

LONG ISLAND BIOLOGICAL ASSOCIATION

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ANNUAL REPORT

OF

THE BIOLOGICAL LABORATORY

COLD SPRING HARBOR
LONG ISLAND, NEW YORK

1943

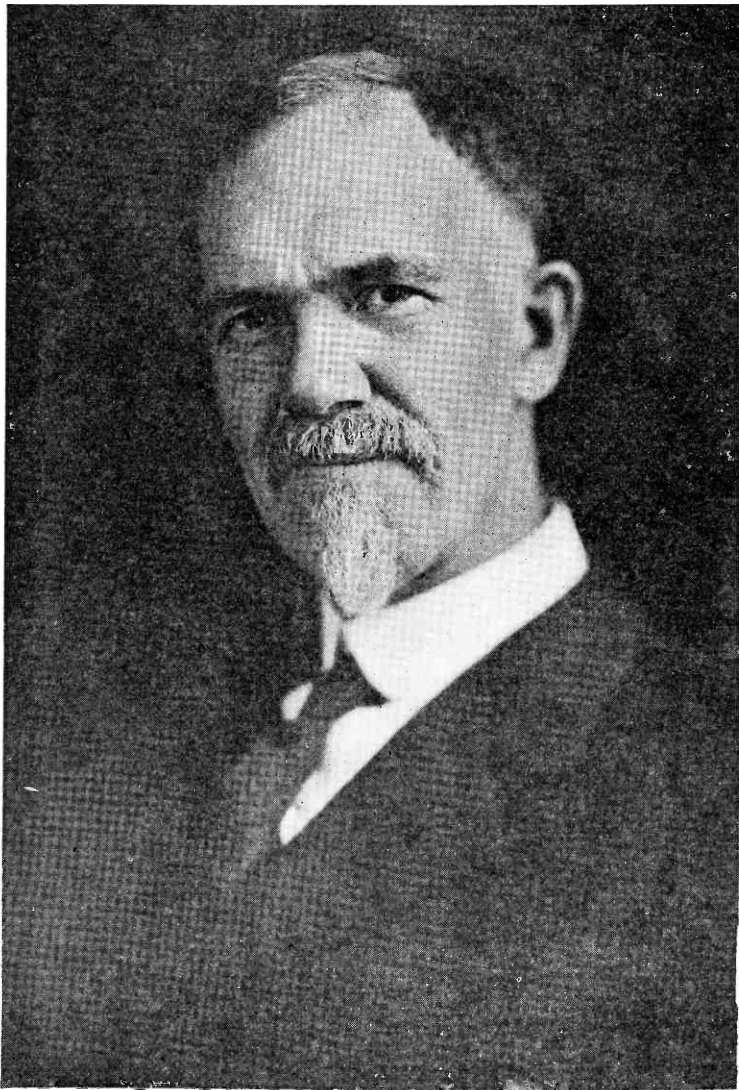
LONG ISLAND BIOLOGICAL ASSOCIATION
INCORPORATED 1924

ANNUAL REPORT
OF
THE BIOLOGICAL LABORATORY
FOUNDED 1890

FIFTY-FOURTH YEAR
1943

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CHARLES BENEDICT DAVENPORT

CHARLES BENEDICT DAVENPORT

June 1, 1866 — February 18, 1944

On February 18, 1944, while the manuscript for this report was in preparation, the Long Island Biological Association was deprived of a distinguished member and ardent supporter through the death of Dr. Charles Benedict Davenport, which took place in the Huntington Hospital as a result of atypical pneumonia. His loss is felt equally by our Association, our community, and the whole field of biological science.

More than any other person, Dr. Davenport was responsible for the growth of the Biological Laboratory, for the establishment of the Department of Genetics of the Carnegie Institution of Washington at Cold Spring Harbor, and for the development here of a prominent biological center. In 1898, when Professor H. W. Conn of Wesleyan University, the second director of the Biological Laboratory, left to spend a sabbatical year in Europe, Davenport was appointed director of the Laboratory. At that time he was a young instructor at Harvard, full of ambitions to organize facilities for biological research. His coming brought a new vigor to the work of the Laboratory.

When Davenport took over the directorship, the Laboratory was owned by the Brooklyn Institute of Arts and Sciences, but had its own Board of Managers consisting of twenty-four persons, of whom two were local residents. It had one laboratory building (the John D. Jones Laboratory), a lecture hall (the present Wawepex Laboratory), and two dormitories (the present Hooper House and another similar building which stood a short distance north of it). The Laboratory operated during the summer months, offering courses in zoology, botany, and bacteriology to college students and teachers, providing working space for research, and arranging evening lectures on topics connected with biology and natural history.

During Dr. Davenport's administration much emphasis was placed on teaching. He was successful in inducing a number of leading teachers to give summer courses at the Laboratory. The course in Field Zoology given by Professor H. E. Walter of Brown University, that in Cryptogamic Botany conducted by Professor D. S. Johnson of Johns Hopkins University, and that in Comparative Anatomy taught by Professor Henry S. Pratt of Haverford College were among the best offered anywhere. In consequence, many students were attracted to the Laboratory, and Cold Spring Harbor became an important summer center for the teaching of biology. The number of students increased from 22 in 1897 to 80 just before the outbreak of the first World War. During the Laboratory's first thirty-five years about 1500 persons were enrolled in its courses, and in addition a large number of biologists did research work there during the summers. In 1901, three years after Dr. Davenport took charge of the Biological Laboratory, he was appointed Associate Professor and curator of the Zoological Museum at the University of Chicago. However, he continued his connection with the Laboratory and spent his summers at Cold Spring Harbor.

The most important event of his scientific career occurred in 1904. When in 1901 Andrew Carnegie set aside an endowment for a national

research institution, several outstanding biologists submitted plans for a biological department. Davenport's plan was accepted; and approval was given to his suggestion that a Station for Experimental Evolution be established on land adjacent to the Biological Laboratory, which was leased to the Carnegie Institution by the Wawepex Society. He was asked to organize the department, became its first director in 1904, and remained Director until his retirement in 1934.

After he had moved his residence to Cold Spring Harbor, Dr. Davenport had a better opportunity to work for the Biological Laboratory and to develop it, together with the Station for Experimental Evolution, as an important center for biological research. Under his leadership, and backed by the great resources of the Carnegie Institution, the Station developed rapidly from a small laboratory employing eight persons and having a budget of about \$20,000 into one of the leading research laboratories of the world in its field, with a personnel of about 68 and a yearly budget of nearly \$150,000. The Biological Laboratory expanded as well. In 1906 Mrs. Eugene G. Blackford erected, in memory of her husband, a fine reinforced-concrete building, which houses dormitories, dining hall, and lecture hall, and serves as a recreational and social center for the Laboratory. Davenport established contacts with local residents, and aroused their interest in biological research and in the Laboratory. Their representation on the Board of Managers was increased from two to fifteen, and their financial support from \$50 in 1897 to around \$1000 in 1916. The names of the following local residents appear on the list of major supporters of the Laboratory at the close of Dr. Davenport's administration: Charles M. Bleecker, Henry W. de Forest, Robert W. de Forest, Marshall Field, George S. Franklin, Childs Frick, August Heckscher, Walter B. James, Walter Jennings, R. C. Leffingwell, William J. Matheson, Acosta Nichols, Mrs. George Nichols, Henry F. Noyes, Arthur W. Page, George D. Pratt, John K. Roosevelt, Mortimer L. Schiff, John H. J. Stewart, Louis C. Tiffany, William K. Vanderbilt, Col. T. S. Williams, and Willis D. Wood.

The Biological Laboratory had been established through the initiative of Mr. Eugene G. Blackford, a leader in the fish-marketing industry and Fish Commissioner of New York State, and of Professor Franklin W. Hooper of the Brooklyn Institute. After Professor Hooper's death, the connection between the Laboratory and the Institute was perceptibly weakened, until finally in 1923 the Laboratory was taken over by a local organization of neighbors, which was incorporated as the Long Island Biological Association. A great deal of the credit for this successful solution of the problem then confronting the Laboratory was due to the initiative, energy, perseverance, and organizing ability of Dr. Davenport. In the reorganization that followed, Dr. Davenport became Secretary of the Association, and for the first time the Laboratory had a full-time director, Dr. Reginald G. Harris being appointed to that position.

Dr. Davenport had the particular gift of being able to make enthusiastic plans for various projects and to pass his enthusiasms on to others. Through their daughter, who was a student at the Laboratory, he met Mr. and Mrs. E. H. Harriman, showed them the work at Cold Spring Harbor, and enlisted their interest in it. Four years later, in 1910, after Mr.

Harriman's death, Mrs. Harriman purchased land, erected a building and established and later endowed a laboratory for the study of human heredity, known as the Eugenics Record Office, of which Dr. Davenport became director. This increased the scientific group at Cold Spring Harbor. In 1918 the Eugenics Record Office was taken over by the Carnegie Institution and combined with the Station for Experimental Evolution to form the Department of Genetics, with Dr. Davenport in charge.

On numerous occasions Davenport was consulted by the neighbors about problems connected with biology and the natural sciences. In 1901 he was in charge of the biological part of the mosquito survey conducted under the auspices of the North Shore Improvement Association. With the help of scientists working at the Biological Laboratory, he made a careful study of the distribution of mosquitoes in an area covering about 75 square miles and prepared an extensive report which served as a basis for control measures.

Davenport was an outstanding scientist. He was a pioneer in the experimental studies of Mendelian inheritance, and made important contributions to science in the fields of genetics and anthropology. With his studies of the fauna of the Sand Spit, he also pioneered in work on animal ecology. He experimented with canaries, chickens, sheep and mice, and also studied the inheritance of eye-, hair-, and skin-color, temperament, stature, build, and twin births in man. During the first World War he served as a major in charge of anthropology in the Surgeon General's Office, and made studies on the physical characteristics of men in the armed services. He published twenty scientific books and more than 400 articles in various scientific journals. His position in the scientific world was recognized by his election to membership in the National Academy of Science, the American Philosophical Society, and many other national and foreign scientific societies. In 1923 he was awarded the gold medal of the National Institute of Social Sciences.

He retained his youthful enthusiasm for work and his driving energy and vigor until the time of his death. After his retirement as Director of the Department of Genetics, he continued with research on the growth and development of humans, and he devoted a great deal of time to the concerns of the Long Island Biological Association. He continued in many ways to serve the community in which he lived. Despite his advanced age, at the outbreak of the present war he immediately volunteered for a full share of Civilian Defense activities. He was an airplane spotter, and carried out his spotting duties throughout the severe winters of 1942 and 1943; he also acted as an Air Raid Warden for his district. His outstanding organizing ability was directed in recent years toward the establishment of the Cold Spring Harbor Whaling Museum, built in 1942; he was a director and the curator of this museum. When, in the early part of this year, the carcass of a whale was washed up on the beach at Greenport, Dr. Davenport secured the head, and in the process of preparing the skull for exhibit at the Museum he caught the cold which may have led to his last illness.

The major part of Dr. Davenport's life was devoted to research in science and to the organization of facilities for the research of others. Therefore it seems very appropriate that the Executive Committee of the

Board of Directors has decided, as a permanent memorial to him, to raise a fund which will be used in support of research. The resolution passed by the Committee is reproduced below:

“Resolved, That the President and the Secretary be authorized to approach members of the Board of Directors, members of the Long Island Biological Association, members of the Women’s Auxiliary Board, colleagues, friends and neighbors of the late Doctor C. B. Davenport, for contributions toward a fund to be known as the Charles Benedict Davenport Memorial Fund, which will be invested in securities and the interest of which will be used at the discretion of the Board of Directors for aiding scientists in the biological field.”

Charles Davenport was born at Stamford, Connecticut, on June 1, 1866. He was the son of Amzi B. and Jane Joralemon Davenport. His father was a teacher, genealogist, agriculturist, and real estate dealer; and his mother was the daughter of John Dimon, carpenter and builder, and a granddaughter of Judge Teunis Joralemon, a leading citizen of Brooklyn, New York. His earliest paternal American ancestor was the Reverend John Davenport, a noted English divine, who sailed from London to Boston in 1637 and later settled at New Haven, Connecticut, of which he, with Theophilus Eaton, was a founder. Abraham Pierson, one of his more recent ancestors, was the first president of Yale College. Dr. Davenport graduated from the Polytechnic Institute, Brooklyn, in 1886, received the A.B. degree from Harvard in 1889, and the Ph.D. degree in 1892. He married Gertrude Crotty, of Burlington, Kansas, in 1893.

THE LONG ISLAND BIOLOGICAL ASSOCIATION

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Vice-President

Arthur W. Page

Secretary

†Charles B. Davenport

Vice-President and Treasurer

Marshall Field

Asst. Treasurer and Auditor

William F. Dean

Director of The Biological Laboratory, M. Demerec

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Marshall Field.....Huntington, N. Y.
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Arthur W. Page.....Huntington, N. Y.
Harlow Shapley.....Harvard University
†William K. Vanderbilt.....Centerport, N. Y.

To serve until 1946

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John M. Schiff.....Oyster Bay, N. Y.
Harold C. Urey.....Columbia University
Willis D. Wood.....Huntington, N. Y.

To serve until 1945

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M. Demerec.....The Biological Laboratory
Henry Hicks.....Westbury, N. Y.
Stuart Mudd.....University of Pennsylvania Medical School
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Acosta Nichols.....Oyster Bay, N. Y.
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Mrs. George S. Franklin.....Cold Spring Harbor, N. Y.
William B. Nichols.....Syosset, N. Y.
Roland L. Redmond.....Oyster Bay, N. Y.
W. W. Swingle.....Princeton University
B. H. Willier.....Johns Hopkins University

†Deceased

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R. C. Leffingwell.....Oyster Bay, N. Y.
Henry L. Stimson.....Huntington, N. Y.
H. E. Walter.....Providence, R. I.

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By contribution of at least \$5,000 in money or property

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Mrs. Leonard Elmhirst	Mrs. Acosta Nichols
Marshall Field	Arthur W. Page
Mrs. Walter B. James	Rockefeller Foundation
Mrs. Otto H. Kahn	John M. Schiff
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Deceased

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Henry W. de Forest	William J. Matheson
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Walter Jennings	Mortimer L. Schiff
John D. Jones	Col. T. S. Williams
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Nicholas F. Brady	Edward Floyd-Jones
Thomas Cochran	Edward S. Harkness
Paul D. Cravath	Mrs. E. H. Harriman
Robert W. de Forest	Reginald G. Harris

†Deceased

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 Wawepex Society
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 Helen M. Wells
 B. H. Willier
 Willis D. Wood
 W. Wilton Wood
 Sewall Wright
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The following, though not members of the Long Island Biological Association, have contributed to the Land and Endowment Fund:

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 Albert D. Silver
 J. G. Dettmer
 William G. Loew
 John Hill Morgan

Acosta Nichols, Jr.
 George Lane Nichols
 C. J. Peabody
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Herman Stutzer

†Deceased

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(By contribution of \$100 or more)

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Mrs. Walter Jennings

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†Deceased

ANOTHER WAR YEAR

The present Annual Report of the Biological Laboratory relates to 1943, the second full year in which the program of our institution has been determined by the needs of a nation at war.

It would be unseemly, nevertheless, to defer until 1945 a notice of the passing, early in the present year, of two of our foremost friends, Mr. William K. Vanderbilt and Dr. Charles B. Davenport. This may best be recorded for our members by quoting from the minutes of meetings of the Directors of the Long Island Biological Association.

The following statement was incorporated in the minutes of the January 24 meeting of the Board:

"The Board of Directors of the Long Island Biological Association, gathered at its winter meeting, records with deep regret the death of William Kissam Vanderbilt, for twenty years a member of the Board and a generous supporter of the work of the Association. The Board appreciates also the contribution that Mr. Vanderbilt made to the community by the establishment of his Marine Museum at nearby Northport, to which all have been freely admitted. The Board extends to his widow its expression of sympathy with her in her bereavement."

At the meeting of the Executive Committee of the Board of Directors held on February 28, 1944, the following resolution was adopted:

"Be it resolved, That the Directors of the Long Island Biological Association record with a sense of irreparable loss the death, on February 18, 1944, of Dr. Charles Benedict Davenport.

"Among the foremost of American men of science, Dr. Davenport was for forty years a resident of Cold Spring Harbor. From 1898 until 1923, he served as director of the Biological Laboratory, and from 1904 until 1934 as director also of our neighbor-organization, the Department of Genetics of the Carnegie Institution of Washington. To a greater extent than any other individual, he was, indeed, the founder of both these institutions.

"Retirement from executive responsibility brought no slackening in the interest and labor of Dr. Davenport for the cause of the Biological Laboratory. Throughout periods of discouraging outlook, of disappointment and deep personal sorrow, no less than during the happier years, he held faith in the importance and assured success of our common aim. As Secretary of the Board from 1923 until his 78th year, Dr. Davenport maintained his health and enviable vigor, his sound judgment, foresight and complete self-effacement. Among all his fellow-workers and neighbors his memory will stand for high attainment and for an abiding example of integrity, helpfulness and warmth of heart.

"Be it further resolved that a copy of this resolution be sent to the members of Dr. Davenport's family."

A more detailed appreciation, from the pen of Dr. Oscar Riddle, was published in 'Science' of June 2, 1944. Plans are under way for the creation at the Laboratory of a memorial that will be in harmony with Dr. Davenport's own kindly and modest temperament.

The report of the Director, Dr. Demerec, should be read for a summary of the year's research—to whatever extent he is at present permitted to reveal its nature. It is at least gratifying to learn that studies on the protoplasmic cell, the dynamics of animal populations, the varying rates of mutability of certain genes, and the influence of hormones on the development of transplanted organs have not been wholly crowded out by the urgency of combat requirements. The continued investigations in pure science, even though of relatively small scale, represent the Ariadne's thread by which we shall be led back to the normal world after the modern counterpart of the Minotaur has been slain.

Robert Cushman Murphy, President
Long Island Biological Association, Inc.

REPORT OF THE DIRECTOR

The year 1943 was filled with uncertainty for educational institutions and summer laboratories such as ours. Young men were being drafted into military service; college courses were accelerated and reorganized to fit special training programs; and research scientists were called to assist in war projects. Adaptation to these new circumstances was not complete by the time that plans for our summer program were being made; therefore planning was difficult and there were many successive changes in the list of guest scientists expected.

A preliminary survey indicated that leading scientists were so preoccupied with duties brought about by the war that it would scarcely be possible to arrange a meeting of broad scope lasting for several days. Therefore, the Scientific Advisory Committee recommended, and the Executive Committee decided, that the Symposium should be omitted in 1943, and thereafter until conditions again become favorable for the leisurely discussion of scientific topics. A similar decision was announced by several other groups that usually hold meetings comparable to our Symposia.

War Research

The Laboratory participated significantly in war research. It cooperated with the Airborne Instruments Laboratory of the Columbia University Division of War Research, by making available to them the Walter B. James Biophysical Laboratory, the Urey Cottage, and the Davenport Laboratory for use in experimental work. Thus a part of our laboratory space has been occupied by a group of between twenty and thirty physicists who are working on the production of new tools important to the prosecution of the war.

The Laboratory participated directly in war research through a contract with the Chemical Warfare Service. Funds used in this work were contributed by the Josiah Macy, Jr. Foundation and by the War Department. Altogether, two contracts have been executed, and one of these is still in effect through a third renewal. A total of \$32,800 has been appropriated for the work. The George Lane Nichols Memorial Laboratory is used as headquarters for these experiments; and Dr. J. S. Potter, staff member of the Department of Genetics of the Carnegie Institution; Dr. Vernon Bryson, and Mr. Sidney Laskin are working full time on the project. In addition, Dr. Frank Fremont-Smith, of the Macy Foundation, and the Director of the Laboratory are taking part in this work.

The Laboratory has cooperated with the Research Laboratory of the Chemical Warfare Service in New York, by making laboratory space available to it for the preparation of equipment, which was then tested on the Sand Spit.

Research

Although our Laboratory was as active in research during the past year as at any other time in its history, there is comparatively little that I am at liberty to report upon here. The greater part of the work dealt with war problems and is therefore confidential. We may learn about it later, when peace comes again; or we may hear of instruments used in the war that have been developed at our Laboratory.

A number of visitors were able to spend only brief periods at the Laboratory, and a few worked here during most of the summer. Of these, Dr. Leo M. Meyer, of Brooklyn, New York, began preliminary experiments to study the effect of methyl acetamide and parachlorxylerol on the bone marrow of rats and doves. Previous work on rats and humans indicated an increase in the circulating leukocytes, particularly the polymorphonuclear cells, following simultaneous injection of both chemicals. Because of technical difficulties, studies on the bone marrow constituents were not made, but the stimulating effect on the peripheral blood was confirmed. Dr. Meyer plans to continue this work during the summer of 1944. He devoted some time also to a survey of the literature on the plasma cell and the various types of neoplasm which may develop from it. A paper was prepared and is to be published in the *Annals of Internal Medicine*.

Dr. Ernst Mayr, of The American Museum of Natural History, New York City, spent part of the summer working with *Drosophila*. He plans to use this material for studies of the dynamics of populations, and came to the Laboratory to acquire experience in the methods used in experimental work with *Drosophila*.

Dr. James Neel, of the University of Rochester, stayed at the Laboratory during a brief vacation between two terms, and worked on manuscripts he was preparing for publication.

Dr. Myron Gordon, of the New York Zoological Society, was again in charge of the Wildlife Study Course. A statement covering this activity will be found later in the report.

Dr. S. Zamenhof, of New York City, continued with his studies of the influence of chemicals on the mutability of certain genes in *Drosophila virilis*. Unstable genes were found to be very suitable for this study because their high mutability rate yields more significant data for a given number of examined flies than would be possible with the C1B method. This year the influence of chemicals on germinal mutations of the unstable gene *mt-3a* (*Drosophila virilis*) was investigated. Altogether, 74,259 flies carrying unstable genes were examined and 3,649 mutants found. Flies raised on food containing 0.1% CuSO_4 , or no food made alkaline (pH = 9 to 14) by means of NaOH or NH_4OH , show a significant decrease of mutability; this was found both in mass and in individual cultures. The chemicals themselves probably cannot penetrate into the nuclei of the germ cells, and therefore the decrease of mutability is probably attributable to some general disturbance of the organism. A similar decrease of mutability in unstable genes as a result of temperature disturbances has also been reported.

Dr. Alfred Mirsky, of the Rockefeller Institute for Medical Research, New York City, utilized time spent at the Laboratory for writing a manuscript and for conferences with members of the Laboratory and of the Department of Genetics.

Mr. Philip Kotlar, of the Fieldston School, New York City, gathered information and material for his biology teaching program.

Mr. Dietrich Bodenstern completed experiments dealing with developmental studies of transplants of various organs of *Drosophila* and of the influence of hormones on the development of these organs.

Lectures

As in the past, technical lectures were given weekly by members of the Laboratory and members of the Department of Genetics. In order to make them accessible to those who work at the laboratories but live at a distance, the lectures were scheduled for Thursday afternoon, rather than Thursday evening as in previous years. The lectures were again arranged as joint meetings with the Journal Club of the Department of Genetics, with Dr. Ugo Fano acting as chairman. Titles of the lectures are listed below:

June 10: Harry E. Warmke, Department of Genetics. Some studies on the Russian dandelion.

June 17: James Neel, University of Rochester. Problems in human genetics.

June 24: L. Marinelli, Memorial Hospital, New York, New York. Some therapeutic and experimental uses of radioactive isotopes.

July 2: Ernst Mayr, The American Museum of Natural History. Modern methods in Zoogeography.

July 8: Dietrich Bodenstern, Guggenheim Fellow. Some new facts about the action of hormones in *Drosophila*.

July 15: J. Gordon Carlson, University of Alabama. Some observations on mitosis in the living grasshopper cell.

July 22: S. E. Luria, Indiana University. Mutation of bacteria from virus-sensitivity to virus-resistance.

August 5: A. E. Mirsky, Rockefeller Institute. Some observations on chromatin.

August 19: A. Hollaender, National Institute of Health. Methods of determining airborne microorganisms.

August 26: Myron Gordon, The American Museum of Natural History. The origin of new varieties of fishes under domestication.

Because of transportation difficulties, the general evening lectures were omitted this year.

Scholarships

The John D. Jones Scholarship supported the work of Dietrich Bodenstern; while the Dorothy Frances Rice and the Temple Prime Scholarships were used to provide for the laboratory expenses of other members.

Other Activities

Restrictions resulting from the war, and particularly the rationing of gasoline, affected the activities of our group more this year than during the previous summer. There was very little chance for the members of the Laboratory to make excursions in the neighborhood, or for neighbors to visit the Laboratory. These contacts were greatly missed.

Community victory gardens were grown on the plot received as a gift from Mrs. Henry W. de Forest, and many members of the group took advantage of this opportunity to raise their own vegetables.

Mrs. Alfred Mirsky stimulated interest in music among the members of the group, by giving free instruction in the playing of recorders and by organizing group playing for children and adults.

Dining Room

Owing to the labor shortage, rationing difficulties, and the fact that the Symposium was not held this year, it was found impractical to open the Blackford Hall dining room. Members of the Laboratory who were here for short periods or were unable to provide meals for themselves, were accommodated at the dining room of the Department of Genetics, Carnegie Institution.

Laboratories and Equipment

Since three of our laboratory buildings were occupied for war research, only two were available for summer use. Of these, the Wawepex Laboratory was used by the Wildlife Study Course and the John D. Jones Laboratory by visiting research workers. A considerable amount of new equipment was acquired for permanent possession in connection with the war research carried on by the Laboratory.

Buildings and Grounds

This year was again an important one for the physical growth of the Laboratory. A tract of land containing about $7\frac{1}{4}$ acres was sold to us on very generous terms by Mrs. Henry W. de Forest; the funds necessary for this purchase were contributed by the Rockefeller Foundation and the Carnegie Corporation. The tract is situated west of the Sand Spit and, together with the Sand Spit and the Henry W. de Forest Gift, forms a unit of about $22\frac{3}{4}$ acres of very choice land at the southwestern head of the harbor. On this newly acquired land stands the fine fifteen-room residence known as "Airsleie", which was built in 1806 by Major William Jones and which now serves as a home for the director and his family.

Repairs to buildings during the year included reconstructing the front porch and reinforcing the foundation of the Williams House, and rebuilding a small porch on the Hooper House. Extensive repainting was done at Airsleie; and a number of rooms in several of the apartments were repainted.

Acknowledgments

Acknowledgment is due here to Mrs. Henry W. de Forest for the very generous terms of the sale of land of Airsleie to the Association; and to the Rockefeller Foundation and the Carnegie Corporation for the grants that made this purchase possible.

It gives me great pleasure to acknowledge the support given to the Laboratory by the members of the Long Island Biological Association. It is due primarily to their interest and generosity that the Laboratory has become an outstanding scientific center and is continuing in that status.

The Women's Auxiliary Board, under the presidency of Mrs. George S. Franklin, made an important contribution toward the support of the scientific work of the Laboratory; and the House Committee of the Board, under the chairmanship of Mrs. Percy H. Jennings, collected furniture for residences and contributions for the purchase of additional furnishings.

Acknowledgement is also made of the contribution of the Wawepex Society toward the upkeep of buildings and grounds, of the John D. Jones Scholarship maintained by that Society, and of the special library fund contributed this year.

The Laboratory is grateful to the Josiah Macy, Jr. Foundation for its grant in support of the war project.

We wish to acknowledge also the assistance given by the Carnegie Institution, and particularly the opportunity for close cooperation with the Department of Genetics, which is proving very helpful to the work of the Laboratory.

M. Demerec, Director

WILDLIFE STUDY COURSE FOR YOUNG PEOPLE

Dr. Myron Gordon

New York Zoological Society, New York, N. Y.

The purpose of the Wildlife Study Course is to acquaint young people with the rich and varied plant and animal life within the Cold Spring Harbor area and to help them relate the natural life about them to their own experiences.

The Biological Laboratory is situated at the center of a variety of ecological areas, and thus is admirably located for the study of wildlife. Organisms from both fresh and salt water may be collected and studied. Heavily forested areas and open meadows provide contrasting types of vegetation, which in turn give shelter to a number of animal communities. The sandy beaches of the Sand Spit and the shores of nearby fresh-water lakes provide a contrast in the types of organisms living at each locality. All of these ecological areas are within a short walking distance of Wawepex Laboratory, the headquarters of the Wildlife Study Course.

The Wildlife Course Under Wartime Conditions

Owing to the acute gasoline shortage, the number of students attending the Wildlife Study Course was considerably reduced. In previous years over 40 students took the course, but this year there were only 10 who completed the term's work. Instead of conducting three classes, as was done in other years, we held only one class.

As before, the class was conducted chiefly in the field. Every effort was made to continue observations in the laboratory of the material collected. Many living specimens of plants and animals were maintained for varying lengths of time in aquaria and terraria provided by the Laboratory. The life requirements of the organisms collected, in terms of food, water, oxygen, and other details, were learned from day to day.

During the course of the work, the class collected and maintained a sunfish, eels, and many killifish. A box turtle and a painted turtle were kept in a large aquarium specially furnished with earth and mosses for their welfare. Frogs of several species were kept in another aquarium. Many tadpoles, which were collected during the early part of the studies, later developed into young frogs. The students were urged to take specimens home, provided they promised to take care of their living charges. A mosquito breeding-spot was found not far from the Wawepex Laboratory in a woodland pool. The mosquito eggs were collected and brought to the laboratory, where they hatched into wriggler larvae; these in turn transformed into the adult, flying insects. The life cycle of the mosquito thus became quite real to the students, who were then more appreciative of the relationship of mosquitoes to the problem of human malaria.

The Field Trips

1. The Sand Spit and life along the seashore: shells of mollusks, crustaceans; scavenger shrimps, springtail insects, fiddler crabs.

2. The life of fresh-water lakes: sunfish nests and spawning, aquatic insects, jewel weeds and other aquatic plants.
3. Life in a running brook: salamanders; a trip to the fish hatchery and the story of the brook trout and fish conservation.
4. Life in and along a stagnant farm pond: the story of the teeming populations in an area seemingly without life.
5. Life in the transition zone between fresh and salt water: a study of tolerance for salt conditions.
6. Evidences of life cast up along the seashore by the outgoing tide: the daily toll of life and its disposal.

In the walks to and from the particular ecological areas visited, casual comments were made as interesting specimens of plants or animals appeared. The work of the insect gall makers on many species of plants was explained. In some instances the larvae were surprised in the galls they had made. In other instances no larvae were caught, yet the evidences of their work could be seen in the dissected gall. The work of other larval insects was also pointed out, particularly that of the leaf miners. These could best be seen by holding leaves with their scroll-like markings up to the light. In most instances the larva could be seen continuing his work between the upper and lower layers of a thin leaf. The songs of many birds were heard, some of which the students tried to imitate. Nests of the robin and cat-bird were found.

The feature of the sand spit trip was the seining for specimens not far from the shore. Each student participated in hauling the seine, and learned the proper technique of its use and care. The class learned that killifish are hardy, whereas flounders and silversides are extremely delicate, barely surviving the trip from the shore to the laboratory. On this trip the homes of the fiddler crabs were discovered. Several were brought back to the laboratory, and they proved to be quite hardy. They demonstrated the habits of a scavenger species.

The second field trip was made along the fresh-water lakes near the New York State Fish Hatchery. The nesting sites of sunfish were pointed out. We had the opportunity of seeing yellow perch and the large-mouthed black bass. The temporary nature of fresh-water lakes was explained, for these water areas are constantly invaded by the encroaching vegetation along the shores. Special attention was given to the alders, willows, and the rank growth of touch-me-nots, trillia, false Solomon's-seal, and other swamp plants.

In another field trip an exploration of the stream between the second and third lakes was made. The water is considerably cooler than that of the lake; for it is in a heavily wooded area, protected from the heat of the sun, and in addition many small, cold springs run into the stream. The prime purpose of this trip was the search for salamanders, which were found in great numbers underneath stones lining the shore. These were captured and brought back to the laboratory, where they were maintained in a terrarium fitted to suit their life requirements. The class learned that certain organisms seek cold waters while others seem to do better under higher temperatures. The rich life of a flowing stream was demonstrated

to the class by the simple expedient of picking up stones at random and studying the number and kinds of organisms that had made their homes there. At first glance nothing could be seen, but upon closer inspection the wealth of life discovered there was surprising. The larval forms of many insects were chiefly represented, and these are of great economic importance to man owing to the fact that some of them in their winged forms are biting pests. Both these and the harmless kind furnish food for fishes, such as trout. Caddis-fly cases were found, as well as the silk-net makers—the hydrophilids. The thick, leech-like larva of the crane fly demonstrated its marked ability to squeeze out of tight places by working its way out of a moistened but tightly closed fist.

Life in and along a stagnant farm pond was explored. At first glance there seemed to be little life, except for the dragonflies that hovered over the water and the floating duckweed on the surface. By wading into the pond, and using two types of nets—one fine and the other coarser—the teeming life within the water was easily discovered. A long-handled net made of fine bolting cloth was first employed, passing it back and forth through the thick growth of aquatic weeds. Backswimmers, whirligig beetles and leeches were easily trapped. The catch was emptied into a large, shallow, white photographic tray where the various small animals could be seen to best advantage. For the even smaller forms of life, the water was passed through the finer-meshed net and collected in a fruit jar. This was then held against the light, and the myriad tiny forms of life could easily be seen. When, in the laboratory, these minute forms of life were inspected under a microscope of low magnification, the members of the class saw daphnids, copepods, rotifers, the phantom larvae of the insect *Corethra*, and others. The theme of the farm fish-pond was discussed, and it was pointed out that the teeming population of the pond could support a large number of food fish.

One of the most unique collecting localities lies in the strip of territory beginning at the waterfall at the outlet of the third lake and following the water-course until it enters the Inner Harbor. Here the fresh waters from the lake meet the salt water of the Sound. The gradual transition in salinity is reflected in the number and kinds of organisms found at various stages downstream and in the harbor proper. Sunfish were seined in the region immediately below the falls, but none were found away from this locality; whereas eels were found both here and in normal sea water. There was a sharp distinction in the distribution of the fresh-water snails and the marine snails. This year's class failed to find stickleback, which were quite common a year ago. In the fresh waters *Onadonta* clam shells were found; in the salt water of the harbor, oyster shells and typical marine shells were gathered, indicating a sharp division of habitat for the forms.

The walk along the shore to the west of the Sand Spit at low tide was particularly instructive, not only for the study of intertidal species, such as the barnacles, but also because of wreckage left by the outgoing tide. On the day of our trip, the beaches were littered with hundreds of freshly killed fish of several species: flounders, silversides, tautogs, and sculpins. From their fresh condition it seemed that they had died during

the night. Many birds were seen; of most interest were the sandpipers that ran along the beaches and then took to the wing upon our approach, flying to the next sandy area far ahead or far behind us. Collections of sea shells were made, supplementing previous collections.

The following is a list of the students enrolled in the course:

Abramson, Sandra
Abramson, Sandy
Bodenstein, Evelina
Dobzhansky, Sophie
Kaufmann, Anders

Laanes, Ann
Laanes, Carl
Meyer, Brenda
Sansome, John
Soper, Tappen

COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE
BIOLOGY

List of Published Volumes

- *Vol. I (1933) Surface Phenomena 239 pp.
- Vol. II (1934) Growth 284 pp.
- Vol. III (1935) Photochemical Reactions 359 pp.
- Vol. IV (1936) Excitation 376 pp.
- *Vol. V (1937) Internal Secretions 433 pp.
- Vol. VI (1938) Protein Chemistry 395 pp.
- Vol. VII (1939) Biological Oxidations 463 pp.
- Vol. VIII (1940) Permeability and the Nature of Cell Membranes 285 pp.
- Vol. IX (1941) Genes and Chromosomes 315 pp.
- Vol. X (1942) The Relation of Hormones to Development 160 pp.
- *Out of print

LABORATORY STAFF

Bryson, Vernon—Research biologist
Demerec, M.—Director
Dorsey, Henry—Laborer
Holmes, Joseph—Outside handyman
Klem, Dorothy V.—Secretary
Laskin, Sidney—Biophysicist
Potter, James S.—Investigator
Reddy, William—Laborer
Skinner, Elizabeth—Clerical assistant

SUMMER RESEARCH INVESTIGATORS

Meyer, Leo—Brooklyn, N. Y.
Mayr, Ernst—American Museum of Natural History, New York, N. Y.
Neel, James V.—Rochester University, Rochester, N. Y.
Gordon, Myron—New York Zoological Society, New York, N. Y.
Zamenhof, S.—New York, N. Y.
Mirsky, Alfred—The Rockefeller Institute, New York, N. Y.
Kotlar, Philip—Fieldston School, New York, N. Y.
Bodenstein, Dietrich—Guggenheim Fellow

REPORT OF THE SECRETARY

The 45th meeting of the Board of Directors was held at the Down Town Association in New York City on January 27, 1943. President Murphy expressed the satisfaction of the Board in the recent appointment of Dr. Demerec, Director of the Laboratory, to the directorship of the Department of Genetics of the Carnegie Institution. He also referred with gratification to the return to the Board of Mrs. Merle-Smith, and to the new members Professors Dobzhansky and Willier. The President referred to the gift made by Mrs. Henry W. de Forest consisting of the Sand Spit, nine acres of upland, and a building which has been made into two apartments; and also to the contribution of the Rockefeller Foundation of \$5,000 toward the purchase of additional adjoining land with house. Mr. Roland L. Redmond was elected a member of the Board of Directors, to serve until 1944. The Report of the Treasurer was read by the Director of the Laboratory. The Director also presented the budget of the Laboratory for 1943, which was adopted. It was voted that the residence building hitherto known as the Fire House be named the Reginald Gordon Harris House to commemorate the name of a former Director of the Laboratory. It was voted also that the new building on the land given by Mrs. de Forest be named the Henry W. de Forest Building, and the private road leading to it be named de Forest Lane. Dr. Demerec reported on the scientific work at the Laboratory, including the arrangements made with the Airborne Instruments Laboratory of Columbia University for the use of the Walter B. James Laboratory for war research, and the contracts of the Laboratory with the War Department to continue work on the aerosol project.

A meeting of the Executive Committee was held on March 15, 1943, at the Down Town Association. The committee appointed on January 27 to consider matters relating to the financial statements of the Association made its report, which was adopted. The Director of the Laboratory presented a statement concerning the two war projects being carried out at the Laboratory. The financing of the purchase from Mrs. Henry W. de Forest of a residence and land was considered. Dr. Demerec reported the recommendation of the Scientific Advisory Committee that the usual summer Symposium be omitted in 1943.

The 20th Annual Meeting of the Association was held on July 27, 1943, at the John D. Jones Laboratory. The Secretary gave a summary of the acts of the Board of Directors and the Executive Committee for 1942, and the acts were voted approved. A report of the work of the Laboratory for the past year was presented by the Director. The following were elected members of the Board of Directors, to serve until 1947: Charles M. Bleecker, Marshall Field, Ross G. Harrison, Arthur W. Page, and William K. Vanderbilt. It was voted to establish the honorary class of Directors Emeriti, to which members may be elected by the Board of Directors from among past members of the Board.

The 46th meeting of the Board of Directors was held at the George Lane Nichols Memorial Laboratory on July 27, 1943. Professor H. E.

Walter was elected a Director Emeritus, and Dr. B. P. Kaufmann was elected a member of the Board, to serve until 1947. Mrs. George S. Franklin was appointed President of the Women's Auxiliary Board for 1944.

Charles B. Davenport, Secretary

REPORT OF THE TREASURER

The Treasurer reports total income for the year of \$43,676.81 and disbursements of \$33,367.63.

The Women's Auxiliary Board, under the leadership of Mrs. George S. Franklin, President; Mrs. Van Santvoord Merle-Smith, Vice-President; Mrs. Alvin Devereux, Secretary; Mrs. Gordon Rentschler, Treasurer; Mrs. Percy H. Jennings, Chairman of the House Committee; and Mrs. John C. Hughes, Chairman of the Membership Committee, contributed \$1310.00 to the work of the Laboratory and also made many valuable gifts of furnishings for the houses on the grounds.

The Wawepex Society continued its annual grant, this year of \$1,250 plus \$250.00 for the John D. Jones Scholarship and \$200.00 for Library expenses. Officers of the Wawepex Society are: Charles M. Bleecker, Governor; Jesse Knight, Scribe; and T. Bache Bleecker, Custodian. In addition to its annual financial support, the Wawepex Society leases certain lands and buildings to the Association, free of rent, and carries the insurance on these buildings.

Mr. William F. Dean audited the books for the year. The balance sheet and income-and-expense accounts of the Association follow herewith:

BALANCE SHEET

ASSETS

Current:

Cash in Banks	15,293.70	
Accounts Receivable	1,059.06	
		16,352.76

Securities held by Bankers Trust Co.:

U. S. Saving Bonds Series G	14,000.00	
Other Securities	8,856.00	
		22,856.00

Securities held by N. Y. Community Trust:

Walter B. James Bequest		5,000.00
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Land:

Land Purchased	69,630.52	
Land on 50-year lease	13,500.00	
Henry W. de Forest Gift	12,000.00	
Land (improvements)	2,898.01	
Land (Airlsie)	5,000.00	
		103,028.53

Buildings:	
Blackford Hall*	19,000.00
Jones Laboratory*	10,000.00
Davenport Laboratory	8,500.00
George Lane Nichols Memorial Laboratory ..	13,700.00
Williams House	11,300.00
Stewart Cottage	3,000.00
Hooper House*	13,200.00
Wawepex Laboratory*	7,500.00
Osterhout Cottage*	5,500.00
Dr. Walter B. James Laboratory.....	13,500.00
Reginald G. Harris House.....	8,500.00
Urey & Cole Cottages	4,765.00
Henry W. de Forest Building	15,000.00
Machine Shop and Garage	2,000.00
Airslie	5,000.00
	<hr/>
	140,465.00

Equipment:	
General	38,577.27
Biophysics	16,849.90
Physiology	2,513.15
	<hr/>
	57,940.32

* Situated on property on 50 years' lease from Wawepex Society 345,642.61

LIABILITIES

Current:	
Accounts Payable	2,541.04
War Research Project	4,020.27
Library Fund	177.70
Rockefeller Symposia Fund Interest	300.00
	<hr/>
	7,039.01

Special Funds:	
Blackford Memorial Fund	5,000.00
Temple Prime Scholarship Fund	2,500.00
Dorothy Frances Rice Fund	2,000.00
Dr. William J. Matheson Fund	20,000.00
Rockefeller Symposia Fund	12,000.00
	<hr/>
	41,500.00

Special Fund—in trust:	
Dr. Walter B. James Fund	5,000.00

Balance:	
Long Island Biological Association	152,950.32
Value of Leasehold—Wawepex Society	39,153.74
January 1, 1943	93,521.54
Gain in Capital—December 31, 1943	6,478.00
	<hr/>
	292,103.60

345,642.61

Income and Outgo — Year Ended December 31, 1943

	TOTAL		NET	
	Received	Paid	Received	Paid
Balance forward from 1942:				
Cash in Banks	5,592.67			
Payables and Receivables	538.06	2,628.19		
	6,130.73	2,628.19	3,502.54	
Current Accounts: ..				
Dues and Contributions	3,265.49		3,265.49	
Women's Auxiliary Board	1,310.00		1,310.00	
Wawepex Society	1,250.00		1,250.00	
W. B. James Bequest	229.28		229.28	
W. J. Matheson Bequest	375.00		375.00	
Research	1,900.00	25.79	1,874.21	
Sale of Books	3,344.40	187.50	3,156.90	
Scholarships:				
John D. Jones	250.00	250.00		
Dorothy F. Rice	75.00	75.00		
Temple Prime	75.00	75.00		
Summer Course	76.00	50.00	26.00	
Dining Hall	316.65		316.65	
Insurance		592.69		592.69
Residences and Dormitories				
R. G. Harris House	468.75	246.51	222.24	
Hooper House	422.80	515.41		92.61
Williams House	610.50	671.37		60.87
Osterhout Cottage	480.00	39.50	440.50	
Urey Cottage	412.46	132.77	279.69	
Cole Cottage	237.43	160.64	76.79	
Stewart Cottage	579.20	191.97	387.23	
H. de Forest Building	798.20	288.98	509.22	
"Airsie"	416.67	604.55		187.88
Allocated to D. F. Rice and				
T. Prime Scholarships		150.00		150.00

Lab. Buildings and Grounds	842.32	4,089.52		3,247.20
de Forest Property Taxes		604.49		604.49
Deed—Fricke's land		15.00		15.00
General Expenses:				
Admin. Expenses		274.06		274.06
Admin. Salaries		1,664.00		1,664.00
Telephone and Stamps		170.78		170.78
Stationery and Printing		356.41		356.41
Capital and Special Accounts				
Library	200.00	22.30	177.70	
Symposia Fund Interest	300.00		300.00	
Purchase de Forest Prop.	10,000.00	10,005.06		5.06
War Project	15,296.17	11,892.43	3,403.74	
" " Balance 1942 *	(616.53)		(616.53)	
Payable and Receivables 1942	145.49	15.90	129.59	
	<u>43,676.81</u>	<u>33,367.63</u>	<u>17,730.23</u>	<u>7,421.05</u>
Deduct—Payments			7,421.05	
Excess Receipts over Payments			10,309.18	
Add—Balance of January 1, 1943			3,502.54	
Balance December 31, 1943	15,293.70			
Payables and Receivables	1,059.06	2,541.04		
	<u>16,352.76</u>	<u>2,541.04</u>	13,811.72	
Deduct: Special Receivable				
Accounts shown above		4,497.97		
Land Sold (1942)		250.00		
Total Reserved Balance			4,747.97	
			<u>4,747.97</u>	
				<u>9,063.75</u>
				Net Balance

* The balance of \$616.53 is carried forward from last year, making the total balance \$4,020.27 available on the War Project.

SPECIAL FUNDS

TEMPLE PRIME SCHOLARSHIP FUND

Donor: Cornelia Prime. Original Principal, \$2,500. (1913)

"In memory of my brother, Temple Prime, the entire annual income to be expended each year for the payment of the tuition and other expenses of a male, or female, student in biology, who is working at the Laboratory at Cold Spring Harbor, New York, during that year."

Allocated, 1943	\$75.00
Scholarship, support of research	75.00

BLACKFORD MEMORIAL FUND

Bequest of Frances L. Blackford. Principal, \$5,000. (1924)

". . . to be used in the maintenance of the Blackford Memorial at Cold Spring Harbor, Long Island, as the trustees may deem to be for the best interest of said Memorial."

No income, 1943

DOROTHY FRANCES RICE FUND

Donor: Oran W. Rice. Original Principal, \$2,000. (1926)

Income to be applied as follows: (1) one-sixth to be added annually to principal of fund, (2) remaining five-sixths to be paid over each year to a woman student, preference of selection being given to students working in the botanical sciences and particularly worthy of such recognition.

Allocated, 1943	\$75.00
Scholarship, support of research	75.00

DR. WALTER B. JAMES FUND

Bequest, in trust, of Dr. Walter B. James. Principal, \$5,000. (1927)

"I give and bequeath Five Thousand Dollars (\$5,000) to the Equitable Trust Company, in trust. . . I desire the net income thereof to be devoted to the support of Long Island Biological Association of Cold Spring Harbor Long Island."

Invested by Trustee, Equitable Trust Company, New York.

Received, 1943	\$229.28
Transferred to Income Account	229.28

DR. WALTER J. MATHESON FUND

Bequest of Dr. William J. Matheson. Bequest, \$20,000.

Cost of securities, \$20,116.18. (1931)

"I give and bequeath to Biological Laboratory, of Cold Spring Harbor, Long Island, for its endowment fund, the sum of Twenty Thousand Dollars."

Interest, 1943	\$375.00
Transferred to Income Account	375.00

Marshall Field, Treasurer

William F. Dean, Assistant Treasurer and Auditor

