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124th ANNUAL REPORT

of the

**NEW YORK STATE MUSEUM
AND SCIENCE SERVICE**

July 1, 1961–June 30, 1962

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NEW YORK STATE MUSEUM AND SCIENCE SERVICE

MUSEUM BULLETIN NUMBER 393

The University of the State of New York

The State Education Department

Albany, 1963



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THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of the University

With years when terms expire

1968	EDGAR W. COUPER, A.B., LL.D., L.H.D., <i>Chancellor</i>	- - - -	Binghamton
1967	THAD L. COLLUM, C.E., <i>Vice-Chancellor</i>	- - - - -	Syracuse
1976	MRS. CAROLINE WERNER GANNETT, LL.D., L.H.D., D.H.	- -	Rochester
1964	ALEXANDER J. ALLAN, JR., LL.D., Litt.D.	- - - - -	Troy
1966	GEORGE L. HUBBELL, JR., A.B., LL.B., LL.D., Litt.D.	- - - -	Garden City
1973	CHARLES W. MILLARD, JR., A.B.	- - - - -	Buffalo
1970	EVERETT J. PENNY, B.C.S., D.C.S.	- - - - -	White Plains
1972	CARL H. PFORZHEIMER, JR., A.B., M.B.A., D.C.S.	- - - - -	Purchase
1975	EDWARD M. M. WARBURG, B.S., L.H.D.	- - - - -	New York
1971	J. CARLTON CORWITH, B.S.	- - - - -	Water Mill
1969	JOSEPH W. MCGOVERN, A.B., LL.B., L.H.D., LL.D.	- - - -	New York
1965	ALLEN D. MARSHALL, A.B., LL.D.	- - - - -	Scotia
1977	JOSEPH T. KING, A.B., LL.B.	- - - - -	Queens

President of the University and Commissioner of Education

JAMES E. ALLEN, JR., Ed.M., Ed.D., LL.D., Litt.D., Pd.D., L.H.D.

Deputy Commissioner of Education

EWALD B. NYQUIST, B.S.

Associate Commissioner for Cultural Education and Special Services

HUGH M. FLICK, Ph.D., LL.D.

Assistant Commissioner for State Museum and Science Service

WILLIAM N. FENTON, A.B., Ph.D.

Assistant Director of State Museum

VICTOR H. CAHALANE, B.S., M.F.

Contents

	PAGE
Museum Advisory Council	iv
The Staff	v
General Statement	1
Accomplishments of the Surveys	7
The Museum	19
Special Services	42
Publications	49
Appendices	51

Museum Advisory Council

1962	VINCENT J. SCHAEFER	Schenectady
1963	W. STORRS COLE	Ithaca
1964	FREDERICK J. DOCKSTADER	New York
1965	WILLIAM C. STEERE	New York
1966	GEORGE F. GOODYEAR	Buffalo

The Staff

State Museum and Science Service
WILLIAM N. FENTON, *Assistant Commissioner*

ANTHROPOLOGICAL SURVEY

WILLIAM A. RITCHIE.....State Archeologist, Associate Scientist
ROBERT E. FUNK.....Junior Scientist

BIOLOGICAL SURVEY

DONALD L. COLLINS.....State Entomologist, Principal Scientist
DONALD P. CONNOLA.....Senior Scientist (Entomology)
PAUL F. CONNOR.....Scientist (Zoology)
HUGO A. JAMNBACK, JR.....Senior Scientist (Entomology)
DONALD M. LEWIS.....Junior Scientist
EUGENE C. OGDEN.....State Botanist, Associate Scientist
RALPH S. PALMER.....State Zoologist, Associate Scientist

GEOLOGICAL SURVEY

JOHN G. BROUGHTON.....State Geologist, Principal Scientist
JAMES F. DAVIS.....Scientist (Geology)
DONALD W. FISHER.....State Paleontologist, Associate Scientist
Y. WILLIAM ISACHSEN.....Associate Scientist (Geology)
W. LYNN KREIDLER.....Senior Scientist (Geology)
LAWRENCE V. RICKARD.....Senior Scientist (Paleontology)
ROSS P. SANGSTER.....Science Research Aide – Wellsville Office
ARTHUR M. VAN TYNE.....Scientist (Geology) – Wellsville Office

State Museum

VICTOR H. CAHALANE, *Assistant Director*

CURATORIAL

ROGER L. BORST.....Senior Curator (Geology)
CHARLES E. GILLETTE.....Associate Curator (Archeology)
CLINTON F. KILFOYLE.....Associate Curator (Paleontology)
Vacant.....Associate Curator (Interpretation)
EDGAR M. REILLY, JR.....Associate Curator (Zoology)
STANLEY J. SMITH.....Associate Curator (Botany)
JOHN A. WILCOX.....Associate Curator (Entomology)

EXHIBITS

EDITH FROELICH.....	Museum Technician (Temporary)
LEWIS E. KOHLER.....	Museum Technician
LOUIS J. KOSTER.....	Senior Museum Technician
ROBIN D. ROTHMAN.....	Museum Technician
THEODORE P. WEYHE.....	Museum Exhibits Designer

SCHOOL SERVICES

C. MICHAEL DARCY.....	Museum Instructor
JUDITH A. DRUMM.....	Museum Instructor
MARY JANE STAUCH.....	Museum Instructor (Temporary)
JANET L. STONE.....	Museum Education Supervisor

LIBRARY

EILEEN COULSTON.....	Librarian, Junior Scientist
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CLERICAL

MARGARET BASSOTTI.....	Stenographer
MARION B. BENDER.....	Clerk
MARYELLEN CANFORA.....	Typist
JOAN C. KELLEY.....	Stenographer
JOSEPH T. KILLEA.....	Mail and Supply Helper
ROSELLE LITHGOW.....	Clerk
VERA McMILLEN.....	Senior Stenographer
MARJORIE R. SCHMIDT.....	Principal Clerk
MARY C. STEARNS.....	Stenographer
EILEEN A. WOOD.....	Senior Stenographer

GUARDS

JOHN C. CUNNINGHAM.....	Building Guard
EDWARD W. MCCARTHY.....	Building Guard
ALVIN W. TURNER.....	Building Guard
WILLIAM C. ZIMMER.....	Museum Caretaker

PHOTOGRAPHER

JOHN A. HELLER.....	Museum Photographer
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MAINTENANCE

JACOB SMALLENBROEK.....	Carpenter
JAMES WIEDEMANN.....	Maintenance Man (Carpenter)

General Statement

I HAVE THE HONOR TO RETURN a report on the major activities and accomplishments of the New York State Museum and Science Service for the year ended June 30, 1962. Our last report went into some detail. It covered the establishment, it outlined a policy, it documented 15 years of accomplishments in research, it mentioned problems of support and balance occasioned by outside grants, it pointed with pride to the 150 young scientists who have shared in the Graduate Student Honorarium program during 15 years of its operation, and it stressed some long-range needs. The accomplishments belong to history; the problems are still with us; and we hope that old issues may be disposed of in future accomplishments by planning today.

Major Accomplishments of the Year

Five achievements overshadow all others, mentioned in the reports of the scientists and of the curators, below:

1. The work of the Commissioner's Committee on Museum Resources, started last year, culminated in a report presented to the Regents at their June 29 meeting, that was afterward printed.*

2. The publication of the *Geologic Map of New York . . . 1961*, compiled by John G. Broughton and associates. (State Museum and Science Service, Geological Survey: Map and Chart Series No. 5, Albany, 1962. Map folio, 5 sheets; text 5 folio sheets. 42 pp.)

3. The appearance of the first volume of the *Handbook of North American Birds, Vol. 1, Loons through Flamingos*, under the editorship of Ralph S. Palmer, State Zoologist. (Yale University Press, New Haven, 1962. 568 pp., 6 color plates, figures and maps.) This is a continuing project, co-operative with the American Ornithologists' Union.

4. In the Museum, the opening of the exhibition of the mammals of Alaska, through the generosity of Dr. and Mrs. W. Brandon Maeomber of Albany.

5. The enhancement of the educational effectiveness of the Museum by the conduct of Teacher Workshops, co-operatively with

* *Report of the Commissioner's Committee on Museum Resources, 1962.* (The University of the State of New York, The State Education Department, New York State Museum and Science Service, Albany, 1962. 61 pp.)

the Capital Area School Development Association, with the assistance of funds made available under Title III of the National Defense Education Act.

Long-Range Needs

One by one continuing needs have passed into the realm of accomplishments; but all of these pale into insignificance as compared with the major need that has haunted the establishment for a half century — a new facility, adequately financed, for the State Museum. There have been one or two moments when its fulfillment seemed imminent, but never as close as the present opportunity when consideration of the inclusion of a cultural center within the State's South Mall project may be on the planning boards. It might be appropriate to mention some of the features that a plan for a new museum would include, as an indication of how it would enhance a cultural center for Albany.

A Museum on the Mall for the State of New York

A museum center for the State Capital Mall should introduce the citizen visitor to the heritage of the Empire State. The building and its contents should arouse respect and admiration for the State's place in the world, and they should make the visitor think about its future.

- The center would tell the story of the region from remote geological ages to the present.
- It would relate, in a meaningful way, the environment to the fauna and flora of New York and the rest of the world.
- It would illustrate geological and biological concepts and processes.
- It would portray the life and cultural position of the native Indians who greeted the Dutch and whose predecessors had lived here for 5,000 years. It would show how the remarkable League of the Iroquois, the People of the Longhouse, stood astride the first gap in the northeastern-trending Appalachian Mountains, which was the gateway to the West.
- Around this gateway seethed the struggle for the control of the continent. It saw the first settlement by land-hungry colonists who began farming, successfully harnessed water power, and staged the western movement over waterways and paths that became roads through central New York.
- The State has had distinguished firsts in geology, paleontology, botany, entomology, and anthropology. It also has a promising scientific future, and the new museum, with its research tradition,

can underscore this illustrious past and guide the citizen to glimpse vistas of future research which open from the laboratories of the Science Service – the Anthropological Survey, the Biological Survey, and the Geological Survey – and in the books of the State Library and manuscripts of the State Archives, yet to be established – and extend from these components of a State cultural center to other research establishments that ring the capital, to the universities, colleges, and other schools of the State.

- The State Museum, like the State Library, would become the logical focus of a vigorous program of museum extension cooperating with existing institutions and aiding regional museum systems in remote areas of the State now wanting museum service.
- The student visitor getting his education in New York, and his parents continuing theirs, would see New York as part of the world; they would see the relevance of geology to the formation of planets and of the solar system; they can be assisted to understand the process of biological evolution; and they must grasp the principle of the continuity of cultures. That the museum can contribute to the education of the layman, and that the museum occupies a unique place in the educational structure of the State, are among the main findings of a distinguished committee of museum people and citizens during the past year.

Education in our Western culture is carried on in a multiplicity of institutions: Among them are the home, the church, the school, the library, and the museum. . . .

In the learning process the devices for transmission of culture are language and its media, and real objects. When objects are necessary or vital to understanding complex relationships and when the objects are of such a nature as to require special care in gathering and maintaining them, then the museum – with its collection of objects, its ability to organize material into orderly systems, and its staff of specialists to study and interpret these objects – becomes an essential part of the educational process.

The distinctive attribute of museums as institutions of learning and their unique contribution to the educational process are the maintenance of an “open system” of learning. For the museum visitor, like the library reader, the “open system” is one which raises questions. It poses no requirements for entrance, it makes no formal demands in curriculum, and it requires no examination. The “open system” appeals to all age levels. It provides the atmosphere, it sets the tone, and it stimulates independent learning, thus reinforcing the formal curriculum of the school and strengthening the informal sanctions of the home. The “closed system” primarily provides answers to questions.

Museums, therefore, with their contributions to the learning process and their functions as institutions of learning, constitute

one of the most important educational resources of the State of New York and should more effectively serve as an integral part of the State's educational structure.¹

A Museum Building for the State of New York

A new State Museum building should stand by itself as an easily identified structure that would invite and facilitate visitation. It should afford adequate space for the scientific collections and the research activities now included in the programs of the State Museum and Science Service. Collections must be immediately accessible to research scientists and to programs of interpretation.

If the Empire State, its land, its natural resources, its peoples, its place in the world, and its posture in science and technology are to be the themes of a mature State Museum and Science Service program, then a new facility is needed to fulfill them. Now one of the oldest natural history museums of the country, it is already a site of scientific discoveries and of publication; it not only keeps the State's collections of record in its fields, but it also interprets the results of its researches on these collections to the public through its exhibits and education programs. In performing both research and community services, the State Museum is in the tradition of the great museums of the world which are still first and foremost centers of study and interpretation. The present demand for its services, which is mounting yearly, suggests that a new State Museum could perform an even greater service to a proud and affectionate public if it had a ground floor site of its own where people could park. Present research of the Science Service covers the State; museum services could then follow.

A new facility must provide for existing programs, it must afford room for programed expansion, and it must be strategically located. There must be parking for school buses and visitors' cars.

Offices and research laboratories for the three Surveys of the Science Service (now housed in the Education Building Annex) would be arranged with offices, laboratories, and ranges for the Museum curators. Facilities for research and the study collections would be grouped around a reference library. The latter would be enlarged beyond present space because a larger collection of books would be required when the State Museum and Science Service is moved to a location several blocks from the State Library. Two lecture theaters will be required, plus a small auditorium which can be divided into several smaller units of various sizes.

¹*Report of the Commissioner's Committee on Museum Resources, 1962* (Albany), p. 29.

In front of the facilities for research and the collections, and deriving their factual information and strength from them, would be the galleries of the teaching museum. The present exhibit areas, geology, paleontology, biology, and anthropology, should be extended to include physics and chemistry and their application to science and industry, and astronomy. Halls should be devoted to a Junior Museum, special or temporary exhibitions, and a space theater.

Education has been a growing function in the State Museum for the past decade. With the proper encouragement in a new building, it should become a major branch of the institution.

Storage for scientific equipment, exhibits, and publications is a major problem in the present quarters. Ample space of about 20 times that now available should be provided for efficient and safe housing of valuable material.

In the main, a new museum calls for new exhibits, and the funds and staff to build them. But some of our exhibits cannot be duplicated today; they have stood the test of time, and people like them. They can be salvaged. Others have been built in the last 5 years and probably cannot be improved significantly.

Staff Changes

During the reporting period, permanent status was received by James F. Davis as Scientist (geology) August 24, and Robin Rothman as Museum Technician February 8. Ross P. Sangster was appointed Science Research Aide in the Wellsville Office April 19. James W. Manley resigned as Associate Curator (interpretation) February 21; C. Michael Darcy was appointed Museum Instructor September 21 under NDEA funds. James W. Carroll resigned as Building Guard February 24, and was replaced by Edward W. McCarthy March 22. On June 14, Alvin W. Turner filled the building guard position vacated by the resignation of Francis J. Lyneh May 16. Nelson D. Powers, Maintenance Helper, transferred to another Departmental unit, and James C. Wiedemann was appointed Maintenance Man (carpenter) June 28.

WILLIAM N. FENTON

*Assistant Commissioner for
State Museum and Science Service*



Student assistants uncovering prehistoric burial at O'Neil site near Weedsport, N. Y.

Accomplishments of the Surveys

Anthropological Survey

MAJOR EXCAVATIONS WERE carried out by the State Archeologist at the stratified O'Neil site on the Seneca River, near Weedsport, Cayuga County. This important site spans a sequence from the Late Archaic (C-14 dated at the site at circa 2000 B.C.), through the Transitional period, to Middle Woodland. A new culture, named the Frost Island phase, was found here in the Transitional horizon. New data were obtained on the Point Peninsula I culture, Middle Woodland period. Further excavations are planned at the site. Excavations were also conducted on four sites on eastern Long Island, pertaining to the Orient and Sebonac cultures.

The junior archeologist spent the first full season at the Garoga site, Ephratah, N. Y., with two field assistants. In an excavated area of 1,500 square feet, a total of 43 pits was uncovered. Some were hearths but most were storage pits, filled with sand and refuse. Several lines of post molds, marking probable longhouse walls, were exposed to be more fully investigated in the next season. Many artifacts were recovered, the bulk being potsherds. Numerous implements of bone and chipped and rough stone were found, all typical of late prehistoric Mohawk culture.

Both archeologists made a reconnaissance in central New York and visited sites reported by amateurs at Watkins Glen, Grand Island, and Ballston Lake. Excavations were made at two rockshelters in eastern New York, which contained deposits ranging in time from the Late Archaic to the Iroquois period. Further excavations were also conducted at the Bent site, Scotia.

Materials from 1961 excavations were analyzed, and all field notes and photographs were put in order. Collections from the Barren Island and Bent sites were analyzed.

The junior archeologist answered calls from highway engineers concerning two finds mistakenly reported as Indian. The scene of a mastodon find at Summitville was visited with the State Archeologist and Assistant Director of the Museum. Maynard A. Bebee, Director of the Bureau of Highway Planning and Programming, N. Y. S. Department of Public Works, was consulted, and working arrangements for the future were established.

The State Archeologist applied for and received renewal of his NSF grant in archeology, which was given in full (\$22,700), for a 3-year continuation of the aboriginal settlement pattern study in the Northeast. He was on professional development leave from October 1, 1961, to April 1, 1962, in order to write a book on New York prehistory. Reports were made to the Commissioner and to the American Philosophical Society for a travel and study grant, in connection with this leave.

The junior archeologist set up a temporary exhibit displaying artifacts from the Garoga site, and assisted in planning and writing labels for a forthcoming exhibit on the evolution of man. During the development leave of the State Archeologist, he performed the routine duties of the office. In the course of the year 1961-62, the Anthropological Survey received over 120 local or out-of-town visitors, including professional colleagues and amateur archeologists.

Biological Survey

The several projects described below are grouped under a smaller number of "programs" within the three disciplines — Botany, Entomology, and Zoology. There were significant developments in each of the programs which will be mentioned here before presenting the projects in more detail.

The continuing study and evaluation of pollen samplers in the program supported by the National Institutes of Health resulted in the decision to recommend one of the slide-edge type samplers for official adoption as the standard pollen sampler of the American Academy of Allergy.

The success of a new formulation for coating screens to prevent the entrance of punkies (*Culicoides* spp.) into buildings was a feature of the program in medical entomology. Other developments were the discovery of three sites of arthropod-borne virus activity on Long Island, and the recovery of DDT from lake-bottom and stream-bed arthropods and other organisms in the central Adirondacks. A potentially important advance in the field of biological control of insects was the large-scale aerial application of suspensions of *Bacillus thuringiensis* and polyhedral virus to study their effect on gypsy moth and other defoliating insect populations and damage.

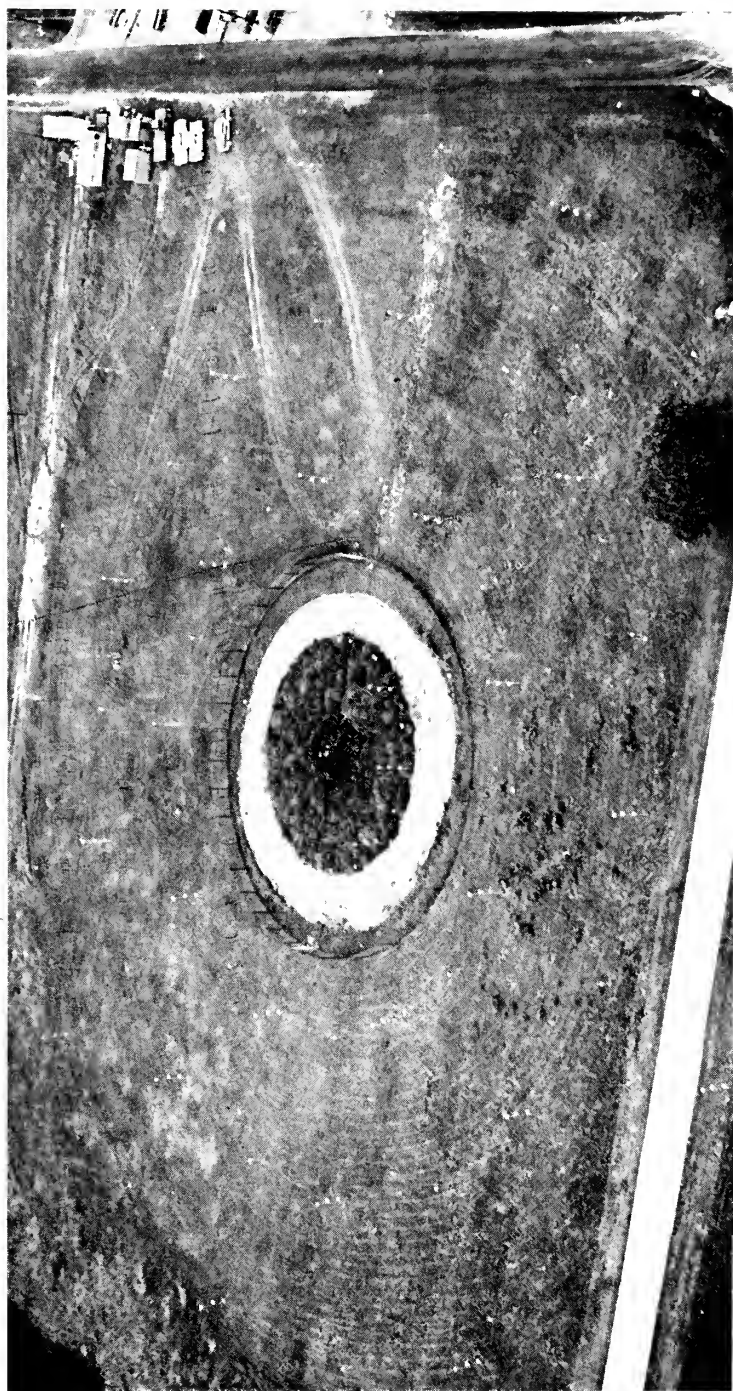
In zoology, the first volume of the *Handbook of North American Birds*, edited by Dr. Ralph S. Palmer, State Zoologist, appeared. The small mammal survey, now located on Long Island, was broadened to include the collection of migratory and other birds for virus testing, and yielded at least one new virus record.

Travels of airborne pollen. Described in earlier reports under the title "Tagging and Sampling of Ragweed Pollen." When the sampling techniques were perfected, the movements of the pollen in the atmosphere could be studied; the grant by the National Institutes of Health was renewed for 4 years. Improvements were made in the cylinder sampler to make it more sensitive to changes in wind direction, in a special device to facilitate counting pollen on the slide edges under the microscope, and in the intermittent and sequential retoslide samplers. The improved techniques and instruments resulted in greater uniformity among samples, thereby giving a more satisfactory statistical background for interpreting the results. For dispersion studies, a new ragweed field was added at Brookhaven and both the new and the old fields were surrounded by an array of slide-edge cylinder samplers. Their arrangement was designed to facilitate studies of changes in concentration with distances from source, as a function of source size, vegetative cover, wind speed, and other conditions.

Studies of variation of pollen concentration with heights were continued on the 400-foot meteorology tower at Brookhaven. Another series was designed to reveal variations in the pattern of pollen emission according to time of day. Samplers were also installed at Blue Mountain Lake, in the Adirondacks, to trap tree pollen in the spring of 1962. A tower, to measure pollen concentrations in the forest and at higher levels, was ready for installation by the end of the report period.

Pollen spectra of bog and lake sediments. One additional site in the Valders Ice studies was sampled, yielding 57 sediment samples. These, and about 120 others taken previously, were processed by the acetolysis method, and a few pollen analyses were made. Studies were also made of the kinds and amounts of pollen being deposited on bog and lake surfaces, in order to provide information as to preservation of pollen, under- and over-representation of particular species, and the possibility of long distance transport. Samplers simulating bog and lake surfaces were used in comparison with the Brookhaven sampling devices. About 800 samples were taken, of which 500 have been analyzed. An additional 150 samples were taken as an extension of this study.

Check list of grasses of New York State. In the course of exploring and collecting by the curator for vascular plants in general (see next





Aerial and ground views of one of the sampling grids for studying the travels of airborne pollen. This is at Brookhaven National Laboratory on Long Island, where part of the pollen project is conducted. The circle of plants in the center is ragweed; pollen samplers are arranged around it.

project), 263 specimens were collected, representing 200 numbers. Common species were recorded on all trips, and detailed observations on critical complexes in the genera *Festuca*, *Agrostis*, and *Panicum* were continued. The Latham collections from eastern Long Island, both old and recent, aided greatly in these studies. Four days were spent at the National Herbarium in Washington, D. C., checking nomenclature, types, and problems in several genera. Five days were spent at the Wiegand Herbarium of the New York State College of Agriculture at Cornell University, checking critical genera, and the entire collection of grasses at the Rochester Academy was verified, as well as those at the Rochester Park Headquarters. Four new weedy grasses were added to the list of species for the State.

Survey of vascular flora of New York State. Special trips were made to eastern New York (the Catskills in particular), northern New York, and Long Island. Specimens were collected and sight-records made in the following counties: Albany, Bronx, Chemung, Clinton, Columbia, Delaware, Essex, Fulton, Greene, Hamilton, Herkimer, Nassau, Otsego, Queens, Rensselaer, Rockland, Saratoga, Schoharie, Suffolk, Ulster, Warren, and Washington. The collection of vascular plants of the Rochester Academy was checked for rare New York species. The curator was assisted in the field for several weeks by Norton G. Miller.

ENTOMOLOGY

Biology and control of *Culicoides* (punkies). Tests of chemicals painted on window screens were continued, using 6 per cent *Bayer* No. 39007, and 6 per cent *Malathion*, *Sumithion*, and *Sevin*. Weathering tests in the laboratory and field were made. Plots of various sizes were sprayed for larval control.

Survey of aquatic life in Adirondack streams and lakes. The purpose of these studies is to determine whether or not DDT occurs in the food chain. Analyses to date have revealed traces of DDT in crayfish and caddisfly larvae from creeks, and in fresh-water clams in a lake. The significance of these findings remains to be determined.

Virus survey on Long Island. Of the several thousand arthropods, mostly mosquitoes, collected for virus processing, two groups (pools) of the mosquito *Culiseta melanura* and one pool of *Culex pipiens* showed virus activity (but not eastern encephalitis). This indicates the presence of unknown viruses in mosquitoes on eastern Long Island. Additional collections were made at the same sites in 1962, but the virus testing has not yet been completed. Discovery of virus activity

in an ovenbird made it desirable to continue the surveillance of birds for the presence of virus. Studies were undertaken to relate the two lines of effort by experiments to determine the host preferences, among birds and small mammals, of the various biting arthropods (i.e., potential vectors of viruses), that commonly occur in the area.

Blackfly larvicide tests in the laboratory. A method for testing the effectiveness of insecticides against blackfly larvae in the laboratory was developed and 22 chemicals tested. These included only chemicals with a relatively low mammalian toxicity.

Gypsy moth—ecological studies. Aggregations, or micropopulations resulting from the grouping tendencies of gypsy moth larvae were found to be especially important for survival in sparse populations. The spring and early summer of 1962 were devoted largely to studying this phenomenon with the aid of artificial shelters or niches. Quantitative data were taken on the number of caterpillars that returned to the same shelter after feeding in the crown of the trees, and attempts were made to determine the cause of death and/or disappearance of the various individuals in each population subgroup. These are now being analyzed.

Gypsy moth—biological control. In exploratory tests made in 1961 with the aerial application of suspensions of the bacterium *Bacillus thuringiensis* and a polyhedral virus, gypsy moth egg-mass counts were reduced from 1,200 per acre to 210 per acre. Accordingly, a rather elaborate field testing program was executed during the late winter and early spring of 1962 with the co-operation of the State Conservation Department, Forest Service and Agricultural Research Service of the U. S. Department of Agriculture, Bacteriology Department of University of Connecticut, Saratoga Springs Authority, Bioferm Corporation, and Stauffer Chemical Company. Test areas where the plots were laid out were in Saratoga and Washington Counties. Plot sizes varied from 25 to 150 acres, with a total of 24 treated plots, 8 in each of three replicated series. The data collected and to be collected in the plots included 10-minute larval counts, frass collection in dropping cloths, the collection of live and dead larvae, rearing of larvae on sprayed and unsprayed foliage, culturing from larvae and foliage, and, later, egg-mass counts. About 20 men were employed more or less continuously for 6 weeks to take these data.

Other Forest Insects. Although the *Bacillus thuringiensis* work was the major project of the forest insect program in 1961-62, other continuing projects received attention as required, including the 10-year

ecological study of white pine weevil (to be completed in 1963). Work done during the present report period included pruning and thinning the plantations so that more accurate data can be taken. In the permanent beech-scale plots, the 10-year study of the scale has been completed. The finding of the fatal red pine scale *Matsucoccus resinosa* in New Jersey around the Wanaque reservoir, close to the New York State border in the Hillburn-Suffern region, prompted intensive scouting in the area, but none were found on the New York side. The 160 acres of red pine around the Wanaque reservoir were clear cut in the hope of exterminating the pest in New Jersey — a drastic measure which emphasizes the importance of the surveillance for this scale in New York. Thus far, in New York State it has not been found north of Westchester County nor west of the Hudson River. Birch leaf miner (*Fenusa pumula*) was added to the list of pests that can be controlled by the comparatively new and "safe" insecticide *Sevin*.

Identification and classification of the leaf beetles (Chrysomelidae: Galerucinae). This work by the curator is a continuation of the projects described in more detail in previous annual reports.

ZOOLOGY

Small mammal survey. Field work was conducted on Long Island throughout the period. Collecting of small mammals was mainly during late July, August; October; late November through early March, and late April into June. A total of 372 specimens were collected. Donald H. Miller assisted during the summer of 1961.

Bird disease study. During the period July 6–October 20, 1961, birds were collected by mist-netting and shooting, and the spleens or brains were removed, immediately frozen, and delivered to laboratories for testing for eastern encephalities and other virus diseases. In 1961, 139 spleens were sent in seven shipments to the State Health Laboratory in Albany; also, 194 spleens and brains were delivered to the Duck Disease Research Laboratory at Eastport on Long Island. The season's total was 333 bird specimens (305 individual birds), representing 68 species.

Bird collecting was resumed (with mist nets and live trap) during the 1962 spring migration, March 20–April 30. Two hundred and twelve spleens in three shipments were sent to Albany, while 82 spleens went to Eastport. The spring total was 294, chiefly migratory blackbirds (red-wings, grackles, and cowbirds). Spread wings of birds representative of the various species were saved incidental to the collecting of

bird specimens for virus testing. During this period, 171 wings of 77 species were saved. Weights and other data were recorded for 635 birds.

Geological Survey

Last year the final compilation of the new State Geologic Map was reported, but work on that project continued throughout 1961-62. It was necessary to carefully check and correct many proofs of the colored geological map, as well as to write the text which is to accompany the map. In addition, cover design, text layout, and all illustrations (24 original plates) were accomplished by Marcia Ring Winslow, a paleontologist employed on a full-time, temporary basis. The end of the report year saw practically all facets of this comprehensive work completed, with publication anticipated in late 1962.

In the resubmission of legislation concerning conservation of oil and gas in New York State, Dr. John G. Broughton and William L. Kreidler served as consultants to the Joint Legislative Committee on Interstate Cooperation which sponsored the bill. Meetings were held with proponents and opponents of the bill and conferences with committee staff. A report on the mineral resources of the Lake Champlain Basin was prepared by James F. Davis for the annual meeting of the Interstate Committee on Lake Champlain. Assisting the New York State Office of Atomic Development in locating the western New York nuclear service center, Dr. Broughton met with officials of that organization at a public meeting in Springville to inform residents of the reasons for choice of the site, and the type of exploration program to be carried on. He also spoke to representatives of industry interested in operation of the site at the time the State announced acquisition of the land.

On two occasions, Dr. Broughton served as a member of an Education Department team to evaluate the graduate program of institutions in the State. These visits of 2 to 3 days were made to determine if the institution qualified for graduate scholarship assistance. Reports and recommendations were submitted following these trips. He also investigated the possibilities of certain underground areas for storage of material in the event of enemy attack.

The Geological Survey acted as host to the annual meeting of the Association of American State Geologists, at which total attendance was approximately 60 persons. Formal meetings were preceded and followed by field trips planned by Dr. Lawrence V. Rickard, James F. Davis, and Dr. J. R. Dunn of Rensselaer Polytechnic Institute. For



Three staff members of the State Geological Survey work on the proof of a sheet in the Geologic Map of New York State.

this occasion, Davis prepared a field guide to the southern Adirondacks, which is available for further distribution.

Field Research

Numerous field trips were made by Dr. Broughton to the site of the western New York nuclear service center in order to check on progress of geological and geophysical exploration. He also made field visits to a number of projects being carried on by temporary employees.

Several days were spent by Y. William Isachsen in reconnaissance field mapping, for purposes of the State Geologic Map, in areas of the Childwold and Santanoni quadrangles where the geology was poorly known. He was assisted by James F. Davis, who collected specimens for analysis. The latter also studied the rock exposures at a purported tungsten prospect near Petersburg.

Visits were paid by Dr. Rickard to field projects carried on by temporary field geologists. He also collected fossils in western New York.

Approximately 325 visits were made by Arthur M. Van Tyne, assisted by Ross Sangster, to exploratory and field wells for the purpose of collecting drilling, production, and geological data, and to collect drilling samples. Van Tyne also attended 44 meetings of the Northern Gas and Oil Scouts Association, and made approximately 100 additional visits to companies, individuals, and areas of geological interest in connection with the work of the Wellsville office.

Field Work of Temporary Personnel

Studies in paleoecology: Leo Laporte of Brown University began an investigation of the Helderberg limestones in eastern New York.

Glacial geology of western New York: 2 months were spent by Ernest Muller, of Syracuse University, in a continuation of the glacial geology mapping of New York State west of the Genesee River.

Laboratory Work

Extensive investigation of purported tungsten mineralization was made by Dr. Rickard and James F. Davis from samples collected near Petersburg and from others submitted by owners of the property. From detailed emission spectrograph analyses, it was possible to show that tungsten did not exist in anything approaching economic quantities. A considerable amount of time was devoted by Dr. Rickard to putting the spectrograph into final adjustment and developing skills and techniques in its operation. He attended a 6-day training school for spectroscopists which was run by the Jarrell-Ash Company in Boston.

Science Research Aide Ross Sangster organized and marked the sections of the Olin No. 1 deep well core which is stored at Wellsville.

Office Activities

Much time was devoted by Drs. Broughton, Fisher, Isachsen, and Rickard to writing a text on the geology of New York State, for the *Geologic Map of New York*. This text of approximately 40,000 words is an up-to-date summary of the geology and geologic history of the State. It is written at a level intended to be informative and understandable to informed high school students and professional geologists, and is abundantly illustrated with line drawings by Mrs. Marcia R. Winslow. A basement map of the State was revised by W. Lynn Kreidler for inclusion in the folio. The Cambrian, Ordovician, and Silurian portions of the text were prepared by Dr. Donald W. Fisher, the sections dealing with geochronology and Precambrian geology by Isachsen, and the Devonian and late Paleozoic sections by Dr. Rickard. The introduction, sections on Pleistocene geology, Mesozoic and Cenozoic geology, and on economic geology were written by Dr. Broughton.

A number of manuscripts were completed, or in progress at the close of the year, by Drs. Fisher, Isachsen, and Rickard. Mr. Kreidler had begun the preparation of a contour map of the surface of the Onondaga limestone.

Work of the Wellsville office, under the general supervision of Mr. Kreidler, was carried on by Arthur M. Van Tyne and R. Sangster. They catalogued well and sample data, and plotted well locations on topographic maps. Well record cards were prepared with duplicates for the Albany office, and well samples were examined for geological tops and data for well records. Service extended by the Wellsville office may be summarized as follows: visits by persons seeking data or information, 238; other visitors, 72; phone calls from persons seeking data or information, 277; phone calls to obtain data or information, 332; phone calls to give data or information, 78; and letters requesting data or assistance and giving information, 234.

The Museum

General

SEVERAL TIMES IN THE past 30 years a new museum structure has appeared to be imminent. On each occasion, hopes were not realized. During 1961-62, the State's South Mall project breathed new life into the proposal. Although planning for the Mall was in a highly preliminary stage and no decisions had been reached concerning building priorities, it seemed desirable to assemble general specifications concerning our future needs. Space and facilities requirements for exhibits design and construction had been studied only 3 or 4 years ago for laboratories in the new Annex, but modern needs for the education and curatorial programs and for storage were undetermined. Accordingly, the museum staff reviewed the requisites and attempted to forecast needs for the next quarter-century. By the end of the reporting period, the amount of space and spatial relationships of various facilities had been worked out with some degree of finality. Planning of details was deferred pending the announcement of building priorities for the South Mall.

Due to the interest of Department officials, several major improvements were made in the present quarters. The long-planned covering of the skylight on the Washington Avenue section of the building was initiated, and the eastern half was completed by late summer (1962). The effect of shutting out daylight from the new exhibits in Paleontology Hall was almost breath-taking. When revealed by individual artificial lighting, and with the structural work of the old-fashioned hall greatly subdued, the colorful displays became the focus of attention as had been intended. Of equal or even greater importance was the prevention of water dripping down from rain and snow melting on the roof; it was no longer necessary for the guards to cover exhibit cases with plastic sheets to avert damage from leaking skylights. An unexpected dividend was the markedly lower temperatures in summer, when the sun formerly had filled the hall with a stifling tropical heat.

Authorization was granted by the Department to use the offices formerly occupied by the audio-visual unit for the expanding work of the Museum's education section. The two smaller rooms were fitted for office use and for the assembly of mineral sets, respectively, while the large office was made into a second classroom. Its location, virtually

adjacent to the Iroquois bark house and the series of life groups, made it especially valuable for teaching ethnology and archeology. Following the orientation session, school classes are conducted directly into the Hall of Iroquois Groups without loss of time and the distraction of walking through other exhibit areas. Establishment of the second lecture room obviously permitted more classes to be accommodated in a given time with less confusion and chance for conflict. It also made it possible to designate the "old" classroom for the teaching of natural history subjects, reducing crowding of teaching materials such as live animals, preserved specimens, rocks and minerals, clothing and utensils, and charts and pictures. Demonstration material can now be laid out ready for use, especially in the ethnology lecture room, instead of being put away to make space for objects used in other teaching subjects.

The herbarium had been moved in 1959-60 from its old quarters at the east end of the main building to the north end of Biology Hall. Being segregated from the exhibits only by an 8-foot wall, noise and echoes in the lofty hall proved to be even more disturbing to the botanists than had been anticipated. The racket of unsupervised school children, particularly, was destructive to a research atmosphere. Accordingly, during the past year studies were made of possible remedies and plans were drawn for a soundproof room to be constructed early next year within the herbarium. In this well-lighted, air-conditioned enclosure, plants can be catalogued and studied in quiet.

Visitor attendance in the exhibit halls continued to fluctuate without evident reason. A steady increase was recorded each year from 1956 through 1958, to be followed by a 17 per cent decline in 1959-60, and a 50 per cent increase in 1960-61. During the period covered by this report, visitation went down again but by only 7 per cent — from 220,000 to 204,000. (A new museum with adequate weekday parking undoubtedly would attract many more visitors.)

As we mentioned last year, the number of persons who take advantage of Sunday openings of the exhibit halls from Memorial Day to Labor Day has declined greatly since World War II. Recently, Sunday use has been little more than half of the average daily attendance for the year. On a per-visitor basis, it appeared that use of inadequate funds for the overtime work of guards and elevator operators to staff the Museum on summer Sundays was no longer justifiable. Study of adequate sample counts made by the Museum guards revealed that weekday, and especially Saturday, figures are highest during the spring and fall months. It was decided, therefore, to close the Museum on Sundays in summer and to open it instead during October-November and March-May. Utmost efforts will be

made to inform the public of this change through radio-press coverage of New York and western New England. If funds become available and the expense appears justified, Sunday openings will be extended until they cover the 10-month period from September through June.

Educational services, especially to teachers, were improved materially. An increase in the staff, financed by NDEA, made it possible to vary the program of instruction for school groups, to write a variety of teaching publications, and to expand the series of teacher workshops. All three fields are important, but the workshop program gives greatest promise of extending the Museum's influence. Almost 150 teachers from 42 schools in the Albany area took advantage of this after-hours activity (evenings and Saturdays). If each teacher is enabled to do a better instructing job for an average of 50 pupils (a low figure, considering that many of these persons taught in secondary schools), the total number of students affected was in the neighborhood of 7,500. This number is more than one-third of the school group attendance at all museum tours which were guided by our staff during the entire school year. The teacher workshops program has proven to be popular with teachers, who give their own time for self-improvement, and should be expanded still further. (Important help has been contributed by curators and by members of the State Science Service.) To give this field proper depth and variety, and to produce the publications (Museum leaflets) which supply important background material for teaching, at least one additional instructor is essential.

The stock of lending sets (minerals, fossils, and Indian artifacts) was increased with funds from NDEA, and about 200 loans were made to schools. A further expansion into the field of biology is desirable. This material would require the services of a preparator. The scope of educational material at the sales desk was extended and more than 2,400 publications, in addition to many other items, were sold. A receptionist is urgently needed at busy periods to relieve the guards for handling school groups and protecting the museum.

The education staff took charge of the preparation of slide shows for the automatic projector in the Little Theater. Two series of slides, one illustrating the varied work of the State Museum and Science Service and the other a summary of principal museums in New York State, were assembled and used at different times. Shows on other subjects are being made up, with the objective of installing a different series every 2 months.

Public-spirited friends of the State Museum continued to augment the collections and future exhibits by donating specimens. Dr. and Mrs. W. Brandon Macomber of Albany gave another group of 32 mammals,

all superbly mounted. A few were from eastern Africa (supplementing their gift of 22 specimens from that region in 1960-61), but most had been taken in northern North America. A special exhibit of Alaskan wildlife utilized some of the latest acquisitions; it was made much more striking by the donors' gift of walnut paneling and a translucent ceiling for the setting. Another significant accession was a series of 23 mounted fishes from the western North Atlantic (Long Island to Bahamas), the gift of Mrs. Mary B. Hecht of New York City and Alligerville. It also was made into a special exhibit. All of this material, whether it originated within the State or from points thousands of miles distant, will be useful in the scientific and educational programs of this institution. To paraphrase an official of the British Museum (*Museum Journal*, 62:170; 1962), an appreciation of nature based on New York State alone would be at best very incomplete and at worst parochial and misleading.

A museum is the product of its staff, and is only as competent as its personnel. We have been fortunate during 1961-62 in acquiring the services of several persons having unusual competence. C. Michael Darcy was appointed Education Instructor (NDEA), in the place of Gerald Schneider (resigned). Miss Robin Rothman, who had been a temporary employee for nearly 2 years, was appointed to a new permanent opening as an Exhibits Technician. Mrs. Helen Fisher of Albany and Harold Ross of Buffalo were also enlisted in the exhibits program with funds provided by Title III (National Defense Education Act). A skilled carpenter, James C. Wiedemann, was appointed to a new position (Maintenance Man) which had been converted from a long-standing apprentice job. The museum now has two able carpenters, which should materially speed up construction work. Additional assistance, which was subprofessional but nevertheless helpful, was given the exhibits program by arrangement with the Co-operative Work Program of Antioch College. Three students, Caroline Dutky, Patricia Eseh, and Barbara Samuels, each served for 3 months as assistants to the Chief Exhibits Technician. The curators were provided with help, unfortunately of short duration, by hiring the following college students during their summer vacations: Paul Graziade (geology), and David Lohre (botany). Henry Thurston provided trained assistance in zoology, and Helen McCulloch was a temporary, part-time Instructor in Museum Education. Full-time, subprofessional assistance continues to be an urgent need in the curatorial program in order to free the curators for more exacting duties which they now lack time to perform.

On occasion, the State Museum has been offered the services of skilled persons who wished to do something constructive or useful but who, for budgetary, age, or other reasons could not be hired. Such services could not be accepted gratis, because, in the event of accident, the person would not be covered by provisions of the Workmen's Compensation Law. By act of the 1962 session of the Legislature, the State Museum was permitted to accept the services of volunteers, who will be entitled to compensation if injured on the job. The Museum thus became the second State agency to be enabled legally to engage unpaid assistance. (State hospitals previously had been authorized to accept the services of the Grey Ladies.) Discussions with representatives of the Albany Junior League and the Girl Scouts indicate that a few volunteers may be anticipated from those organizations.

As in several preceding years, most of the time and money allotted to exhibits were devoted to paleontology. The display wall, which will house all except one of the planned series of nine dioramas showing the life of geologic periods, was almost finished at year's end. Two dioramas, made soon after World War I by Henri Marchand, were dismantled and their principal models were incorporated with new material into completely modern groups with painted backgrounds. Armored fishes are the primary characters in the Devonian group, while eurypterids are the focus of attention in the Silurian period exhibit. A third diorama, which illustrates the Permian period of west Texas, has a background scene in the Big Bend which was painted by Matthew Kalminoff of the American Museum of Natural History. A very striking exhibit on bryozoans was completed; although relatively small in size, it proved to be one of the most time-consuming of the paleontology exhibits because of difficulties in casting the plastic model of the bryozoan cell. Two other displays also were made and placed on view, which aid in explaining the formation of sedimentary rocks and the uses of fossils. Helpful advice on cloud formations in the scene illustrating sedimentary rocks was given by Ernest C. Johnson, director of the Albany office of the U. S. Weather Bureau. A new restoration of the famed Naples Tree (*Lepidosigillaria whitei*), which had been in construction for 2 years, was completed early in 1962 and installed in front of the original fossil in the foyer. The new 3-dimensional tree is made entirely of plastics; its green foliage can be cleaned, and the trunk with its leaf-scar pattern is practically vandal proof.

The second of the seven major displays planned for Orientation Hall was completed soon after the opening of the past year. This exhibit,



A colorful exhibit on bryozoans was installed in one of the pillars of Paleontology Hall.

which explains how geology has determined the topography of New York State, was described in last year's report (p. 39).

Repainting the walls of the rotunda made it advisable to remove the large framed collection of the bird paintings by Louis Agassiz Fuertes for Eaton's *Birds of New York*. Conditions under which these noted paintings had been displayed were far from satisfactory. Rather than replace them, therefore, it was decided to utilize the more outstanding plates in a new major exhibit with the preliminary title of "Bird Art in Science." This exhibit would describe the evolution of depicting birds, beginning with Cro-Magnon cave drawings, and show how artists, through their paintings, have recorded information and advanced human understanding of birds and their habits. Mrs. Aileen Merriam, of Austin, Tex., a graduate of Cornell in ornithology, was commissioned to prepare the exhibit plan, which she did during the summer of 1961. Duplicate cases totaling 84 feet in length were built in the two corridors between the rotunda and Biology Hall to receive the exhibit when assembled. A suspended, translucent ceiling and decorative entrances made a marked improvement in the appearance of the formerly stark corridors. These changes were effected by the talent and imagination of the Exhibits Designer, Theodore P. Weyhe.

Advice on numerous phases of museum management was furnished to other institutions. Inspections by the Assistant Director were made of two institutions, the Woodland Museum and the Valley Stream Museum, which had applied for Regents' charters. The dedication of the former institution, at Cooperstown, was attended. Museums in Washington, D. C.; Williamsburg, Va.; Chicago, Ill.; Lincoln, Nebr.; and Denver, Boulder, and Colorado Springs, Colo., were studied to expand our range of exhibit ideas. In addition, members of the education section visited more than 30 institutions in the United States to study education programs and exhibits; the Education Supervisor visited 10 museums and zoos in northern Europe on official time, but at personal expense, for the same purpose.

Curatorial Activities

Archeology

The Curator spent most of his time on activities which had commenced in previous years, primarily the checking of collections as they were moved into the new range rooms. Further progress was made in updating the central negative files, and additions were made to the site records. Catalogues were completed on specimens from the Baxter site, Wells site, O'Neil site, and other accessions resulting from the

field activities of the State Archeologist. Acquisition of a Sonogen supersonic cleaner promises greater efficiency in processing material.

Botany

The basic inventory of the entire collection was completed. As of June 30, 1962, the totals of inserted specimens in the various groups were: Algae, 500; fungi (including lichens and bacteria), 53,568; bryophytes, 10,528; and vascular plants (including study collections), 100,994. The collection now totals 165,590 specimens.

In addition, materials to be included as they can be mounted are conservatively estimated to be: Algae, 300; fungi, 2,000; bryophytes, 2,000; and vascular plants, 6,000 — a total of 10,300 specimens.

A more complete account will list totals under dates of collection, places of origin, and names of collectors. This inventory is now one-third finished. The Curator was assisted for several weeks by a temporary employee, David Lohre. A detailed report will be presented on completion.

Two institutions and 16 individuals presented materials in exchange or as gifts (see p. 31). These accessions are classified as follows:

	FUNGI	ALGAE	BRYOPHYTES	VASCULAR PLANTS	TOTAL
New York State	1,965	374	723	1,537	4,599
Out-of-State	0	0	0	290	290
Total	1,965	374	723	1,827	4,889

Collections by the Curator were as follows:

New York State	1,183	39	3,015	665	4,902
Out-of-State	0	0	0	3	3

Collections by the State Botanist and assistants:

New York State	0	0	0	317	317
Out-of-State	0	1	0	263	264
Total	3,148	414	3,738	3,075	10,375

The most notable group accessions were 345 specimens of bryophytes from New York State, collected by the curator's assistant, Norton G. Miller and 4,054 specimens, representing all divisions of plants, mostly from Suffolk County, mostly collected by Roy Latham.

During the fiscal year, 2 (probably) new members of the known fungus flora of the State were found and 6 new fungus-host records. Identification was made by Dr. Clark T. Rogerson, New York Botanical Garden.

As in previous years, some mosses were identified by the late Dr. A. Leroy Andrews, Ithaca, N. Y., and others were identified by Dr. Howard E. Crum, National Museum, Ottawa, Can. On the basis of this and other identifications, the following numbers of additions are

made to the check list: District 1 (vicinity of Clayton), 14; District 2 (vicinity of Ogdensburg), 10; District 3 (vicinity of Saranac Lake), 18; District 4 (vicinity of Plattsburgh), 10; District 6 (vicinity of Lockport), 4; District 7 (vicinity of Rochester), 1; District 9 (vicinity of Lowville), 8; District 10 (vicinity of Indian Lake), 14; District 11 (vicinity of Warrensburg), 3; District 12 (vicinity of Jamestown), 2; District 13 (vicinity of Olean), 4; District 15 (vicinity of Ithaca), 2; District 16 (vicinity of Unadilla), 5; District 17 (vicinity of Middleburg), 8; District 18 (vicinity of Albany), 2; District 20 (vicinity of Ellenville), 4; District 21 (vicinity of Poughkeepsie), 3; District 22 (vicinity of Orient), 1; and District 26 (vicinity of Riverhead), 7. Six species and five varieties were added to the known moss flora of the State. The curator has continued copying records of vascular plants from authoritative literature. This, combined with field work and study of recent accessions, has added the following numbers of species and subspecies of vascular plants to the county lists:

Albany	1	Niagara	1	Steuben	2
Cayuga	3	Onondaga	1	Suffolk	3
Essex	1	Ontario	3	Tioga	1
Genesee	1	Otsego	2	Tompkins	2
Hamilton	2	Putnam	5	Ulster	10
Herkimer	1	Rensselaer	1	Washington	2
Livingston	4	Richmond	1	Wayne	2
Monroe	12	Saratoga	2	Yates	5
Nassau	2	Schenectady	1		
New York	1	St. Lawrence	2		

Included in these records are four introduced grasses.

Entomology

The transfer and rearrangement of exotic beetles, moths, and butterflies, and the updating of nomenclature and arrangement of the insect study collection was continued.

A considerable number of specimens were collected by Donald P. Connola, Dr. Hugo A. Jamnback, and the Curator. William E. Smith, Forest Pest Control Bureau, State Conservation Department, submitted many forest pest insects for identification and subsequently for storage in the State Museum collection.

Approximately 275 requests for information were received. Most of these called for the identification of a particular insect and the means of controlling it if it was apt to become a pest. Co-operative work with the Forest Pest Control Bureau, Conservation Department, called for identification of forest pests. Co-operation with the Department of Health called for identification of mites, ticks, and fleas.

Geology

The Curator continued his investigation of the clay minerals present in the Lower Devonian rocks of the central Hudson Valley.

A condensed 8-session course on the subject of rocks and minerals was outlined for the Capital and Natural Science Center.

One hundred and fifty visitors were received during the year. Approximately 305 rock, mineral, and ore samples were identified for the public and/or colleagues. One hundred and five of these identifications were made using X-ray techniques.

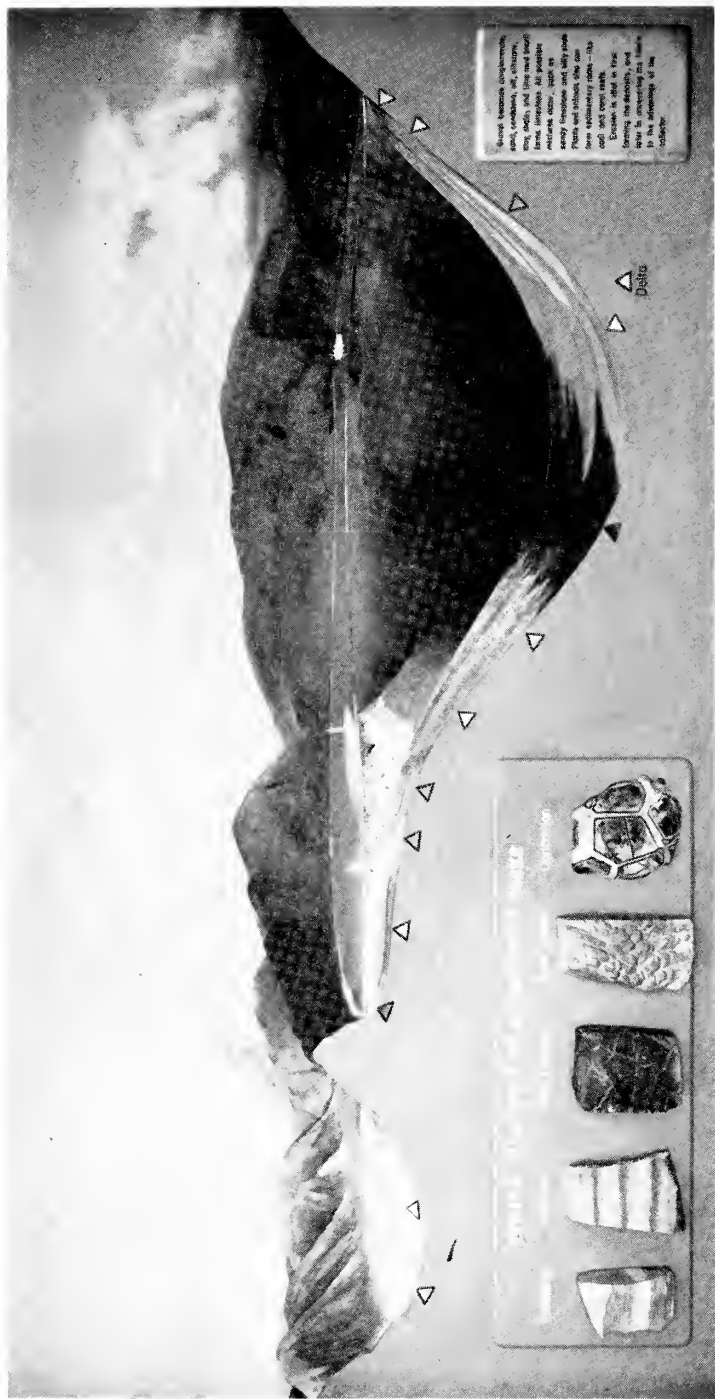
Public requests for information are listed by subject and number of requests answered:

State geology	50
State mineralogy	105
Miscellaneous	60
Copies of leaflet No. 10, <i>Rocks and Minerals of New York State</i> , sent to school children and teachers.....	120
Rock samples of anorthosite, with descriptive information, sent to school children.....	360

Paleontology

The contents (74 specimens) were removed from several exhibit cases, and the material was catalogued and stored. This completes the dismantling of the old exhibits in Paleontology Hall. As usual, a considerable amount of time was spent in keeping the type catalogue up to date. Forty-nine new specimens were added to the type collection, and cards were entered in the type catalogue. One hundred and ninety-one type and nontype specimens were treated in an attempt to stop or prevent disintegration. Collections containing 784 specimens were packed for shipment. Ninety entries were made in the locality and accession records, and 951 specimens were ticketed with locality numbers. The State Paleontologist, the Senior Scientist (paleontology), and temporary members of the staff collected and turned over for accessioning a total of 871 fossil specimens from 29 localities in the State.

Assistance was given to the following visiting scientists who desired to study portions of the collections: Dr. William B. N. Berry, University of California (graptolites); Dr. William A. Oliver, Jr., U. S. Geological Survey (fossil corals); Dr. W. D. Ian Holfe, Museum of Comparative Zoology (fossil phyllocarids); Dr. Adolph Seilacher, Geolog.-Palaontolog. Institut der Georg-August-Universitat, Gottingen, Germany (fossil worm trails); Erik N. Kjellesvig-Waering, Trinidad, West Indies (eurypterids). Dr. F. J. W. Holwill, Imperial College of Science



A portion of a new exhibit which was installed this year in Paleontology Hall. The label describes "How Sedimentary Rocks Are Formed: Rock fragments of all sizes, broken or dissolved from the earth's crust are moved by water, glaciers, and other forces to places where they are deposited in layers. Many of these sediments are compacted or cemented into solid rock."

and Technology, London, England, was furnished 34 photographs of type corals. Approximately 80 fossil specimens were identified for some 30 visitors, and information on fossils and fossil localities was transmitted to a number of correspondents.

Zoology

Experiments were made to test some commercially available paints and wood stains to determine their value in preventing woodpecker damage to structures such as dwellings. Breeding bird censuses were made in the 100-acre tract of the Wilson M. Powell Wildlife Refuge.

Distribution files were maintained on animals of the State, and maps for the bird handbook project were continued. A museum guidebook to the mammals of the State is nearly completed.

For the New York State Conservation Department, many letters to the editor of the *Conservationist* dealing with zoological matters were answered by the Curator. Work was continued with Boy Scouts, 4-H Clubs, and school groups.

Two outstanding donations of zoological material were received from friends of the State Museum. Dr. and Mrs. W. Brandon Macomber, of Albany, gave 32 specimens of North American and African mammals, and Mrs. Walter Greenwood, of Jersey City, N. J., donated the birds egg collection of her husband, which consisted of over 200 sets of eggs suitable for exhibition. It included eggs of the passenger pigeon and the ivory-billed woodpecker.

Henry Thurston of Claverack, N. Y., acted as assistant to the Curator in sorting out and cataloguing the collections of birds' eggs and skeletons. Miss Susan Staffa started part-time work for the zoology office in June, primarily to arrange the skeleton collection and identify fragmentary bones from the archeological collections. Only 221 items were actually catalogued, but over 500 more were added to the collection uncatalogued, as some preparation remained to be done.

Three outdoor trips, including two for teachers from CASDA classes, were led by the curator to the Wilson M. Powell Wildlife Sanctuary at Old Chatham. A lesson in ecology was given for a "Zoology for Teenagers" class, and three special classes were lectured on the subject of classification and duties of a zoologist. One special outdoor class from Columbia Central High School, under Lee Burland, was given a lecture on ecology at Wilson M. Powell Sanctuary. Five elementary grade classes were given outdoor walks and lessons at the same sanctuary. A 4-H group was given a bird walk at the Alps 4-H camp in Rensselaer County. The Curator also advised on land use at Catskill Central School.

Accessions

With the exception of a few purchases as noted, the following objects and material were donated to the State Museum by generous friends.

Archeology

Skeletons, pot fragments, and charcoal samples	R. Arthur Johnson, Latham, N. Y.
Flint projectile point	Michael Cacchillo, Schenectady, N. Y.
Indian stone tools	Harriet M. Telford, Carmel, N. Y.
Quartz projectile points and pot fragments	Julian Solecki, Cutchogue, N. Y.
Photographs of Indian paintings (66)	Albert Jaques, Woodstock, N. Y.
Tomahawk	Alan Garbiardino, Boonville, N. Y.
Figurine	Arthur Einhorn, Lowville, N. Y.
Flint Bayonet	Jessie Robinson, Warrensburg, N. Y.
Prints of Iroquois Indians (5)	Purchased
Alaskan Indian Shaman's Costume	Mrs. Harriet V. S. Roy, Saratoga Springs, N. Y.
Cow horn rattles (2)	Purchased
Collection from the Barren Island site	R. Arthur Johnson, Latham, N. Y.
Collection from the Claverack site	E. B. Christman, Rensselaer, N. Y.
Photographs and prints of Indians	R. Arthur Johnson, Latham, N. Y. E. B. Christman, Rensselaer, N. Y. Mrs. Gustav Kiefer, Norwalk, Conn. Mrs. Lynn Perkins, Geneseo, N. Y.

Botany

Plants, mostly from New York State (75)	Theodore C. Baim, Schenectady, N. Y.
<i>Mycota</i> from Columbia County (7)	Judith Drumm, New York State Museum
Plants from Ulster County (37)	Henry F. Dunbar, Kingston, N. Y.
Plants from central New York State (3)	Mildred E. Faust, Syracuse, N. Y.
Plants from Hamilton County (11)	Frederick J. Hermann, Beltsville, Md.
<i>Gymnosporangium</i> from Albany County (2)	Kenneth Ireland, Delmar, N. Y.
<i>Tracheophyta</i> from Delaware County (72)	Anna E. Jenkins, Walton, N. Y.
Plants from New York State (63)	Clifford Lamere, Albany, N. Y.
Plants from Suffolk County (4054)	Roy Latham, Orient, N. Y.
<i>Anthopsida</i> from Suffolk County (2)	Herbert M. Mapes, Richmondville, N. Y.
Plants from Erie County (3)	Norton G. Miller, South Wales, N. Y.
Plants from United States (101)	New York Botanical Garden, New York, N. Y.
<i>Tracheophyta</i> from United States (190)	University of Oklahoma, Norman, Okla.

Plants from New York State (253)

Iris from Essex County (2)

Algae from Suffolk County (2)

Mycota from New York State (5)

Quercus ilicifolia from Suffolk
County (1)

Orra A. Phelps, Wilton, N. Y.

Mrs. David Prince, Schenectady, N. Y.

Edgar M. Reilly, Jr., New York State
Museum

Mrs. Clara Schultz, Bemis Heights,
N. Y.

George Woodwell, Brookhaven, N. Y.

Geology

Mineral collection (400 specimens)

Dr. Alva Gwin McCord, Albany, N. Y.,
in memory of her husband, the late
Dr. Clinton F. McCord

Kasolite pseudomorphous after
uraninite crystals – fergusonite
crystals in feldspar – cyrtolite
crystals with lanthanite in
allanite, Essex County, N. Y.;
calcite cleavage showing twinning
– wernerite crystal, Ticonderoga,
N. Y.; tourmaline crystals in
quartz–pyrrhotite with plagioclase,
Brant Lake, N. Y.; pyrite
nodules, East Greenwich, N. Y.;
fergusonite, Lyons Falls, N. Y.;
pyroxene orbicles in gneiss,
Johnsburg, N. Y.; complex
vesuvianite crystal, Olmstedville,
N. Y.; oligoclase (sunstone),
Ausable Forks, N. Y.; quartz
crystal groups – calcite crystals
with pyrite and hematite – large
doubly terminated quartz crystal
– doubly terminated quartz
crystal – John B. Steeie
Mine, Lyndhurst, Ontario, Can.;
betafite with biotite – betafite
crystal – apatite crystals, Silver
Crater Mine, Bancroft, Ontario,
Can.; serpentine (picrolite) with
deweytite, Cedar Hill Quarry,
Lancaster County, Pa.; stilbite
crystals on basalt, Perkiomenville,
Pa.; serpentine (chrome picrolite),
Woods Chrome Mine, Jenkins
Corners, Pa.; albite (peristerite),
Perth, Ontario, Can.; marcasite
in calcite cleavages, Faraday

Elmer B. Rowley, Glens Falls, N. Y.

Uranium Mine, Bancroft, Ontario,
Can.; pyrochlore (uraniferous
Ellsworthite uraniferous
Hatchettolite), Hybla,
Ontario, Can.

Collection of artifacts (dreikanter,
etc.), Long Island, N. Y.

Barite, Pillar Point, N. Y.

Dolomite crystals and anthroxolite,
Little Falls, N. Y.

Pyrite crystals in shale,
Kingston, N. Y.

Strontianite on limestone,
Voorheesville, N. Y.

Idocrase, Sanford, Me.

Trona, halite and loughlinite,
Green River, Wyo.

John W. Baker, Huntington, N. Y.

Ronald Waddell, Syracuse, N. Y.
Donald Hurley, Little Falls, N. Y.

Robert E. Baker, Kingston, N. Y.

Henry Rausch, Voorheesville, N. Y.

George Goodwin, Albany, N. Y.
Stanley J. Lefond, Diamond Alkali
Company, Cleveland, Ohio

Paleontology

Trilobites and rubber molds of
trilobites from the Devonian
of Germany (15)

Pelecypod from the Schoharie grit,
Saugerties, N. Y.

Mastodon remains, Pleistocene,
Summitville, N. Y. (46 pieces)

Fossils from the Permian of Young
County, Tex. (7)

Titanothera tooth, Oligocene of the
western United States

Dr. H. K. Erben, Bonn, Germany

Judith H. Fiero, Saugerties, N. Y.

Lane Construction Corp.,
Meriden, Conn.

Museum of Comparative Zoology,
Cambridge, Mass.

Dr. Charles K. Winne, Jr.,
Albany, N. Y.

Zoology

Przewalski horse ♀; Onager ♂
Black bear skulls (3); deer (2);
bear, skins

North American mammals, mounted
(24); African mammals,
mounted (8)

North Atlantic marine fishes,
mounted (23)

Collection of birds' eggs (200 sets)

Mammal skins (4); bird skins (14)
Specimens of rare Yellow-nosed
vole (6) (*Microtus chrotorrhinus*)

Specimens of Jumping Mouse (110)
(*Zapus hudsonius*)

Bird specimens (6)

Loggerhead shrike

Catskill Game Farm, Catskill, N. Y.
State Conservation Dept.,
Albany, N. Y.

Dr. & Mrs. W. Brandon Macomber,
Albany, N. Y.

Mrs. Mary B. Hecht, Allgerville, N. Y.

Mrs. Walter Greenwood,
Jersey City, N. J.

Henry Thurston, Claverack, N. Y.
James Brower, Albany, N. Y.

James Whitaker, Jr., Cornell
University, Ithaca, N. Y.

Miss Mary F. Linch, Albany, N. Y.

Mrs. Jack Cook, R.F.D.,
Castleton, N. Y.

Grosbeak (pine)
Chickadee; brown creeper;
fox sparrow

David Cook, Albany, N. Y.
Mrs. Donald Radke,
East Chatham, N. Y.

Donations

Duplicate and other materials which were excess to needs were donated to schools, co-operating institutions, and individuals which expressed need for them:

Botany

Specimens of Bryophytes (913)

State University, N. Y. State College of
Agriculture, Ithaca, N. Y.

Unusual species of *Sphagnum*
(15 specimens)

Prof. William T. Winne, Union
College, Schenectady, N. Y.

Specimens of Bryophytes (33)

Prof. Babette C. Brown, The University
of Rochester, Rochester, N. Y.

Paleontology

Fossil specimens (66)

Geology Department, Boston College,
Chestnut Hill, Mass.

Fossil specimens (63)

Geology Department, University of
South Florida, Tampa, Fla.

Fossil specimens (10)

Vernon B. Sundown, Tonawanda
Reservation, Basom, N. Y.

Exchanges

Botany

Specimens of Bryophytes (488)

New York Botanical Garden,
New York, New York 10058

Specimens of Bryophytes (299)

U. S. National Herbarium, Smithsonian
Institution, Washington, D. C. 20025

Specimens of Bryophytes (296)

Canadian National Herbarium,
National Museum, Ottawa,
Ontario, Can.

Loans

The following material from the State Museum collections was loaned on request from schools or other institutions and of scientists.

Archeology

Ethnological items
Photographs of Indian Masks
Ethnological items

Albany Medical School, Albany, N. Y.
Y. William Isachsen, Delmar, N. Y.
Mrs. Howard Flierl, Delmar, N. Y.

Botany

- Types and specimens of
Hymenomyces (45); specimens
of *Bryopsida* (69)
- Types and specimens of *Clavaria* (7)
- Specimens of *Bryopsida* (69)
- Specimen of *Brachythecium
cyrtophyllum*
- Type of *Boletus fraternus*
- Types of *Cantharellus* (2)
- Specimens of *Lichens* (54)
- Types of *Hymenomyces* (2)
- Type of *Periconia tenuissima*
- Type of *Pestalozzia camposperma*
- Type of *Helotium vibrisseoides*
- Types of *Agaricaceae* (32)
- State University, College of Forestry,
Syracuse, N. Y.
- State University of New York at
Buffalo, Buffalo, N. Y.
- The University of Rochester,
Rochester, N. Y.
- State University College at Geneseo,
Geneseo, N. Y.
- Brown University, Providence, R. I.
- University of Massachusetts,
Amherst, Mass.
- Michigan State University,
East Lansing, Mich.
- Canadian Department of Agriculture,
Ottawa, Ontario, Can.
- Ontario Agriculture College,
Guelph, Ontario, Can.
- Commonwealth Mycological Institute,
Kew, Surrey, England
- Dr. W. D. Graddon, Pongleton,
Cheshire, England
- University of Tennessee,
Knoxville, Tenn.

Geology

- Opal specimens (2)
- Fluorescent mineral specimens (3)
- Blowpipe analysis kit
- Miss Linda Kowalski,
Loudonville, N. Y.
- John Spath, Rensselaer, N. Y.
- Mrs. William Marleau,
Big Moose, N. Y.

Paleontology

- Type specimens of fossil
malacostracans (21)
- Type specimens of fossil
pelecypods (7)
- Fossil coral specimens (37)
- Type specimens of graptolites (13)
- Type specimens of fossil
malacostracans (3)
- Fossil brachiopod specimens (6)
- Fossil echinoderm specimens (146)
- Dr. H. K. Brooks, Harvard University,
Cambridge, Mass.
- Egbert G. Driscoll, University of
Michigan, Ann Arbor, Mich.
- Dr. William A. Oliver, Jr.,
U. S. Geological Survey,
Washington, D. C.
- Dr. John Riva, McGill University,
Montreal, Province of Quebec, Can.
- Dr. W. D. Ian Rolfe, Museum of
Comparative Zoology,
Cambridge, Mass.
- Dr. Herta Schmidt, Senckenbergische
Naturforschende Gesellschaft,
Frankfurt-Am-Main, Germany
- Jan Van Sant, University of Kansas,
Lawrence, Kan.

Eurypterid specimens (4)	Erik N. K. Waering, Port of Spain, Trinidad, West Indies
Type specimens of stromatoporids (11)	John S. Warren, University of North Carolina, Chapel Hill, N. C.
Type specimens of fossil brachiopods (9)	Donald H. Zenger, Cornell University, Ithaca, N. Y.

Zoology

Bird skins	Franklin School, Schenectady, N. Y.
Rattlesnake	American Museum of Natural History, New York, N. Y.
Warbler skins	Adelphi College, Long Island, N. Y.

Museum Exhibits

Planning and Design

The two exhibits planners, whose assistance was provided by the NDEA (Title III), were lost to the Museum program. David Roberts left early in the year to assume a teaching position near Cleveland, Ohio, while his assistant, Kenneth Hasson, went into the military service near the end of the period.

The completion of the northeast and south walls of Paleontology Hall, two Biology Hall corridors (for an exhibit on bird art), and an Alaskan wildlife exhibit highlighted the year's accomplishments. Much of the designer's time was occupied in designing, engineering, and supervising these projects, and in ordering (and recording) the diversity of required materials.

In the Hall of Ancient Life, the remaining 120-foot section of the 210-foot structure along the south wall was completed. This last span incorporates two 40-foot bays which have acoustical ceilings to localize lectures. The first part of the north wall (a curved, 70-foot facade which complements the design and color of the opposite wall) was nearly complete by the end of the year. All exhibit walls have been covered with a decorative, durable, plastic fabric. All hidden structures will be coated with fire-retardent paint. New exhibits finished during the year were on sedimentary rocks, uses of fossils, bryozoans, and two dioramas — Texas Permian and hypersaline Silurian. Exhibits under construction, but still incomplete, were echinoderms (crinoids), a cephalopod slab and mollusk pillar, an eurypterid slab and trilobite pillar, and an Ordovician black shale diorama. A model was completed for an Ordovician diorama, as was a detailed scale model and mock-up panels on the history of evolution for a future dramatic entrance to Paleontology Hall.



A modern diorama showing life of the Silurian period in western New York was created by adding brachiopods, snails, and worms to two eurypterids of the Museum's World War I era, and placing the assemblage in a new setting.

In Biology Hall, the two 44-foot entrance corridors were remodeled into an attractive and functional setting for a future explanation of bird art in science. Plans for the exhibit were submitted in a 38-page report by Mrs. Aileen Merriam, of Austin, Tex.

Alaskan Wildlife Exhibit – a 24-foot display unit was tailored to contain some of the collection of Alaskan big game animals which had been donated to the Museum by Dr. and Mrs. Macomber. The unique setting includes walnut paneling, artificial snow, luminous ceiling, scenic vignettes, and animal silhouettes. Slides were selected for a companion show in the Little Theater. The 30-foot synoptic mammal exhibit was given an educational face lifting with new labels and arrangement. The Hecht collection of marine fish was arranged and labeled for display. Over 100 photographs were mounted, labeled, and installed for the following shows:

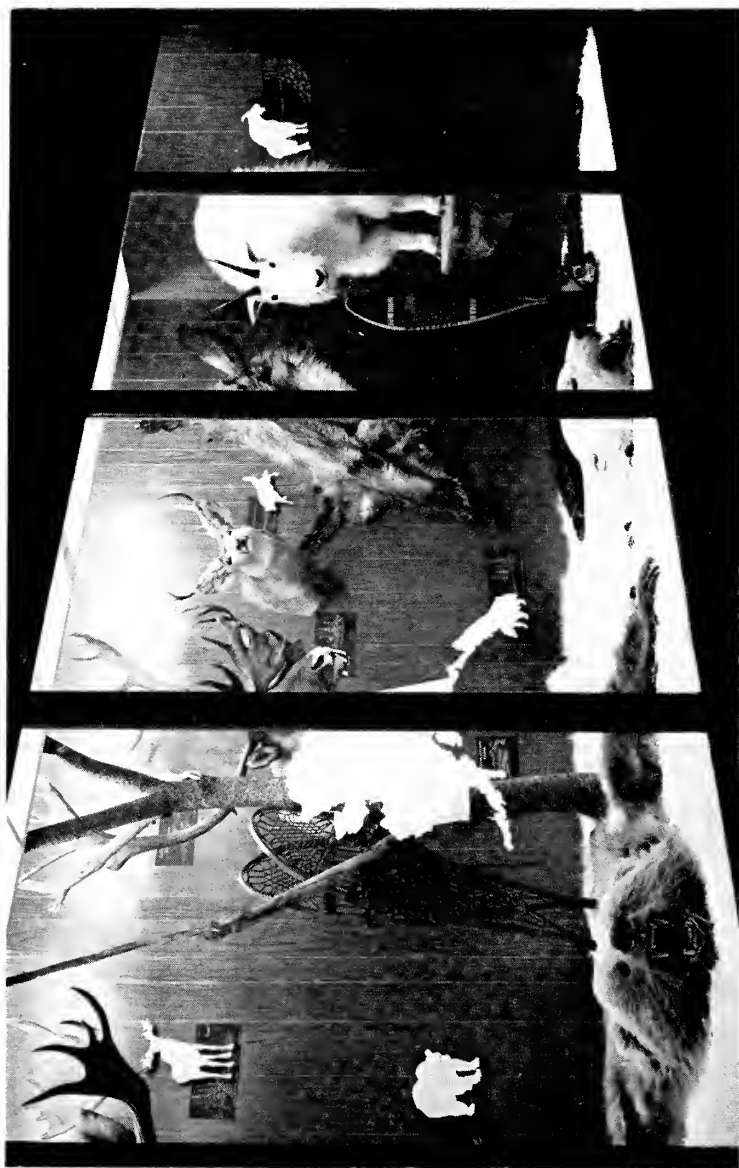
- “Noted from Nature,” by Arnold Le Fevre, Chief
Photographer, Albany Knickerbocker News
- “Here and There,” by Bernard Kolenberg, Staff
Photographer, Albany Times Union
- “Striking Pose,” by Nick Drahos, Cine-Conservation
Educator, New York State Conservation Department

The second permanent exhibit was installed in Orientation Hall; it describes the geology of New York State. Temporary displays include a stamp-insect collection gathered by the Curator of Entomology, and artifacts uncovered at the Garoga site by the Junior Archeologist.

Preparation

A number of projects were completed for the new Hall of Ancient Life. Among these were included the diorama section for the exhibit on sedimentary rocks; accessories for the uses of fossils exhibit; a new model of horn coral for the coelenterate case; an enlarged translucent model of a bryozoan and a number of smaller internally carved models fitted into it; and a full-scale model of a floating sea-lily was made for mounting in front of the crinoid slab. A diorama on the Texas Permian Desert was completed, as was the armored fish (Devonian) diorama. Specimens were modeled for the Devonian Normal Marine display, and casts of archeopteryx and a fossil hoax were made and colored for future exhibits.

Work on a new restoration of the Naples Tree was concluded during this period. A base was modeled in concrete, and an 8-foot fluorescent fixture installed in the lower trunk to illuminate the fossil slab on the wall behind the reconstructed tree, which now stands in the foyer.



A temporary exhibit on "Wildlife of Alaska" utilized specimens which were donated to the State Museum by Dr. and Mrs. W. Brandon Macomber of Albany.

Three wax restorations of fossil fishes made on outside contract were recast in epoxy for greater durability and lightness. Two large models of eurypterids and two of trilobites were recolored and re-finished for installation in the Hall of Ancient Life. More than 30 specimens of reptiles and amphibians on exhibit were renovated and provided with improved bases. New cases and display installations for these specimens are presently under construction. Since some of the reflections caused by windows in Biology Hall have been reduced, it has been possible to balance the lighting in the beaver group and install permanent fixtures. Lighting in the six Indian groups has been restored as far as possible to its original arrangement. Extensive repair work was required to restore the bark house, much of the original material being in poor condition and extremely fragile with age. A number of skins (deer, bear, etc.) were donated by the New York State Conservation Department, and prepared in the Museum exhibit laboratory for use in the bark house. Two pack frames and their accompanying tumplines were constructed and six replicas of bird traps were made, all to be used in the bark house. For the same exhibit, a clay model for the figure of an Indian girl was also begun. Replicas of Iroquois false faces and casts of the skulls of fossil hominids were made, as well as molds for reproducing replicas of Indian carved spoons and 15 projectile point types.

The Hecht marine fish collection, consisting of 23 specimens, was retouched and renovated for exhibition in Biology Hall; a layout was prepared and the specimens were installed. Two trips were made to the Catskill Game Farm to collect the complete skins and skeletons of a Przewalski horse and an onager, which were prepared for the research collections. Three black bear skulls were prepared from fresh specimens for the research collections.

As a result of construction work under way in the Hall of Ancient Life, it was necessary to clean the mastodon exhibit twice during the past year. A relief map of the New York harbor area was cleaned and restored for a photograph requested by the Governor's Office. The large relief map of New York State in Orientation Hall was washed and on several occasions retouched. The Gilboa fossil forest exhibit was repaired and retouched, and the lighting fixture was repaired. Several hundred of the smaller mounted birds and mammals in Biology Hall were cleaned, and two bronze sculptures by Anna Hyatt Huntington were cleaned and refinished.

The Public

Following a 50 per cent increase in attendance in 1960-61, visita-

tion declined in 1961-62 (from 220,000 to 204,000, or about 7 per cent). The figures are based on sample counts of visitors to the exhibit halls on 84 of the 324 days that the Museum was open. Comparison of the data for the 2 years shows that almost all of the decrease occurred on weekdays, when attendance in 1960-61 was 175,250 and in 1961-62 was 158,250. Saturdays showed a slight increase over 1960-61 (35,880 compared with 32,000), while holiday use was reduced almost 50 per cent (3,555 against 6,144). Attendance on the 14 summer Sundays in 1961-62 was slightly less than on the same number of Sundays in 1960-61 (6,011 versus 6,057). This comparatively poor showing, which has steadily worsened over the years since World War II, has led to the decision (discussed on page 20) to change the Sunday openings to other seasons of the year.

Highest daily count for the reporting year (1,831) occurred on Saturday, March 17, 1962, the day of the St. Patrick's Day parade. Highest count on a normal weekday was 1,077 (March 7). Lowest count recorded (January 4, a Thursday) was 226. The average attendance for the 324 open days was 629, compared with 654 for the same number of days in 1960-61.

The Department Nurse was called to give medical assistance to 20 visitors, all of whom were youngsters in school classes. Only three minor accidents occurred during the year.

The Museum guards have continued to carry out their routine duties efficiently, and have performed numerous other helpful services. Exhibit cases have been painted and glass washed. Cases in Morgan Hall were moved under the direction of the Curator. Assistance was given the exhibits preparation staff in washing the large State relief map, and 200 field notebooks for the Geological Survey were hand-stamped. The electric lift was used to remove torn blinds from the skylights in Paleontology and Geology Halls. Light bulbs were replaced and glass cleaned in all lighted exhibits as often as necessary. The guards assisted in an extensive cleaning of the Indian bark house. At the request of the Botany Section, the guards changed the pollen slides on the roof of the Annex on Saturdays, Sundays, and holidays.

During the year, several changes occurred in the guard staff. Francis J. Lynch, who was injured in an auto accident, was replaced by Alvin N. Turner, who had been on the Building Guard staff. Edward W. McCarthy started work in the Museum on March 22, replacing James Carroll, who left to work in the Watervliet Arsenal. Robert H. Cunningham occupied both these positions temporarily, until they were filled with permanent guards from a Civil Service list.

Special Services

Museum Interpretation—Education Program

A MORE FLEXIBLE AND VARIED program was made possible this year by an increase in staff, which was financed by the NDEA (Title III). The services of a full-time secretary greatly increased the efficiency of the Museum Education Office, and freed the Supervisor and Instructors from a number of time-consuming, routine duties.

In September, C. Michael Darcy was appointed to the position of Instructor (NDEA), which was left vacant by the resignation of Gerald Schneider. Helen McCulloch served as part-time, temporary Instructor (NDEA) from February to June.

Each NDEA Instructor concentrated on the improvement of lesson tours and teacher training in a single subject. Mr. Darcy developed a conservation tour for which he wrote *Conservation*, a statement of conservation problems with bibliography. He also built up a leaflet and reprint file of conservation literature, and conducted two teacher workshops. Mrs. McCulloch gave 39 geology tours, assisted with four teacher workshops, and catalogued the geology demonstration materials and specimens for lending sets.

Prior to his resignation in February 1962, James W. Manley, Associate Curator (Interpretation), devoted the major part of his time to NDEA administration and the work of staff secretary for the Commissioner's Committee on Museum Resources. During the summer of 1961, the Museum Education Supervisor studied educational programs of European museums and zoos. She reported her findings at a panel discussion on "European Museums" at the Northeast Museums Conference, and in an article for the *Museologist*.

The Museum Instructor wrote *Iroquois Culture*, Educational Leaflet No. 5, finished the manuscript for *Mastodons and Mammoths of New York State*, and compiled *Visiting the State Museum*, a teacher's guide describing various services. Distribution of the guide to all schools in the State marks a major advance in the Museum's communication with teachers, and resulted in an increased demand for educational leaflets; however, it occurred too late in the season to influence group visits.

The part-time temporary Instructor contributed substantially by giving 208 tours — 22 per cent of the total number given.

Instruction for Visiting Groups

Total group attendance was 34,159, an 11 per cent increase over last year. Of the 29,843 children visiting in school groups, 21,369 or 73 per cent were given instruction by the Museum staff. Seventeen per cent of the 943 tours were general, while 83 per cent covered one or two specific topics in the field of natural science.

Data for 958 groups show that 67 per cent originated within a 50-mile radius of Albany; 27 per cent came a distance of 50 to 150 miles; 3 per cent from over 150 miles; 3 per cent were from outside the State.

Tours continued to be adapted to individual class requirements; however, more emphasis was placed on the structured lesson-tour designed to demonstrate Museum teaching methods and to introduce, clarify, or survey a topic for the benefit of the teacher, as well as the students. Whenever available for the topic of the tour, background materials were distributed to teachers. About 600 of the 1,312 teachers accompanying school groups benefited from structured lesson-tours.

The addition, late in the spring, of an attractive new classroom for Indian tours, convenient to the bark house, makes it possible to give double the number of lesson-tours at a given time and materially lessens the confusion caused by changing materials between demonstrations. An additional classroom is needed to separate biology and earth science demonstration materials.

A major step forward in the analysis of visiting trends and services has been made by the transfer of group records to IBM forms.

Workshops for Teachers

An experimental program of teacher workshops, with cosponsorship by the Capital Area School Development Association, was undertaken last year. Because of its success, the program was expanded in 1961-62 to include nine workshops and three field trips, which were attended by 325 teachers from 42 CASDA-member schools. Workshop subjects were Iroquois Culture and Foods, New York State Rocks and Minerals, Teaching Conservation, Paleontology of New York, and Care of Animals in the Classroom. The Curator of Zoology conducted two field trips to observe winter wildlife at the Alan DeVoe Sanctuary, Old Chatham. Dr. Philip Hewitt, of Union College, and William McClennan, of Scotia-Glenville Central School, conducted 64 teachers on an all-day geological field trip in the Albany area. Resource materials in the form of leaflets, reprints, and outlines were distributed at each workshop or field trip meeting. The workshops, conducted by

the Museum Education staff, utilized both Museum exhibits and appropriate demonstration materials. Under the workshop program the Museum, aided by NDEA funds, contributed staff, facilities, and some materials, and CASDA handled publicity, registration, refreshments, and transportation for field trips.

Lending

Thirty fossil collections, 4 Indian artifact collections, and 130 mineral collections were loaned to schools during 1961-62. Individual collections were often used by a number of teachers in their classrooms, or were exhibited for the entire student body. The effectiveness of all collections would be greatly enhanced by the addition of study guides.

Lending procedures were greatly facilitated by the acquisition of fiberboard mailing boxes. The Indian artifact sets were improved by the addition of objects of contemporary Indian manufacture, and a collection of animal skins was purchased and loaned to a school museum. A portable exhibit on leaf preparation, built primarily for use at the summer conference of the Science Teachers' Association of New York State, was also used by a school system to stimulate interest in Science Congress projects.

Future Objectives

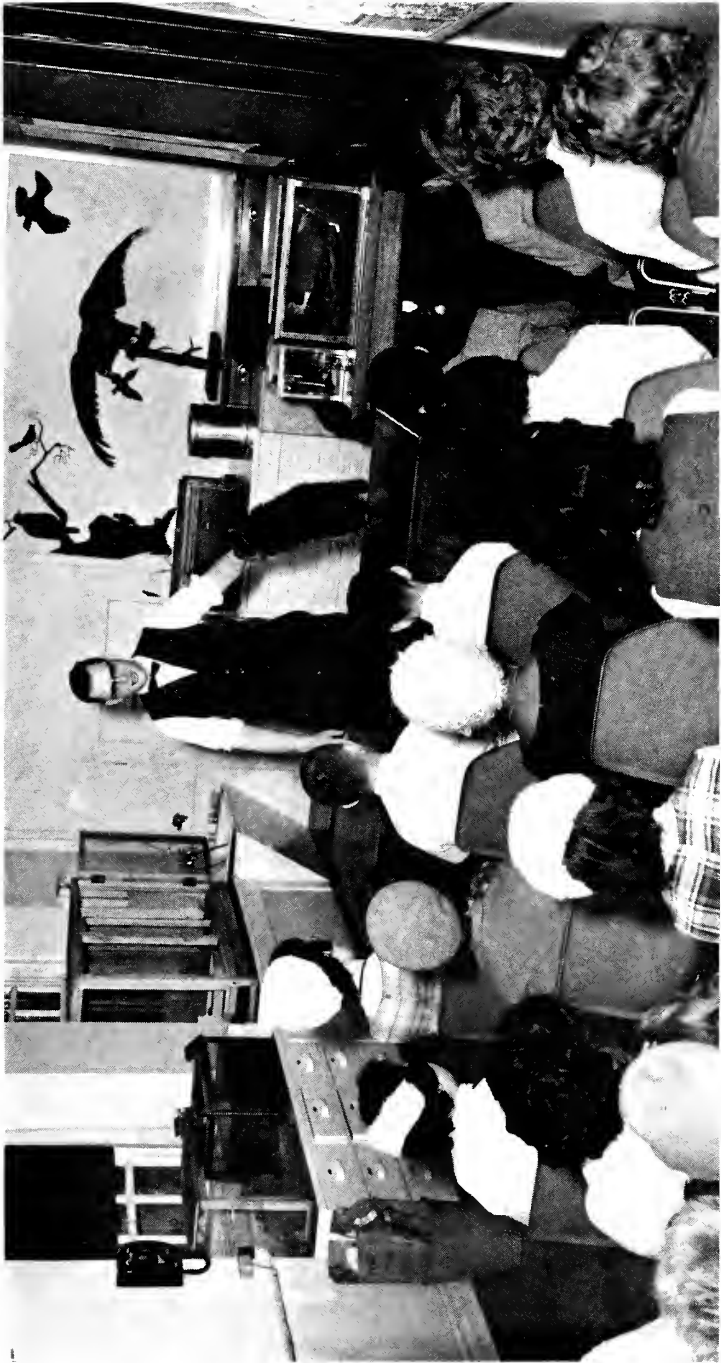
Maximum instruction load and use of present exhibit halls and classrooms is being achieved during much of the school year. The program to improve natural science instruction and use of the Museum should be expanded in three areas:

1. Resource materials for teachers in each tour subject.
(Approximately twice as many educational leaflets were printed and distributed this year.)
2. The lending program to encourage use of actual specimens in science teaching
3. The Teacher Workshop program

Time is the prime requirement to accomplish the above. Since 74 per cent of teaching time is devoted to Indian lessons, the greatest single need is an additional Instructor, trained in anthropology. The entire educational program is still hampered by lack of lunchroom facilities and of adequate coatroom space.

Science Congress Award Program

The Curator and the Museum Education Supervisor attended, respectively, the summer and winter conferences of the Science Teachers'



An instructor gives a visiting school class an orientation talk in the natural sciences classroom before leading a tour of exhibits in Biology Hall.

Association of New York State to discuss problems which arose in connection with the Museum's program to honor regional Science Congress Award winners by displaying their exhibits. As a result, descriptive folders and forms were prepared to aid winners in preparing their projects for display. The Curator and the NDEA Instructor acted as co-ordinators for the accommodation and instruction of the following students who came to the Museum to install their Science Award displays:

Radio Astronomy.....Terry Gerill, Rochester
Crystal Formation.....Jon Gardner, Wellsville
Story of Blood.....Margaret and Kathleen Klotz, Lafayette
Rocks and Minerals.....Eric Sherman, Mohawk
Paleozoic Life.....Michael Meals, Burnt Hills

Related Activities

SALES DESK

During the past year, the stock at the sales desk has been extended to include some new publications, colored slides, gemstones, and rock picks and chisels. The sales total for the year was \$4,157.87. The most significant group of items demanded by the visitors, and the number of items sold during the year, were plastic dinosaur models (3,549), pamphlets and books (2,416), mineral kits (542), model and beadcraft kits (517), and gemstone sets (486). A receptionist at the sales desk would improve relations with the public, and would relieve guards to help with school groups on crowded days.

CONFERENCE AND MEETINGS

The Instructor and part-time temporary Instructor visited the Science Service field work at Garoga, N. Y., to gain a better understanding of archeological field methods. During the year, the four staff members visited a total of 22 museums and outdoor areas in New York State, and 11 institutions in other States, to study exhibits and educational programs. In addition, the Supervisor, at her personal expense but on official time, visited 10 museums and zoos in northern Europe for the same purpose.

Museum Library

Routine maintenance of service to the staff continued to increase, as have honoraria reports, routine accessions, interlibrary loans, and new periodical acquisitions. Many new books were acquired, either as departmental loans or as gifts from institutions or individuals. The first

shipment of a proposed binding project was prepared and executed with the assistance of the State Library, Technical Processes Section. Library space was reclaimed as needed by placing holdings in dead storage or transferring to State Library, Gifts and Exchange Section. Requests for publications exchange were acted upon by the Museum Librarian. Among the additions to the existing list were institutions in England, Scotland, Russia, and Thailand.

The Museum Annual Report was mailed from the Museum Library (to list exclusive of exchange). Bulletins 384 and 386 were sent to review editors. The master mailing list (addressograph), the Museum and State Library's routing lists, staff recommendations for purchase by State Library, correspondence, reference work, and borrowing from State Library were all executed through the Museum Library. A bibliography of science dictionaries was prepared, and the geology bibliography was maintained. United States Geological Survey quadrangle maps were reorganized, and pertinent ones transferred to the Geological Survey Office.

The Museum Librarian was asked to prepare two space requirements surveys.

The following tabulated information indicates the nature and quantity of library services:

Accessions	3,490
Transfers to State Library, Gifts and Exchange..	733
New books received (gifts).....	15
New books received (purchases).....	25
New periodical subscriptions.....	3
Recommendations of staff (for purchase by State Library) searched by Museum Librarian.....	100 (approx.)
Interlibrary loans	54
New exchanges initiated	10
Honoraria reports received.....	8
Mailing list additions.....	15

Photography

A total of 118 approved requisitions were processed during the year. This work resulted in the following: 469 black and white photographs were taken, 976 negatives processed from field photographs, and 2,082 prints and enlargements made from the preceding. In addition, 184 projection slides were prepared, 288 color photographs were taken, and 39 special enlargements were made. This production was about the same as in 1960-61.

The work included both field and office assignments, and was distributed throughout the various sections as follows. (1) Archeology:

Summer archeological field collections and borrowed specimens collected at Barren Island and Staten Island sites were photographed. Negatives were borrowed from Rochester Museum of Arts and Sciences; prints were made from these for a new book, *New York State Archeology*, as well as slides for lectures. Several wood figurines on loan from Einhorn and Don Chase collections were photographed. Prints were prepared for the Staatliches Museum of Munich, Germany, and for Holt Book Company. (2) Biological Survey: Photographs were prepared for pollen collecting studies. Medical entomology studies included photographs of eastern encephalitis and punkie research. Forest insect studies included photographs of white pine weevil, gypsy moth biology, and biological control methods. Photographs were prepared for small mammal studies, and maps were reproduced for *Handbook of North American Birds*. Photos were made for an article in *Bulletin to the Schools*. (3) Geological Survey: Photographs were prepared for Helderberg and Chautauqua County bulletins and symposium on salt of New York State. Photographs were taken at meetings of Association of American State Geologists. Several sets of color slides were made for talks by members of the geology staff; subjects included geologic map of New York State, new geology laboratories and equipment, salt charts, and fossil specimens. Photographs of type specimens were sent to Imperial College of Science and Technology, London, and University of Leeds, England. (4) Exhibits Section: Photographs were made showing progress of construction for new exhibits and of several recently completed exhibits, including the Hecht collection of fishes and Macomber mammals.

Prints were prepared for an article in *Time* magazine, and photographs were taken of new laboratories and equipment in use in the Annex. Illustrations were prepared for a Graduate Student Honorarium announcement. Science Fair award-winning students were photographed with their exhibits. Requests for photographic services by the Department included: Personnel retirement ceremonies; academic Regents Review Commission publicity photos for public relations unit of Commissioner's Office, and Commissioner's Committee on Museum Resources. Routine activities of the photographic unit included checking and requisitioning photographic supplies, minor repairs to cameras, enlarger, and processing equipment.

Publications

Only two Museum bulletins (one an annual report) were printed in 1961-62. They totaled 225 pages of text and 37 plates and charts. Three Museum leaflets totaling 80 manuscript pages, and a pocket-sized teacher's guide for museum visits, were reproduced by the multilith process. Members of the staff published 22 articles, papers, and notes in outside journals, books, and encyclopedias. These writings comprised about 1,000 printed pages.

At the close of the year, six manuscripts had been accepted for publication. Three of these papers were in process of printing, one as a bulletin and two in the map-and-chart series.

Publications

STATE MUSEUM AND SCIENCE SERVICE

- 1962 123d Annual Report of the New York State Museum and Science Service, July 1, 1960-June 30, 1961. N. Y. State Mus. & Sci. Serv. Bull. No. 387, 76pp., 11 pls. 3 charts

Funk, R. E.

- 1961 How archeologists dig and why. Educational Leaflet Series No. 11, 4pp., 2 figs.

Ogden, E. C. & Raynor, G. S.

- 1961 Tagging and sampling ragweed pollen. Progress Report No. 2. (March 1, 1960-February 28, 1961). N. Y. State Mus. & Sci. Serv.

Rickard, Lawrence V.

- 1962 Late Cayugan (upper Silurian) and Helderbergian (lower Devonian) stratigraphy in New York. N. Y. State Mus. & Sci. Serv. Bull. 386, 157pp., 28 figs.

IN OUTSIDE MEDIA

Cahalane, V. H.

- 1961 African discovery in *Discovery*: great moments in the lives of outstanding naturalists. pp. 83-96. J. B. Lippincott

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Collins, D. L. (editor)

- 1961 Mosquito news. Jour. Amer. Mosq. Control Assoc. September

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- 1962 and December, 1961 (v. 21, Nos. 3 & 4); March and June, 1962 (v. 22, Nos. 1 & 2)

Connola, D. P.

- 1961 Portable mistblower spray tests against white pine weevil in N. Y. Jour. Forestry, v. 59, No. 10, pp. 764-765

Fenton, W. N.

- 1962 Ethnohistory and its problems. Ethnohistory, v. 9, No. 1, pp. 1-23
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- 1962 Lewis Henry Morgan (1818-1881): pioneer ethnologist. pp. v-xviii. Corinth reprint of The League of the Iroquois. The American Experience Series AE 12. New York. The Citadel Press

Fisher, D. W.

- 1962 Small conoidal shells of uncertain affinities – treatise on invertebrate paleontology, v. W, pp. 98-143, 34 figs.
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- 1962 How to collect fossils – The Conservationist, December-January (1961-62) p. 48, 1 pl.
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- 1962 Mirror to the past – The Conservationist, December-January (1961-62), pp. 21-27, 4 col. pls., 3 figs.

Isachsen, Y. W.

- 1962 Geological history of the Adirondack Mountains – The Conservationist, June-July, pp. 27-31

Kreidler, W. L.

- 1962 Gas and oil developments in New York State, 1961. Amer. Assoc. of Petroleum Geologists Bull., v. 46, No. 6, pp. 772-777

Ogden, E. C., Raynor, G. S., Singer, I. A. & Smith, M. E.

- 1961 Pollen sampling and dispersion studies at Brookhaven National Laboratory. A.P.C.A. Journal 11 (12): 557-562 (October)

Palmer, R. S. (editor)

- 1962 Handbook of North American birds, v. 1, New Haven and London. Yale Univ. Press. 567pp., 6 pl., map and text figures.

Reilly, E. M., Jr.

- 1961 Articles: Shrike, kingfisher, kingbird, rail, tanager, canary, gull and tern and guinea fowl. Encyclopaedia Britannica Junior

Ritchie, W. A.

- 1961 Highway construction and salvage problems. Archeology, v. 14, No. 4, pp. 241-244. (December)
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- 1962 Archeology: western hemisphere. Encyclopaedia Britannica Book of the Year, pp. 35-38

Van Tyne, A. M.

- 1962 Exploration in New York – international oil and gas development review, 1961, Pt. 1. International Oil Scouts Assoc. v. 32, pp. 219-226. (September)

Appendix A

1962 Graduate Student Honoraria Recipients

ANTHROPOLOGY

BLAU, HAROLD — Columbia University Observation and participation in Longhouse ceremonies, notably Green Corn Dance	\$ 480
HARRELL, DOROTHY S. — Catholic University Vocables in Seneca music: a study in cultural stability.....	480

ENTOMOLOGY

CARTER, GEORGE F. — New York State College of Forestry at Syracuse University Effects of DDT on wildlife	600
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GEOLOGY

BURTNER, ROGER L. — Harvard University Regional study of the rocks and sedimentary structures which comprise the Catskill 'delta' of southeastern and south central New York	276
CARLUCCIO, LEEDS M. — Cornell University Fossil plants of eastern New York (Onteora formation).....	144
FLETCHER, FRANK W. — The University of Rochester Geologic mapping of the "Catskill group" in southeastern New York State	600
MATTEN, LAWRENCE C. — Cornell University Paleobotanical collecting in Catskill area (Onteora formation)	144
SCHOPF, THOMAS J. M. — Ohio State University Conodont biostratigraphy of the Trenton stage (Ordovician) in Black River Valley	504
SHAW, FREDERICK C. — Harvard University Study of the trilobites of the Chazy.....	360

ZOOLOGY

BROWER, JAMES E. — Syracuse University Relationship between habitat selection and water metabolism in jumping mice	480
RICHARDS, WILLIAM J. — Cornell University Studies on the basic biology of darters.....	480
	<hr/> \$4,548

Appendix B

Conferences and professional meetings in which the Museum and Science Service staff participated:

- American Academy of Allergy, Denver, Colo. — Ogden*
- American Anthropological Association, Philadelphia, Pa. — Fenton, Stone
- American Association of Ichthyologists and Herpetologists, Washington, D. C. — Stone
- American Association of Museums, annual meeting, Williamsburg, Va. — Cahalane, Rothman, Weyhe
- American Association of Museums, conference on summer institutes in anthropology and astronomy for teachers, New York City — Fenton
- American Association of State Geologists, Albany, N. Y. — Fenton
- American Committee for International Wildlife Protection, New York City — Cahalane
- American Ethnological Society, annual meeting, New York City — Fenton
- American Indian Ethnohistoric Conference, Providence, R. I. — Fenton*
- American Institute of Mining Engineers, New York City — Broughton, Davis
- American Mosquito Control Association, Galveston, Tex. — Collins
- American Ornithologist Union, Bird Handbook Conferences, New Haven, Conn., Washington, D. C., and Lawrence, Kans. — Palmer
- American Petroleum Institute, Bradford, Pa. — Van Tyne
- American Society for Tropical Medicine, Washington, D. C. — Collins
- American Society of Mammologists, Middlebury, Vt. — Cahalane, Connor, Stone
- Association of Colleges and Universities of the State of New York, panel on New York State Foundation for Science and Technology — Fenton*
- Association of Directors of Science Museums, Washington, D. C. — Cahalane
- Atmospheric Sciences Advisory Council Research Center, Whiteface Mountain, Wilmington Notch, N. Y. and Rensselaerville, N. Y. — Fenton
- Boone and Crockett Club, New York City — Cahalane
- Canadian Institute of Mining Engineering and the American Institute of Mining Engineering, joint meeting of U. S. and Canadian Industrial Minerals Division, Ottawa, Ontario, Can. — Reilly
- Canadian National Museum, Ottawa, Ontario, Can. — Reilly
- Capital Area School Development Association, Administrative Seminar, Albany, N. Y. — Manley
- Commissioner's Committee on Museum Resources, several meetings, New York City — Cahalane, Fenton
- Commissioner's Staff Conference, Diamond Point, Lake George, N. Y. — Fenton
- Conference of Directors of Systematic Collections, Washington, D. C. — Fenton

* Read formal paper.

Educational Research Association of New York State, Albany, N. Y. —
 Darcy, Manley, Stone
 Engineers' Society of Western Pennsylvania, Bradford, Pa. — Van Tyne
 Entomological Society of America (Eastern Branch), Baltimore, Md. —
 Collins
 Federated New York State Bird Clubs, annual meeting, New York City
 — Palmer, Reilly
 Federation of New York State Bird Clubs, Albany, N. Y. — Reilly
 Fourth Biennial Vector Control Conference, Atlanta, Ga. — Collins
 Geological Society of America, annual meeting, Cincinnati, Ohio —
 Borst, Broughton, Fisher, Isachsen, Rickard
 International Conference on Iroquois Research, Hamilton, Ontario, Can.
 — Fenton*
 International Ornithological Congress (13th), Ithaca, N. Y. — Cahalane,
 Palmer, Reilly
 International Palynology Conference, Tucson, Ariz. — Lewis, Ogden
 Joint Legislative Committee on Interstate Cooperation, annual executive
 meeting, New York City — Broughton, Kreedler
 Linnaean Society, New York City — Palmer
 McMaster University, Hamilton, Ont., Can., Iroquois Conference —
 Fenton, Funk, Gillette, Ritchie
 Mohawk-Caughnawaga Museum, Board of Trustees and Advisory
 Council Meeting, Fonda, N. Y. — Fenton, Funk
 National Wildlife Federation (26th), Denver, Colo. — Cahalane
 Natural Science and Conservation Education Forum, New York City —
 Darcy, Manley
 New England Intercollegiate Geological Field Conference, Montpelier,
 Vt. — Davis, Isachsen, Stone
 New Jersey Mosquito Extermination Association, Atlantic City, N. J.
 — Jamnback
 New York State Archeological Association, Van Epps-Hartley Chapter,
 Albany, N. Y. — Funk,* Gillette
 New York State Archeological Association, annual meeting, Glens Falls,
 N. Y. — Fenton,* Funk,* Gillette, Ritchie*
 New York State Archeological Association, Morgan Chapter, Rochester,
 N. Y. — Ritchie*
 New York State Association of Museums Council Meetings, New York
 City, Albany, N. Y. — Fenton
 New York State Conservation Department, Bureau of Forest Pest Con-
 trol, annual meeting, Saratoga, N. Y. — Collins, Connola
 New York State Education Department, Audio-Visual Division, Albany,
 N. Y. — Rothman, Weyhe
 New York State Education Department Conference on Non-Western
 studies, Albany, N. Y. — Fenton
 New York State Education Department Project Able Workshop — Stone
 New York State Geological Association, Port Jervis, N. Y. — Borst,
 Broughton, Davis, Drumm, Fisher, Isachsen, Rickard, Stone, Van Tyne

* Read formal paper

New York State Oil Producers Association, Wellsville, N. Y. – Van Tyne
 New York State Zoological Society, New York City – Palmer
 North American Wildlife and Natural Resources Conference (27th),
 Denver, Colo. – Cahalane
 Northeast Anthropological Conference, Toronto, Ontario, Can. – Fenton
 Northeast Museums Conference, Cooperstown, N. Y. – Cahalane,
 Darcy, Drumm, Manley, Rothman, Stone*
 Northeastern Forest Pest Council, Boston, Mass. – Collins, Connola
 Northeastern Forest Pest Council, summer meeting, Hamilton, N. Y. –
 Collins, Connola
 Northeastern Mosquito Control Association, Boston, Mass. – Jamnback
 Northern Appalachian Basin Geological Society, Lewis Run, Pa. – Van
 Tyne
 Paleontological Research Institution, Ithaca, N. Y. – Fisher, Rickard
 Pennsylvania Geological Field Conference, Reading, Pa. – Isachsen
 Resources for the Future Forum, Washington, D. C. – Darcy
 Science Teachers Association of New York State, summer conference,
 Alfred, N. Y. – Manley*
 Science Teachers Association of New York State, winter conference,
 Brookhaven, N. Y. – Stone
 Society for American Archeology, annual meeting, Tucson, Ariz. –
 Ritchie
 Society for Pennsylvania Archeology, Wilkes-Barre, Pa. – Funk, Ritchie
 Union College Biology Symposium, Schenectady, N. Y. – Fenton
 Weed Society of America, St. Louis, Mo. – Ogden*
 Wildlife Conference, Patuxent Research Center, Md. – Palmer

Appendix C

Co-operative Work (Service): Talks given by the staff of State Museum and Science Service to various groups:

Adirondack Mountain Club (ADK) – Reilly
 Altamont 4-H Group – Wilcox
 Altamont School, Altamont – Fisher, Reilly
 American Anthropological Association, National Science Foundation
 lectureship, State University College at Oneonta, and Hartwick Col-
 lege, Oneonta – Fenton*
 Bethlehem Central High School – Wilcox
 Blue Mountain Lake Association – Jamnback
 Boy Scout Groups, East Greenbush and Rensselaer – Borst, Reilly
 Capital District Geologists Meeting, Albany – Fisher
 Chatham Exchange Club – Reilly
 Claverack Boy Scouts – Reilly
 Clinton Heights PTA – Reilly
 Columbia High School – Wilcox
 Dana Natural History Society – Funk

* Read formal paper.

Delmar (Bethlehem) Rotary Club – Collins
 East Greenbush Garden Club – Reilly
 East Greenbush Town Board Advisory Committee on Lake Improvement
 – Connola
 Eastern New York Science Congress Fair, Columbia High – Reilly
 4-H Club Groups – Reilly
 Girl Scout Troop No. 184, Hudson Valley – Gillette
 Greenville Rotary Club – Collins
 Guilderland Central School – Gillette
 Hillsdale Lions' Club – Reilly
 Ichabod Crane Central School – Fisher
 Interdepartmental Committee on Pesticides – Collins (member for Edu-
 cation Department and Chairman of Subcommittee on Research)
 Interdepartmental Committee on Rabies – Palmer (member for Edu-
 cation Department)
 Kiwanis Club of Hudson Falls – Reilly
 Kiwanis Club of West Sand Lake – Reilly
 Mohawk Valley Historical Society and Oneida Historical Society, com-
 bined meeting, Utica – Fenton*
 National Museum of Canada, Ottawa, staff seminar – Fenton*
 Nature Conservancy League – Lewis, Ogden
 Newcomb Central School – Koster
 New York Mycological Society, New York City – Smith
 New York State Petroleum Council, Albany – Kreidler
 Poughkeepsie Garden Club – Reilly
 Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio – Lewis,
 Ogden
 Schalmont Central School – McCulloch
 School No. 6, Albany – Stone
 Science Teachers Association of New York State Meeting, Alfred –
 Manley
 Scotia-Glenville School – Fisher
 Sigma Xi – Ritchie
 Spanish Institute of Entomology, Forest Pest Service – Collins
 State of Maine Forest Service – Jamnback
 State University College at Potsdam – Funk
 State University of New York at Albany – Fisher
 Union College – Koster
 Voorheesville Cub Scouts – Reilly
 Voorheesville Elementary School – Reilly

Appendix D

Co-operating Agencies

A continuing function of the Museum and Science Service is to co-operate with agencies and organizations concerned with museum

* Read formal paper.

and research activities in this and other States, with the governments of the United States and Canada, universities, and industry in the discovery, analysis, and dissemination of scientific information. These contacts are frequently of reciprocal services, and they often arise out of the personal contacts of the staff and, if so listed, would measure individual participation, but they are here tabulated for the organization.

Adirondack Museum
Albany Medical Center Hospital
Albany Medical College
American Association of Museums
American Museum of Natural History
American Ornithologists' Union
Birdwell Logging Company
Brown University
Buffalo Society of Natural Sciences
Canadian Department of Agriculture, Forest Biology Laboratory
Capital Area School Development Association
Chicago Natural History Museum
Commonwealth Mycological Institute
Denver Museum of Natural History
Durham Nature Center
Federal Area Redevelopment Administration
Harvard University: Gray Herbarium, Museum of Comparative Zoology
Helderberg Workshop
Imperial College of Science and Technology
Joint Legislative Committee on Interstate Cooperation
Michigan State University
National Audubon Society
National Zoological Park
Nature Conservancy
New York Botanical Garden
New York State Archeological Association
New York State Defense Commission
New York State Department of Agriculture and Markets
New York State Department of Commerce
New York State Department of Conservation
New York State Department of Health
New York State Department of Public Works
New York State Executive Department
New York State Division of Police, B.C.I.
New York State Farm Bureau Association
New York State Office of Atomic Development
Northeast Museums Association
Ontario Agriculture College
Paleontological Research Institution
Royal Ontario Museum
Schenectady Museum
Science Teachers Association of New York State
Seneca Nation of Indians

Shaker Museum
State University of New York, College of Agriculture at Cornell
University
State University of New York at Albany
State University College at Geneseo
State University College of Forestry at Syracuse University
State University of New York, New York State Veterinary College,
Duck Disease Research Laboratory, Eastport, N. Y.
State University of New York at Buffalo
Suffolk County Mosquito Control Commission
Syracuse University
Union College
United States Bureau of Mines
United States Department of Agriculture
United States Department of Health, Education and Welfare
United States National Museum
University of Massachusetts
The University of Rochester
University of Tennessee
Valley Stream Museum
West German Television, Documentary Programs, Inc.

Appendix E

Professional Affiliations

Adirondack Mountain Club, Albany Chapter, vice-chairman; Committee
on Clean Trailsides and Roadsides, chairman – Cahalane (re-elected)
American Academy of Allergy, Pollen and Mold Subcommittee of Re-
search Council – Ogden
American Committee for International Wildlife Protection,
vice-chairman – Cahalane (re-elected)
American Indian Ethnohistoric Conference, president – Fenton
American Mosquito Control Association, editor – Collins
American Ornithologists' Union, editor of *Handbook of North American
Birds* – Palmer
Canadian Institute of Mines, Division of Industrial Minerals – Broughton
Capital District Geologists Club, program chairman – Isachsen
Defenders of Wildlife, vice-president – Cahalane (re-elected)
Eastern New York Botanical Club, vice-president and program chairman
1961-62 – Smith
Nature Conservancy, Eastern New York Chapter, vice-chairman –
Cahalane
Northeastern Forest Pest Council, vice-chairman – Collins
Northeastern Forest Tree Improvement Committee, member for New
York State – Collins
Sigma Xi, president, Albany Club – Fisher
Society of American Foresters, New York Section, member of Committee
on Forest Insects and Diseases – Connola
Society of Mining Engineers, director – Broughton

New York Botanical Garden Library



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