 1924.
266 House, H. D. Report of the State Botanist for 1924. 116p. 4 figs. June 1925.
287 Hotchkiss, Neil. A Botanical Survey of the Tug Hill Plateau. 123p. 15 figs. Jan. 1932.

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5 Taylor, Norman. The Vegetation of the Allegany State Park. 121p. 25 figs. 1928.
11 Kreiger, Louis C. C. A Popular Guide to the Higher Fungi (Mushrooms) of New York State. 538p. 126 figs. 32 colored plates. 1935.
17 Gordon, R. B.; Emerson, F. W.; Kenoyer, L. A.; Hicks, L. E.; Saunders, A. A. Vegetational Survey of Allegany State Park. 412p. 216 figs. map. 1937.

Contents: Gordon, R. B. The Botanical Survey of the Allegany State Park.
Emerson, F. W. A Botanical Survey of Big Basin in the Allegany State Park.
Kenoyer, L. A. A Botanical Survey of a Portion of the Allegany State Park.
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Hicks, L. E. A Botanical Survey of the Eastern Section of the Allegany State Park.
Gordon, R. B. A Botanical Survey of the Northern Section of the Allegany State Park.
—— The Relation of Vegetational Surveys to a State Park Management Policy.
Saunders, A. A. Suggestions Concerning Policies for the Allegany State Park.

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(This includes revised descriptions and illustrations of fungi reported in the 49th, 51st and 52d reports of the State Botanist.)
15 **House, H. D.** Wild Flowers of New York. Quarto, v. 1, 185p., 143 colored pl. il.; v. 2, 177p., 121 colored pl., il. The first edition was issued in 1918. This edition is out of print.
The reprint edition was issued in 1923.
There is also issued in portfolio form, a set of the 264 colored plates published in the two volumes of the Wild Flowers of New York.

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Museum Bulletin No. 16 Beauchamp, W. M. Aboriginal Chipped Stone Implements of New York. 86p. 23pls. Oct. 1897.
18 —— Polished Stone Articles Used by the New York Aborigines. 104p. 35pl. Nov. 1897.
22 —— Earthenware of the New York Aborigines. 78p. 33pl. Oct. 1898.
32 —— Aboriginal Occupation of New York. 190p. 16pl. 2 maps. Mar. 1900.
41 —— Wampum and Shell Articles Used by New York Indians. 166p. 28pl. Mar. 1901.
50 —— Horn and Bone Implements of the New York Indians. 112p. 43pl. Mar. 1902.
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v. 1 pt 1 Mammalia. 131 + 46p. 33pl. 1842.

300 copies with hand-colored plates.

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v. 4 Plates to accompany v. 3. Reptiles and Amphibia. 23pl. Fishes 79pl. 1842.

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—— Map of the State of New York Showing the Distribution of the Rocks Most Useful for Road Metal. 1897.
—— Geologic Map of New York. 1901. Scale 5 miles to 1 inch. *In atlas form.*

Separate sheets of this map are as follows:

Ontario West	Finger Lakes	Delaware
Niagara	Long Island	Adirondack
South Western	St Lawrence	Hudson Mohawk
Ontario East	Central	Lower Hudson

NOTE. The Ontario West and the Ontario East are not colored as they have no surface geology.

The lower Hudson sheet, geologically colored, comprises Rockland, Orange, Dutchess, Putnam, Westchester, New York, Richmond, Kings, Queens and Nassau counties, and parts of Sullivan, Ulster and Suffolk counties; also northeastern New Jersey and part of western Connecticut.

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Albany County. 1898.
Area around Lake Placid. 1898.
Vicinity of Frankfort Hill [parts of Herkimer and Oneida counties]. 1899.
Rockland county. 1899.
Amsterdam quadrangle. 1900.
*Parts of Albany and Rensselaer counties. 1901.
*Niagara river. 1901.
Part of Clinton county. 1901.
Oyster Bay and Hempstead quadrangles on Long Island. 1901.
Portions of Clinton and Essex counties. 1902.
Part of town of Northumberland, Saratoga co. 1903.
Union Springs, Cayuga county and vicinity. 1903.
*Olean quadrangle. 1903.
*Becraft Mt with 2 sheets of sections. (Scale 1 in. = ½ m.) 1903.
*Canandaigua-Naples quadrangles. 1904.

*Little Falls quadrangle. 1905.
*Watkins-Elmira quadrangles. 1905.
*Tully quadrangle. 1905.
*Salamanca quadrangle. 1905.
*Mooers quadrangle. 1905.
Paradox Lake quadrangle. 1905.
*Buffalo quadrangle. 1906.
*Penn Yan-Hammondsport quadrangles. 1906.
*Rochester and Ontario Beach quadrangles. 1907.
*Long Lake quadrangle. 1907.
*Nunda-Portage quadrangles. 1908.
*Remsen quadrangle. 1908.
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*Port Leyden quadrangle. 1910.
*Auburn-Genoa quadrangles. 1910.
*Elizabethtown and Port Henry quadrangles. 1910.
*Alexandria Bay quadrangle. 1910.
*Cape Vincent quadrangle. 1910.
*Clayton quadrangle. 1910.
*Grindstone quadrangle. 1910.
*Theresa quadrangle. 1910.
*Poughkeepsie quadrangle. 1911.
*Honeoye-Wayland quadrangles. 1911.
*Broadalbin quadrangle. 1911.
*Schenectady quadrangle. 1911.
*Saratoga-Schuylerville quadrangles. 1914.
*North Creek quadrangle. 1914.
*Syracuse quadrangle. 1914.
*Attica-Depew quadrangles. 1914.
*Lake Pleasant quadrangle. 1916.
*Saratoga quadrangle. 1916.
*Canton quadrangle. 1916.
*Brier Hill, Ogdensburg and Red Mills quadrangles. 1916.
*Blue Mountain quadrangle. 1916.
*Glens Falls, Saratoga, Schuylerville, Schenectady and Cohoes quadrangles. 1917.
Lake Placid quadrangle. 1919.
Schroon Lake quadrangle. 1919.
Cohoes quadrangle. 1920.
Canton quadrangle. 1920.
*West Point quadrangle. 1919.
*Mount Marcy quadrangle. 1920.
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*Lowville quadrangle. 1934.
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*Oswegatchie quadrangle. 1935.
*Berne quadrangle. 1935.
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