THE BIOLOGICAL BULLETIN
PUBLISHED BY THE MARINE BIOLOGICAL LABORATORY

THE MARINE BIOLOGICAL LABORATORY
Sixty-first Report, for the Year 1958—Seventy-first Year

I. Trustees and Executive Committee (as of August 15, 1958) .... 1

Standing Committees
II. Act of Incorporation ........................................... 4
III. By-Laws of the Corporation .................................... 4
IV. Report of the Director .......................................... 6
   Statement ................................................................ 7
   Memorial ................................................................... 9

Addenda:
   1. The Staff ............................................................. 9
   2. Investigators, Lalor and Lillie Fellows, and Students ...... 12
   3. Fellowships and Scholarships .................................. 23
   5. Institutions Represented ......................................... 24
   6. Evening Lectures .................................................. 26
   7. Shorter Scientific Papers (Seminars) .......................... 26
   8. Members of the Corporation ..................................... 28

V. Report of the Librarian .............................................. 47

VI. Report of the Treasurer ............................................ 48

I. TRUSTEES

EX OFFICIO

GERARD SWOPE, JR., President of the Corporation, 570 Lexington Ave., New York City
A. K. PARPART, Vice President of the Corporation, Princeton University
PHILIP B. ARMSTRONG, Director, State University of New York, Medical Center at
Syracuse
C. LLOYD CLAFF, Clerk of the Corporation, Randolph, Mass.
JAMES H. WICKERSHAM, Treasurer, 530 Fifth Ave., New York City

EMERITI

EUGENE DUBoIS, Cornell University Medical College
G. H. A. CLOWES, Lilly Research Laboratory
W. C. CURTIS, University of Missouri
ROSS G. HARRISON, Yale University
E. B. HARVEY, 48 Cleveland Lane, Princeton, N. J.
E. NEWTON HARVEY, Princeton University
M. H. JACOBS, University of Pennsylvania School of Medicine
F. P. KNOWLTON, Syracuse University
W. J. V. OSTERHOUT, Rockefeller Institute
LAWRASON RIGGS, 74 Trinity Place, New York 6, N. Y.

TO SERVE UNTIL 1962
FRANK A. BROWN, JR., Northwestern University
SEARS CROWELL, Indiana University
ALBERT I. LANSING, University of Pittsburgh Medical School
WILLIAM D. MCELROY, Johns Hopkins University
C. LADD PROSSER, University of Illinois
S. MERYL ROSE, University of Illinois
MARY SEARS, Woods Hole Oceanographic Institution
ALBERT TYLER, California Institute of Technology

TO SERVE UNTIL 1961
D. W. BRONK, Rockefeller Institute
G. FAILLA, Columbia University, College of Physicians & Surgeons
ERIC BALL, Harvard University Medical School
R. T. KEMPTON, Vassar College
L. H. KLEINHOLZ, Reed College
IRVING M. KLOTZ, Northwestern University
ALBERT SZENT-GYÖRGYI, Marine Biological Laboratory
WM. RANDOLPH TAYLOR, University of Michigan

TO SERVE UNTIL 1960
H. F. BLUM, Princeton University
K. S. COLE, National Institutes of Health
L. V. HEILBRUNN, University of Pennsylvania
S. W. KUFFLER, Johns Hopkins Hospital
C. B. METZ, Florida State University
G. T. SCOTT, Oberlin College
A. H. STURTEVANT, California Institute of Technology
E. ZWILLING, University of Connecticut

TO SERVE UNTIL 1959
E. G. BUTLER, Princeton University
C. LALOR BURDICK, The Lalor Foundation, Wilmington, Delaware
D. P. COSTELLO, University of North Carolina
H. HIBBARD, Oberlin College
M. KRAHL, University of Chicago
D. MARSLAND, New York University, Washington Square College
R. RUGH, Columbia University, College of Physicians and Surgeons
H. B. STEINBACH, University of Chicago
TRUSTEES

EXECUTIVE COMMITTEE OF THE BOARD OF TRUSTEES

Gerard Swope, Jr., ex officio, Chairman
James H. Wickersham, ex officio
Arthur K. Parpart, ex officio
P. B. Armstrong, ex officio
E. G. Butler, 1959
K. S. Cole, 1959

Rudolf Kempton, 1960
Edgar Zwilling, 1960
W. D. McElroy, 1961
F. A. Brown, Jr., 1961

The Library Committee

Mary Sears, Chairman
R. E. Taylor
Grover Stephens

E. G. Butler
Ralph H. Cheney
Seymour Cohen

The Apparatus Committee

C. Lloyd Claff, Chairman
Albert I. Lansing

W. D. McElroy

The Supply Department Committee

Rudolf Kempton, Chairman
C. B. Metz

Robert D. Allen
L. V. Heilbrunn

The Evening Lecture Committee

Philip B. Armstrong, Chairman
Eric G. Ball

L. V. Heilbrunn
W. D. McElroy

The Instruction Committee

S. Meryl Rose, Chairman
L. H. Kleinholz
Bostwick H. Ketchum

Irving Klotz
C. Ladd Prosser

The Buildings and Grounds Committee

Ralph Wichterman, Chairman
Sears Crowell

Harry Grundfest
Edgar Zwilling

The Radiation Committee

G. Failla, Chairman
Walter L. Wilson
Roberts Rugh

Mones Berman
Roger Greif
Walter Vincent

The Research Space Committee

P. B. Armstrong, Chairman
Arthur K. Parpart

Frank A. Brown, Jr.
Mac V. Edds
II. ACT OF INCORPORATION

No. 3170

COMMONWEALTH OF MASSACHUSETTS

Be It Known, That whereas Alpheus Hyatt, William Sanford Stevens, William T. Sedgwick, Edward G. Gardiner, Susan Minns, Charles Sedgwick Minot, Samuel Wells, William G. Farlow, Anna D. Phillips, and B. H. Van Vleck have associated themselves with the intention of forming a Corporation under the name of the Marine Biological Laboratory, for the purpose of establishing and maintaining a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history, and have complied with the provisions of the statutes of this Commonwealth in such case made and provided, as appears from the certificate of the President, Treasurer, and Trustees of said Corporation, duly approved by the Commissioner of Corporations, and recorded in this office;

Now, therefore, I, HENRY B. PIERCE, Secretary of the Commonwealth of Massachusetts, do hereby certify that said A. Hyatt, W. S. Stevens, W. T. Sedgwick, E. G. Gardiner, S. Minns, C. S. Minot, S. Wells, W. G. Farlow, A. D. Phillips, and B. H. Van Vleck, their associates and successors, are legally organized and established as, and are hereby made, an existing Corporation, under the name of the MARINE BIOLOGICAL LABORATORY, with the powers, rights, and privileges, and subject to the limitations, duties, and restrictions, which by law appertain thereto.

Witness my official signature hereunto subscribed, and the seal of the Commonwealth of Massachusetts hereunto affixed, this twentieth day of March, in the year of our Lord One Thousand Eight Hundred and Eighty-Eight.

HENRY B. PIERCE,
Secretary of the Commonwealth.

III. BY-LAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

I. The members of the Corporation shall consist of persons elected by the Board of Trustees.

II. The officers of the Corporation shall consist of a President, Vice President, Director, Treasurer, and Clerk.

III. The Annual Meeting of the members shall be held on the Friday following the second Tuesday in August in each year at the Laboratory in Woods Hole, Massachusetts, at 9:30 A.M., and at such meeting the members shall choose by ballot a Treasurer and a Clerk to serve one year, and eight Trustees to serve four years, and shall transact such other business as may properly come before the meeting. Special meetings of the members may be called by the Trustees to be held at such time and place as may be designated.

IV. Twenty-five members shall constitute a quorum at any meeting.

V. Any member in good standing may vote at any meeting, either in person or by proxy duly executed.

VI. Inasmuch as the time and place of the Annual Meeting of members are fixed by these By-laws, no notice of the Annual Meeting need be given. Notice of any special
meeting of members, however, shall be given by the Clerk by mailing notice of the time and place and purpose of such meeting, at least fifteen (15) days before such meeting, to each member at his or her address as shown on the records of the Corporation.

VII. The Annual Meeting of the Trustees shall be held promptly after the Annual Meeting of the Corporation at the Laboratory in Woods Hole, Mass. Special meetings of the Trustees shall be called by the President, or by any seven Trustees, to be held at such time and place as may be designated, and the Secretary shall give notice thereof by written or printed notice, mailed to each Trustee at his address as shown on the records of the Corporation, at least one (1) week before the meeting. At such special meeting only matters stated in the notice shall be considered. Seven Trustees of those eligible to vote shall constitute a quorum for the transaction of business at any meeting.

VIII. There shall be three groups of Trustees:
(A) Thirty-two Trustees chosen by the Corporation, divided into four classes, each to serve four years. After having served two consecutive terms of four years each, Trustees are ineligible for re-election until a year has elapsed. In addition, there shall be two groups of Trustees as follows:

(B) Trustees ex officio, who shall be the President and Vice President of the Corporation, the Director of the Laboratory, the Associate Director, the Treasurer, and the Clerk:

(C) Trustees Emeriti, who shall be elected from present or former Trustees by the Corporation. Any regular Trustee who has attained the age of seventy years shall continue to serve as Trustee until the next Annual Meeting of the Corporation, whereupon his office as regular Trustee shall become vacant and be filled by election by the Corporation and he shall become eligible for election as Trustee Emeritus for life. The Trustees ex officio and Emeritus shall have all the rights of the Trustees except that Trustees Emeritus shall not have the right to vote.

The Trustees and officers shall hold their respective offices until their successors are chosen and have qualified in their stead.

IX. The Trustees shall have the control and management of the affairs of the Corporation; they shall elect a President of the Corporation who shall also be Chairman of the Board of Trustees and who shall be elected for a term of five years and shall serve until his successor is selected and qualified; and shall also elect a Vice President of the Corporation who shall also be the Vice Chairman of the Board of Trustees and who shall be selected for a term of five years and shall serve until his successor is selected and qualified; they shall appoint a Director of the Laboratory; and they may choose such other officers and agents as they may think best; they may fix the compensation and define the duties of all the officers and agents; and may remove them, or any of them, except those chosen by the members, at any time; they may fill vacancies occurring in any manner in their own number or in any of the offices. The Board of Trustees shall have the power to choose an Executive Committee from their own number, and to delegate to such Committee such of their own powers as they may deem expedient. They shall from time to time elect members to the Corporation upon such terms and conditions as they may think best.

X. The Associates of the Marine Biological Laboratory shall be an unincorporated group of persons (including associations and corporations) interested in the Laboratory and shall be organized and operated under the general supervision and authority of the Trustees.
XI. The consent of every Trustee shall be necessary to dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be disposed of in such manner and upon such terms as shall be determined by the affirmative vote of two-thirds of the Board of Trustees.

XII. The account of the Treasurer shall be audited annually by a certified public accountant.

XIII. These By-laws may be altered at any meeting of the Trustees, provided that the notice of such meeting shall state that an alteration of the By-laws will be acted upon.

IV. REPORT OF THE DIRECTOR

Gentlemen:

I submit herewith the report of the seventy-first session of the Marine Biological Laboratory.

1. Attendance

Attendance has continued at a fairly constant level through the past several years as shown in the Tabular View of Attendance. Only minor differences in attendance occur from year to year since the laboratory space is fully occupied and the classes are at capacity. Recently there have been qualified investigators with problems appropriate to the Laboratory's research materials and facilities who could not be accommodated. This has posed a difficult problem for the Research Space Committee in the assignment of space. It frequently has been difficult for the Committee to avoid rather arbitrary decisions. It is anticipated that this problem will be eased with the completion of the new research laboratory in the spring of 1960.

2. Crane Building

Renovation of the Crane Building carried out under a grant by the National Science Foundation was completed on schedule, permitting occupancy on June 1, 1958. Space utilization has been greatly improved by the rearrangement of facilities within the laboratories. Also the addition of new utilities has resulted in a real improvement in scientific working conditions.

3. New Laboratory Building

During the past winter the Building Committee has had several meetings with the architects for the new building (Sheply, Bulfinch, Richardson and Abbott) and, with the plans already well developed, construction will start in May, 1959, the building to be completed and ready for summer occupancy in 1960. The building will have a ground level basement and three floors. Half of the basement will be given over to laboratories, the other half to utilities and services. There will be radiobiological service laboratories on the top floor. A caesium $^{137}$ radiation unit, a new departure in radiobiological technique, is being planned and will be constructed under the direction of Dr. G. Failla and installed in one of the radiobiological service laboratories.
Attached to the new building will be a lecture room seating 150. The experience gained in renovating the Crane Wing is being used to advantage by the Building Committee.

4. Devil's Lane Housing Project

The attendance of younger investigators at the Laboratory, particularly those with families, has frequently been limited by the cost of housing rental. The Laboratory applied to the National Science Foundation and received a grant for housing construction on the Laboratory's Devil's Lane property. Twenty-four cottages are being erected and will be ready for 1959 summer occupancy. Through the generosity of the Grass Foundation another cottage is being added to those above. Through the efforts of Mr. Smith, General Manager, the Laboratory has a tax exemption on this new housing project which will permit modest rental changes.

The recently completed and the projected construction at the Laboratory has been made possible by the grants listed below:

- National Science Foundation—Crane Wing $415,000
- National Science Foundation—New laboratory and housing 544,250
- National Institutes of Health—New laboratory 369,250
- Rockefeller Foundation—New laboratory 738,500
- Grass Foundation—Housing 10,000

5. Grants, Contracts and Contributions

The total income to the laboratory from these sources of support amounted to $184,445.23 in 1958. This represents 34.3% of the total income and is made up of the following accounts:

- American Cancer Society—RC4A (+) —Studies in Radiobiology $6,600.00
- AEC—1343—Program of Research on the Physiology of Marine Organisms Using Radioisotopes 10,775.00
- NIH—4359—Biological Research on the Morphology, Ecology, Physiology, Biochemistry and Biophysics of Marine Organisms 40,000.00
- NIH—C3813 (A) Bio-Equipment 1,600.00
- NSF—5143—Training Program in Nerve Muscle Physiology 51,593.00
- ONR—1497—Studies in Marine Biology 15,000.00
- ONR—09701—Studies on Isolated Nerve Fibers 6,712.23
- ONR—09702—Studies in Ecology 6,936.00
- M.B.L. Associates 3,150.00
- Abbott Laboratories 1,000.00
- American Philosophical Society 2,500.00
- Carter Products, Inc. 1,000.00
- Ciba Pharmaceutical Products, Inc. 1,000.00
- Josephine B. Crane Foundation 2,000.00
- Eli Lilly and Company 5,000.00
- Hoffman-LaRoche, Inc. 1,000.00
- Merck Company Foundation 1,000.00
- Pfizer Foundation, Inc. 1,000.00
8 MARINE BIOLOGICAL LABORATORY

<table>
<thead>
<tr>
<th>Foundation/Miscellaneous</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockefeller Foundation</td>
<td>20,000.00</td>
</tr>
<tr>
<td>Schering Foundation, Inc.</td>
<td>1,000.00</td>
</tr>
<tr>
<td>Smith, Kline, and French Foundation</td>
<td>3,000.00</td>
</tr>
<tr>
<td>The Upjohn Company</td>
<td>1,000.00</td>
</tr>
<tr>
<td>Wyeth Laboratories</td>
<td>1,000.00</td>
</tr>
<tr>
<td>Miscellaneous Individuals</td>
<td>579.00</td>
</tr>
<tr>
<td></td>
<td>$184,445.23</td>
</tr>
</tbody>
</table>

It is gratifying that such a diverse group of agencies, foundations, companies and individuals as listed above are interested in the support and development of the Laboratory and its research programs.

6. Courses

The course in Physiology will be modified and operate in 1959 as a Physiology Training Program under the direction of Dr. William D. McElroy with financial support from the National Institutes of Health. The additional support will permit well-qualified doctoral and post-doctoral students to participate in the program who otherwise might not be able to do so. Selected students will continue on in the program doing research through the last half of the summer following the completion of the earlier formal part of the program.

With the loss of certain dormitory facilities, the Old Rockefeller Building is being converted into a dormitory for some of the summer service personnel. The course in Marine Ecology which formerly occupied this building is being moved into the Old Main Building.

7. Boats

Two new collecting boats were purchased and were received by the Laboratory in May, 1958. These are 24-foot open-cockpit boats of rugged construction and have proved very sea-worthy. One is used for the daily trips to the fish traps and, together with the second boat, for inshore collecting. They replace two old boats, the Sagitta and Tern. A diesel engine was installed in the Arbacia resulting in real economies in operation.

8. Survey

During the summer of 1958 the firm of Shurcliff and Merrill, Landscape Architects and Town Planners, was retained jointly by the Marine Biological Laboratory and the Woods Hole Oceanographic Institution to survey Woods Hole, including the physical lay-out of each institution on its own campus and also problems of the institutions as they relate to the community. The resulting report emphasized the present wasteful utilization of the six acres of land which make up the central campus of the M.B.L. The six frame houses, formerly private dwellings, which are used as dormitories occupy an excessive amount of land for the number of people they accommodate. They are old buildings, ill adapted for dormitory purposes and should be replaced. The old Mess Hall, adapted to self-service, could advantageously be replaced by a new building in combination with
dormitory facilities. Consolidation of these facilities will open up areas urgently needed for parking. With the development of additional training programs, there will develop a need for training facilities space. The Old Lecture Hall can readily be converted to such temporary use but it will not be entirely satisfactory for a program involving the new techniques required for a modern training program. Only a new building will adequately serve this purpose.

Respectfully submitted,

PHILIP B. ARMSTRONG,
Director

MEMORIAL

ALLEN R. MEMHARD

by

Donald P. Costello

Allen R. Memhard had a lifelong interest in biology, but, by reason of training for the Bar and practicing international and corporation law, was able to indulge this interest only in his later life.

Mr. Memhard was born in Chicago, and was graduated from the New York Law School in 1915. Soon after his graduation, he began an independent law practice in New York City. This was interrupted briefly while he served in U. S. Army Intelligence during World War I, after which he returned to his own practice. Later he became a member of the law firm of O'Brien, Boardman, Fox, Memhard and Early. In 1933 he was a delegate to a conference on international law at The Hague. From 1939 to 1950 he was counsel for the Geological Society of America. He was also very active in town affairs in his home community of Greenwich, Connecticut. Here he and Mrs. Memhard raised their fine family of two daughters and three sons.

In 1941, to learn more about the field that had interested him since childhood, he enrolled in a course in biology at New York University, where he came into contact with the late Professor Robert Chambers. By this time, Mr. Memhard was in a position to take time from his professional work to pursue his interest in marine biology, and Dr. Chambers was so impressed with his sincerity and abilities that he encouraged him to apply for space at the Marine Biological Laboratory. During the summer of 1942, Mr. Memhard first took the Embryology Course, which was under the direction of Professor Viktor Hamburger, and then was engaged in research during the remainder of the summer. He continued his research work in marine embryology during the summers of 1943, 1944, 1945, and part of 1947. He was elected a member of the Corporation in 1945.

In 1946, Mr. Memhard established a scholarship fund at the Marine Biological Laboratory, the income of which is awarded to qualified students who complete the course in embryology and wish to return or stay on for further work.

Mr. Memhard was a charming gentleman, a diligent scholar, and an interested observer of marine embryological phenomena. He was a fine example of that group of enlightened laymen who deserve the title, "Friend of the Marine Biological Laboratory."

1. THE STAFF, 1958

PHILIP B. ARMSTRONG, Director, State University of New York, School of Medicine, Syracuse
ZOOLOGY

I. Consultants

F. A. Brown, Jr., Morrison Professor of Zoology, Northwestern University
Libbie H. Hyman, American Museum of Natural History
A. C. Redfield, Woods Hole Oceanographic Institution

II. Instructors

Grover C. Stephens, Assistant Professor of Zoology, University of Minnesota; in charge of course.
John B. Buck, Senior Biologist, National Institutes of Health
Demorest Davenport, Associate Professor of Biology, Santa Barbara College
Peter W. Frank, Associate Professor of Biology, University of Oregon
Clark P. Read, Associate Professor, School of Hygiene and Public Health, Johns Hopkins University
Morris Rockstein, Associate Professor of Physiology, New York University College of Medicine
Howard A. Schneiderman, Associate Professor of Zoology, Cornell University
Milton Fingerman, Assistant Professor of Zoology, Tulane University

III. Laboratory Assistants

Frank E. Friedl, University of Minnesota
Irwin W. Sherman, Northwestern University

EMBRYOLOGY

I. Instructors

Mac V. Edds, Jr., Professor of Biology, Brown University; in charge of course
Philip Grant, Assistant Professor of Pathobiology, Johns Hopkins University
John W. Saunders, Jr., Professor of Zoology, Marquette University
Nelson T. Spratt, Jr., Professor of Zoology, University of Minnesota
Maurice Sussman, Associate Professor of Biological Sciences, Northwestern University
Lionel Rebhun, Assistant Professor of Anatomy, University of Illinois

II. Laboratory Assistants

Chandler M. Fulton, Rockefeller Institute for Medical Research
David S. Love, University of Colorado

PHYSIOLOGY

I. Consultants

Merkel H. Jacobs, Professor of Physiology, University of Pennsylvania
Arthur K. Parpart, Professor of Biology, Princeton University
Albert Szent-Györgyi, Director, Institute for Muscle Research, Marine Biological Laboratory
II. INSTRUCTORS

W. D. McElroy, Professor of Biology, Johns Hopkins University; in charge of course
Francis D. Carlson, Assistant Professor of Biophysics, Johns Hopkins University
Bernard D. Davis, Professor of Bacteriology, Harvard Medical School
Donald Griffin, Professor of Zoology, Harvard University
Howard Schachman, Virus Laboratory, University of California
Albert W. Frenkel, University of Minnesota

III. LABORATORY ASSISTANT

Louis Otero, University of Puerto Rico, Rio Piedras

BOTANY

I. CONSULTANT

Wm. Randolph Taylor, Professor of Botany, University of Michigan

II. INSTRUCTORS

Harold C. Bold, Professor of Botany, University of Texas; in charge of course
John M. Kingsbury, Assistant Professor of Botany, Cornell University
Richard C. Starr, Associate Professor of Botany, Indiana University

III. LECTURER

Ruth Patrick, Curator of Limnology, Academy of Natural Sciences of Philadelphia

IV. LABORATORY ASSISTANTS

Temd R. Deason, University of Texas
Harry W. Bishoff, Texas Lutheran College

ECOLOGY

I. CONSULTANTS

Paul Galtsoff, U. S. Fish and Wildlife Service, Woods Hole
Alfred C. Redfield, Woods Hole Oceanographic Institution
Bostwick H. Ketchum, Woods Hole Oceanographic Institution
Edwin T. Moul, Rutgers University
Charles E. Jenner, University of North Carolina
Howard L. Sanders, Woods Hole Oceanographic Institution

II. INSTRUCTORS

Howard T. Odum, Director, Institute of Marine Science, University of Texas
John H. Ryther, Marine Biologist, Woods Hole Oceanographic Institution
Albert J. Bernatowicz, Chairman, Department of Botany, University of Hawaii

III. LABORATORY ASSISTANT

Cameron E. Gifford, Harvard University
THE LABORATORY STAFF, 1958

Homer P. Smith, General Manager

Mrs. Deborah Lawrence Harlow, Librarian
Carl O. Schweidenback, Manager, Supply Department

Robert Kahler, Superintendent, Buildings and Grounds
Robert B. Mills, Manager, Department of Research Service

GENERAL OFFICE
Irving L. Broadbent, Office Manager

Mrs. Lila S. Myers
Mrs. Vivien R. Brown
Mrs. Virginia M. Morehouse

Mrs. Emily B. Merrill
Mrs. Vivian I. Manson
Mrs. Shirley Elder

LIBRARY
Mary Rohan
Mrs. M. Verena Hanks

Mrs. Naomi Botelho
Albert K. Neal

MAINTENANCE OF BUILDINGS AND GROUNDS
Robert Adams
Eldon P. Allen
Edmond Botelho
Arthur D. Callahan
Robert Gunning
Walter J. Jaskun

Donald B. Lehy
Ralph H. Lewis
Russell F. Lewis
Alan G. Lunn
Alton J. Pierce
James S. Thayer

DEPARTMENT OF RESEARCH SERVICE
Gail M. Cavanaugh
John P. Harlow

Seaver R. Harlow
Ludie A. Johnson

SUPPLY DEPARTMENT
Donald P. Burnham
Milton B. Gray
Geoffrey J. Lehy
Robert O. Lehy
Mrs. Mildred Mixson

Robert M. Perry
Bruno Trapasso
Jared L. Vincent
Samuel W. Vincent
Hallett S. Wagstaff

2. INVESTIGATORS, LALOR AND LILLIE FELLOWS, AND STUDENTS

Independent Investigators, 1958

Afzelius, Bjorn, Assistant Professor of Biophysics, Johns Hopkins University
Allen, M. Jean, Associate Professor of Biology, Wilson College
Allen, Robert D., Assistant Professor of Biology, Princeton University
Armstrong, Philip B., Professor and Chairman, Department of Anatomy, State University of New York, College of Medicine at Syracuse
Arnold, William, Principal Biologist, Division of Biology, Oak Ridge National Laboratory
Baird, Spencer, Associate Researcher, Institute for Muscle Research, Marine Biological Laboratory
REPORT OF THE DIRECTOR

BANG, FREDERIK B., Professor of Pathobiology, Johns Hopkins University School of Medicine
BART, LESTER G., Professor of Zoology, Columbia University
BATTLEY, EWING H., Instructor in Biochemistry, The Medical Center, Jersey City
BENESCH, REINHOLD, Investigator, Marine Biological Laboratory
BENNETT, MICHAEL V. L., Research Associate, Columbia University, College of Physicians & Surgeons
BERGAN, MONES, Assistant Physicist, Sloan Kettering Institute
BERNATOWICZ, ALBERT J., Chairman, Department of Botany, University of Hawaii
BETTELHEIM, FREDERICK A., Assistant Professor in Chemistry, Adelphi College
BISHOP, DAVID W., Staff Member, Department of Embryology, Carnegie Inst. of Washington
BOLD, HAROLD C., Professor of Botany, University of Texas
BROWN, FRANK A., JR., Morrison Professor of Biology, Northwestern University
BRYANT, SHIRLEY H., Assistant Professor of Pharmacology, University of Cincinnati
BUCK, JOHN B., Physiologist, National Institutes of Health
BURBANCK, W. D., Professor of Biology, Emory University
CARLSON, FRANCIS D., Associate Professor of Biophysics, Johns Hopkins University
CASE, JAMES F., Assistant Professor of Zoology, State University of Iowa
DEL CASTILLO, JOSÉ, Head, Section of Clinical Neurophysiology, National Institutes of Health
CHART, ALFRED B., Assistant Professor of Physiology, Boston University School of Medicine
CHANG, JOSEPH J., Visiting Scientist, National Institutes of Health
CHASE, AURIN M., Associate Professor of Biology, Princeton University
CHEN, RALPH HOLT, Professor of Biology, Brooklyn College
CHILD, FRANK M., Instructor in Zoology, The University of Chicago
CLIFF, C. LLOYD, Assistant Professor in Surgery, Harvard Medical School
CLAUDATUS, JOHN C., Head, Department of Biochemistry, The Cancer Institute at Miami
CLAYTON, ANTHONY C., Professor of Biology, Emory University
CLOWES, G. H. A., Research Director Emeritus, Lilly Research Laboratories
COLE, KENNETH S., Chief, Laboratory of Biophysics, National Institutes of Health
COLLIER, JACK R., Assistant Professor of Zoology, Louisiana State University
COLVIN, ARTHUR L., Associate Professor, Queens College
COLVIN, LAURA HUNTER, Lecturer, Queens College
COOPERSTEIN, SHERWIN, Associate Professor of Anatomy, Western Reserve University, School of Medicine
COSTELLO, DONALD P., Kenan Professor of Zoology, University of North Carolina
COWGILL, ROBERT W., Assistant Professor of Biochemistry, University of Colorado, School of Medicine
CRANE, ROBERT K., Associate Professor of Biological Chemistry, Washington University Medical School
CROWELL, SEARS, Associate Professor of Zoology, Indiana University
CSAPO, ARPAD, Associate Professor, Rockefeller Institute for Medical Research
DAVENPORT, DEMOREST, Associate Professor in Zoology, University of California, Santa Barbara College
DAVIS, BERNARD D., Professor of Bacteriology, Harvard Medical School
ECCLES, ROSAMOND, Research Fellow, Australian National University
EDDS, MAC V., JR., Professor of Biology, Brown University
FAHLE, G., Professor, Columbia University
FANKUCHEN, ISIDOR, Professor and Head, Division of Applied Physics, Polytechnic Institute
FASHCET, DON W., Professor of Anatomy, Cornell University Medical College
FINNERMAN, MILTON, Assistant Professor of Zoology, Newcomb College, Tulane University
FISHER, LOUIS, Research Associate, New York University College of Dentistry
FRANK, PETER W., Associate Professor of Biology, University of Oregon
FREINKE, ALBERT W., Professor of Botany, University of Minnesota
FRIEDL, FRANK E., Teaching Assistant, University of Minnesota
GALISOFF, PAUL S., Director, U. S. Fish & Wildlife Service, Department of the Interior
GOLDBERG, IRVING H., Post-Doctoral Student, Rockefeller Institute for Medical Research
GOTO, MASAYOSI, Investigator, Rockefeller Institute for Medical Research
GRANT, PHILIP, Assistant Professor of Pathobiology, Johns Hopkins University
GREEN, JAMES W., Associate Professor of Physiology, Rutgers University
GREF, ROGER L., Associate Professor of Physiology, Cornell University Medical College
GRIFIN, DONALD R., Professor of Zoology, Harvard University
GRODZINSKI, F., Professor of Comparative Anatomy, University of Krakow, Poland
GROSCH, DANIEL S., Professor of Genetics, North Carolina State College
GROSS, PAUL R., Associate Professor of Biology, New York University
GRUNDFEST, HARRY, Associate Professor of Neurology, Columbia University, College of Physicians and Surgeons
GUTTMAN, RITA, Assistant Professor of Biology, Brooklyn College
HAGINS, WILLIAM A., Research Medical Officer, Naval Medical Research Institute
HARDING, CLIFFORD V., Visiting Assistant Professor of Zoology, University of Pennsylvania
HARVEY, E. NEWTON, Professor of Biology emeritus, Princeton University
HENLEY, CATHERINE, Research Associate, University of North Carolina
HICKSON, ANNA KELTCH, Independent Investigator, Lilly Research Laboratories
HOLT, GEORGE G., Jr., Associate Professor of Zoology, Syracuse University
HUGHES, GEORGE M., University Lecturer, University of Cambridge, England
HUSSEY, KATHLEEN L., Assistant Professor of Parasitology, Columbia University
HYDE, BEAL B., Assistant Professor of Plant Sciences, University of Oklahoma
ISENBERG, IRVIN, Associate Researcher, Institute for Muscle Research, Marine Biological Laboratory
ITO, SUSUMU, Instructor in Anatomy, Cornell University Medical College
JACKSON, SYLVIA FITTON, Assistant Professor, Kings College, London
JENNEM, CHARLES E., Associate Professor of Zoology, University of North Carolina
JOHNSON, FRANK H., Professor of Biology, Princeton University
KAI, AKIRA, Fellow in Ophthalmology, Johns Hopkins University
KANE, ROBERT E., Postdoctoral Research Fellow, Johns Hopkins University
KEMPSON, RUDOLF T., Professor of Zoology, Vassar College
KENNEDY, DONALD, Assistant Professor of Zoology, Syracuse University
KINGSBURY, JOHN M., Assistant Professor of Botany, Cornell University
KLINHOLZ, L. H., Professor of Biology, Reed College
KLOTZ, IRVING M., Professor of Chemistry, Northwestern University
KLUS, BYRON C., Instructor, Albion College
KÖHLER, KURT, Research Associate, Florida State University
KRANE, STEPHEN M., Instructor in Medicine, Massachusetts General Hospital
KUPLER, STEPHEN W., Professor of Ophthalmic Physiology, Johns Hopkins University
KURY, LIVIA REV, Institute for Muscle Research, Marine Biological Laboratory
LANSING, ALBERT L., Professor of Anatomy, University of Pittsburgh
LEWY, MORTIMER, Instructor in Anatomy, University of Pennsylvania
LENHOFF, HOWARD M., Investigator in Biochemistry, Carnegie Institution
LEVIN, RALPH A., Independent Investigator, Marine Biological Laboratory
LITZ, MORTIMER, Instructor in Bacteriology, Harvard Medical School
LOWENHAUP, BENJAMIN, Research Associate, Rockefeller Institute for Medical Research
LURIN, MARTIN, Assistant Professor of Pharmacology, Harvard Medical School
MCELBROY, W. D., Chairman, Department of Biology, Johns Hopkins University
MARSALD, DOUGLAS, Professor of Biology, Washington Square College, New York University
MATEYKO, G. M., Assistant Professor of Biology, Washington Square College, New York University
MERRIAM, ROBERT W., Associate in Zoology, University of Pennsylvania
METZ, CHARLES B., Professor, Florida State University
METZ, CHARLES W., Research Professor, University of Pennsylvania
REPORT OF THE DIRECTOR

MIDDLEBROOK, ROBERT, Associate Researcher, Institute for Muscle Research, Marine Biological Laboratory

MONROY, ALBERTO, Professor of Comparative Anatomy, University of Palermo

MOORE, JOHN W., Associate Chief, Laboratory of Biophysics, National Institutes of Health

MÜLLER, HELMUT, Associate Researcher, Institute for Muscle Research, Marine Biological Laboratory

MULLINS, L. J., Associate Professor of Biophysics, Purdue University

NACE, PAUL FOLEY, Associate Professor of Zoology, McMaster University

NELSON, LEONARD, Assistant Professor of Anatomy, University of Chicago

NICKERSON, NORTON H., Instructor in Botany, Cornell University

NORRIS, WILLIAM ELMORE, Jr., Professor of Biology, Southwest Texas State Teachers College

ODUM, HOWARD T., Director, Institute of Marine Science, The University of Texas

OSTERHOUT, W. J. V., Member Emeritus, Rockefeller Institute for Medical Research

PADAWER, JACQUES, Assistant Professor of Biochemistry, Albert Einstein College of Medicine

PARKER, JOHNSON, Assistant Professor in Plant Physiology, Yale School of Forestry

PARPAN, ARTHUR K., Professor and Chairman of Biology, Princeton University

PATRICK, MABEL C., Assistant Professor of Zoology, Vassar College

PERSON, PHILIP, Chief, Special Dental Research Program, Veterans Administration Hospital

POTTER, DAVID D., Johns Hopkins University School of Medicine

PRESTON, JAMES B., Assistant Professor of Physiology, State University of New York at Syracuse

PROSSER, C. LADD, Professor of Physiology, University of Illinois

READ, CLARK P., Associate Professor of Parasitology, Johns Hopkins University

REBHUN, LIONEL I., Assistant Professor of Anatomy, University of Illinois

RIESER, PETER, Research Associate, University of Pennsylvania

ROCKSTEIN, MORRIS, Associate Professor of Physiology, New York University-Bellevue Medical Center

ROSE, S. MERYL, Professor of Zoology, University of Illinois

ROSENBERG, EVELYN K., Associate Professor, New York University-Bellevue Medical Center

ROSENTHAL, THEODORE B., Associate Professor of Anatomy, University of Pittsburgh

ROSANSKY, JOHN D., Research Associate, Princeton University

RUGH, ROBERTS, Associate Professor of Radiology, Columbia University

RYTHER, J. H., Marine Biologist, Woods Hole Oceanographic Institution

SAKAI, TOSHIO, Research Fellow, Rockefeller Institute for Medical Research

SANBORN, RICHARD C., Assistant Professor of Zoology, Purdue University

SANDEK, MURIEL I., Assistant Professor of Zoology, Duke University

SAUNDERS, JOHN W., Jr., Professor of Zoology, Marquette University

SCHECHTER, VICTOR, Associate Professor of Biology, City College of New York

SCHNEIDERMAN, HOWARD A., Associate Professor of Zoology, Cornell University

SCHNELLER, SISTER MARY BEATRICE, Professor of Biology, St. Joseph College for Women

SCHNU, REV. JOSEPH E., Chairman, Biology Department, Saint Peter's College

SCOTT, ALAN, Chairman, Department of Biology, Colby College

SCOTT, SISTER FLORENCE MARIE, Professor of Biology, Seton Hill College

SCOTT, GEORGE T., Professor of Zoology, Oberlin College

SEGAL, JOHN R., Graduate Student, Massachusetts Institute of Technology

SNEFF, ALFRED W., Woods Hole, Massachusetts

SHAW, EVELYN, Research Associate, American Museum of Natural History

SLIFER, ELEANOR H., Professor of Zoology, State University of Iowa

SMITH, PAUL FERRIS, Electronics Engineer, Rockefeller Institute for Medical Research

SPEIDEL, CARL C., Professor of Anatomy, University of Virginia

SPIEGEL, MELVIN, Assistant Professor of Biology, Colby College

SPRATT, NELSON T., Professor of Zoology, University of Minnesota

SPYROPoulos, CONSTANTINE S., Neurophysiologist, National Institutes of Health

STARR, RICHARD C., Associate Professor of Botany, Indiana University

STEINBACH, H. BURR, Chairman, Department of Zoology, University of Chicago

STEINHAEDER, JANET, Director, Operations Evaluation Group, Massachusetts Institute of Technology

STEVENS, GROVER C., Assistant Professor of Zoology, University of Minnesota
Stokey, Alma G., Professor Emeritus, Mount Holyoke College
Stone, William, Director, Ophthalmic Plastics Laboratory, Massachusetts Eye and Ear Infirmary
Stobman, Richard C., Assistant Professor of Zoology, University of California
Stunkard, Horace W., Research Scientist, U.S. Fish and Wildlife Service
Sturtevant, A. H., Thomas Hunt Morgan Professor of Genetics, California Institute of Technology
Sudak, Frederick N., Instructor, Albert Einstein College of Medicine
Sussman, Maurice, Associate Professor, Biology Department, Northwestern University
Szent-Györgyi, Albert, Chief Investigator, Institute for Muscle Research, Marine Biological Laboratory
Szent-Györgyi, Andrew G., Investigator, Institute for Muscle Research, Marine Biological Laboratory
Szent-Györgyi, Eva, Associate Researcher, Institute for Muscle Research, Marine Biological Laboratory
Taleporos, Plato, Postdoctoral Research Fellow, University of California
Tasaki, Ichiji, Chief, Special Senses Section, Laboratory of Neurophysiology, National Institutes of Health
Taylor, Robert E., Physiologist, National Institutes of Health
Taylor, William Randolph, Professor of Botany, University of Michigan
Tobias, Julian M., Professor of Physiology, University of Chicago
Todd, Robert E., Professor of Zoology, Colgate University
Trautwein, Wolfgang, Associate Professor of Physiology, Johns Hopkins Hospital
Trendelenburg, Ulrich, Associate in Pharmacology, Harvard Medical School
Trinkaus, J. P., Associate Professor of Zoology, Yale University
Troll, Walter, Assistant Professor of Zoology, New York University—Bellevue Medical Center
Twedell, Kenyon S., Assistant Professor of Zoology, University of Maine
Tyler, Albert, Professor of Embryology, California Institute of Technology
Devillafranca, George W., Assistant Professor of Zoology, Smith College
Vincent, Walter S., Assistant Professor of Anatomy, State University of New York, Upstate Medical Center, at Syracuse
Wagner, Captain Henry G., Head, Physiology Division, Naval Medical Research Institute
Wainio, Walter W., Associate Professor of Biochemistry, Rutgers University
Webb, H. Marguerite, Research Associate, Northwestern University
Whiting, P. W., Professor of Zoology Emeritus, University of Pennsylvania
Wichterman, Ralph, Professor of Biology, Temple University
Wilber, Charles G., Chief, Comparative Physiology Branch, Army Chemical Center
Willey, C. H., Professor and Chairman of Biology, New York University, University College
Wilson, Walter L., Assistant Professor of Physiology and Biophysics, College of Medicine, University of Vermont
Wittenberg, Jonathan B., Assistant Professor of Physiology and Biochemistry, Albert Einstein College of Medicine
Wright, Paul A., Associate Professor of Zoology, University of Michigan
Wurzel, MenACHEM, Research Worker, College of Physicians & Surgeons, Columbia University
Zweifach, Benjamin W., Associate Professor of Pathology, New York University—Bellevue Medical Center
Zwilling, Edgar, Associate Professor of Genetics, University of Connecticut

LALOR FELLOWS, 1958

Afzelius, B., Johns Hopkins University
Bettelheim, F., Adelphi College
Czerlinski, G., Max-Planck Inst. Physikal Chemie
Eccles, Rosamond, Australian National University
Harding, Clifford V., University of Pennsylvania
Kluess, Byron C., Albion College
Lash, James, University of Pennsylvania
Lubin, Martin, Harvard Medical School
Nelson, Leonard, University of Chicago
Wittenberg, Jonathan B., Albert Einstein College of Medicine
REPORT OF THE DIRECTOR

Lillie Fellow, 1958
MONROY, ALBERTO, University of Palermo, Italy

Grass Fellows, 1958
BENNETT, MICHAEL V. L., Columbia University
REUBEN, JOHN, University of Florida
RICKLES, WILLIAM H., JR., Baylor University, College of Medicine

American Philosophical Fellows
CHOI, KS-CHUL, Seoul National University, Korea
GRODZINSKI, F., University of Krakow, Poland
MONROY, ALBERTO, University of Palermo, Italy

Beginning Investigators, 1958
ASHTON, FRANCIS T., University of Pennsylvania
BRAVERMAN, MAXWELL H., University of Illinois
BRETT, WILLIAM J., Indiana State Teachers College
CAGLE, JULIEN, Princeton University
DUBNAU, DAVID A., Columbia University
ELLIOIT, PAUL R., University of Michigan
FELDHERR, CARL, University of Pennsylvania
FIELDEN, ANN, University of Illinois
FRANKEL, JOSEPH, Yale University
FRIZ, CARL T., University of Minnesota
FUJIMORI, EIJI, University of Tokyo
GRIFFIN, JOE L., Princeton University
HATHAWAY, RALPH R., Florida State University
JACKSON, JAMES A., Western Reserve University
JOHNSON, SISTER MARIA BENIGNA, Saint Joseph College
KAHLROCK, MARGIT M., Columbia University
KREENY, THOMAS, Cornell Medical College
KRASSNER, STUART, Johns Hopkins University
LAMBERT, LORETTA, Harvard University
MCCLEUSKEY, ROBERT T., New York University College of Medicine
MATURANA, HUMBERTO R., Harvard University
MOORE, RICHARD DAVIS, Purdue University
NAGLE, ARNOLD L., New York University-Bellevue Medical Center
Ralph, CHARLES L., U. S. Dept. of Agriculture
RICHES, WILLIAM C., Johns Hopkins University
RICKLES, WILLIAM H., JR., Baylor University College of Medicine
ROSS, SAMUEL M., State University of New York at Brooklyn
ROTHMAN, ALVIN H., Johns Hopkins School of Hygiene and Public Health
SHIROOKAR, MANOHAR V., Johns Hopkins School of Hygiene and Public Health
SJIDIN, RAYMOND A., Purdue University
STEINBERGER, WILLIAM W., University of Michigan
STREHLER, B. L., National Institutes of Health
SWETT, JOHN EMERY, University of California
VILLEGAS, RAJMUNDO, Harvard Medical School
WALLACE, ROBIN A., Columbia University
WERMAN, ROBERT, Columbia University, College of Physicians and Surgeons
WERTNZ, HENRY O., Harvard University
WYLE, RICHARD M., Harvard University
YOUNG, ROBERT R., Harvard Medical School
Research Assistants, 1958

Adler, Howard, Albert Einstein Medical School
Adler, Julius, Washington University School of Medicine
Allen, Archie, University of North Carolina
Alsup, Peggy Ann, University of Pennsylvania
Arnold, Elizabeth, Indiana University
Auclair, Walter, New York University
Barnwell, Franklin, Northwestern University
Bedford, Bonnie V., Vassar College
Bensam, Bertrand, State University of New York Medical College at Syracuse
Birky, Carl William, Jr., Indiana University
Bischoff, Harry W., Texas Lutheran College
Borgesee, Thomas A., Rutgers University
Bosler, Robert B., Johns Hopkins University School of Medicine
Briskow, Cornelia, Barnard College
Bunin, Lesley S., Barnard College
Camougeis, George, University of California
Cantor, Marvin H., Massachusetts Institute of Technology
Caraanastos, George J., St. Peter's College
Cheesbrough, Carolyn, Mount Holyoke College
Clark, Eloise E., University of California
Clare, Lenora M., Lilly Research Laboratories
Clare, Lynne G., Queens College
Close, Russell I., University of Illinois
Cohen, Janice, New York University, College of Medicine
Cohen, Stafford I., Boston University Medical School
Cole, Ellen L., University of Pennsylvania
Conway, Dorothy M., Rockefeller Institute for Medical Research
Coutinho, Elsimar M., Faculdade de Medicina Universidade de Bahia, Brazil
Davis, Ann, Columbia University
Deason, Tem R., University of Texas
Dingle, Al D., McMaster University
Doolittle, Russell F., Harvard University
Ein, Daniel, New York University-Bellevue Medical Center
Erdman, Howard E., North Carolina State College
Esper, Hildegard, Reed College
Fine, Albert S., Veterans Administration Hospital
Frank, Colin H., Belmont High School
Friedman, Leonard, Rutgers University
Fulton, Chandler M., Rockefeller Institute
Gebhart, John H., National Institutes of Health
Gippford, Cameron E., Harvard University
Gould, Edwin, Harvard University
Green, Jonathan, University of Minnesota
Greenberg, Alan, Albert Einstein College of Medicine
Greenlee, Janet, Rutgers University
Gross, Marcia, Yale University
Grupp, Erica, Columbia University
Guttman, Burton S., University of Minnesota
Hamburger, Carola L., St. Louis
Hicks, Mary, Rockefeller Institute
Holtzman, Eric, Columbia University
Humphreys, Tom D., University of Chicago
Jones, Raymond, England
Kagay, Karen, New York University College of Medicine
Kanungo, Madhu S., University of Illinois
Kent, Joan L., Columbia University
REPORT OF THE DIRECTOR

DELANURIEN, ANNE, Smith College
Laurie, John S., Tulane University
Lewy, Jane W., Vassar College
Lorenzo, Michael A., St. Louis University
Lowe, David S., University of Chicago
Lowe, Mildred E., Tulane University
Lowe, Ruth N., New York University-Bellevue Medical Center
McCann, Frances V., Columbia University
McCann, Marjorie, Louisiana State University
McLaughlin, Jane, Institute for Muscle Research, Marine Biological Laboratory
MacMullen, Joyce A., Cornell University
Malkoff, Donald B., University of Pittsburgh School of Medicine
Margolis, Phyllis, Barnard College
Mingioli, Elizabeth S., Harvard Medical School
Morgan, Miriam, Smith College
Mosher, Carter G., Boston University School of Medicine
Moule, Margaret, McMaster University
Murrell, Leonard R., McMaster University
Nass, Sylvan, New York University
Noel, Elisabeth S., Seton Hill College
Oberpriller, John, University of Illinois
Otero, Luis R., University of Puerto Rico
Palival, Rupusudan L., University of Oklahoma
Palmeri, Amelia, Cornell University Medical College
Pearse, John S., University of Chicago
Philmott, Delbert, Institute for Muscle Research, Marine Biological Laboratory
Plumb, Mary E., North Carolina State College
Robertson, Lola, Fish and Wildlife Service
Rodenberg, Jeannette M., New York University-Bellevue Medical Center
Rosenblum, William, New York University-Bellevue Medical Center
Rosenbluth, Raja, Columbia University
Rosillo, Ludwige, St. Peter's College
Rubinoff, Ira, American Museum of Natural History
Salach, James I., University of Chicago
Satunen, Janice R., Syracuse Medical School
Schinski, Robert A., University of Minnesota
Schuel, Herbert, University of Pennsylvania
Shepard, David, University of Chicago
Sherman, Irwin W., Northwestern University
Siger, Alvin, Johns Hopkins University
Simmons, John E., Johns Hopkins University
Spyrides, George J., Johns Hopkins University
Staub, Herbert W., Rutgers University
Sundararaj, B. I., Tulane University
Swope, Julia C., Massachusetts General Hospital
Szente-Györgyi, Martha, Institute for Muscle Research, Marine Biological Laboratory
Tsuk, Marianne, Smith College
Wahl, Rosemarie, University of Chicago
Walters, C. Patricia, Lilly Research Laboratories
Warwick, Anne C., Johns Hopkins School of Hygiene
Whitcomb, Ernest R., National Institutes of Health
Wilber, John F., Harvard Medical School
Wilbois, Annette, Indiana University
Wong, Edward T., University of Minnesota
Wood, Robert W., Sloan-Kettering Institute
Woods, B. Louise, Lilly Research Laboratories
Wyttbach, Charles R., Carnegie Institution of Washington
Yip, Cecil, McMaster University
Library Readers, 1958

Ball, Eric G., Professor of Biological Chemistry, Harvard Medical School
Batham, Elizabeth J., Lecturer, University of Otago, New Zealand
Baylor, Martha B., Investigator, Marine Biological Laboratory
Beidler, Lloyd M., Professor of Physiology, Florida State University
Bodansky, Oscar, Professor of Biochemistry, Sloan-Kettering Institute
Brigman, Anna Josephine, Professor of Biology, Agnes Scott College
Broberg, Patricia L., Postdoctoral Fellow, Brandeis University
Browne, L. Barton, Johns Hopkins University
Butler, Elmer G., Professor of Zoology, Princeton University
Chanutin, Alfred, Professor of Biochemistry, University of Virginia
Clark, Elior R., Professor Emeritus of Anatomy, University of Pennsylvania
Claudatus, John C., Head, Department of Biochemistry, The Cancer Institute at Miami
Cohen, Seymour S., Professor of Biochemistry, University of Pennsylvania
DuBois, Arthur, Associate Professor of Physiology, University of Pennsylvania
Eisen, Herman N., Professor of Dermatology, Washington University
Feenberg, Eugene, Professor of Physics, Washington University
Fieser, Erik F. B., Associate Professor, City College of New York
Gabriel, Mordekai L., Associate Professor of Biology, Brooklyn College
Gaffron, Hans, Professor of Biochemistry, University of Chicago
Ginsburg, Harold S., Associate Professor of Preventive Medicine, Western Reserve University
Guberavitch, Frederick, Director, Cornell University Medical College
Hackett, David P., Associate Professor of Biology, University of Buffalo
Himmelfarb, Sylvia, Instructor in Physiology, University of Maryland Medical School
Hoberman, H. D., Professor of Biochemistry, Albert Einstein College of Medicine
Horsfall, Frank L., Vice-President and Physician-in-Chief, Rockefeller Institute
Jacobs, M. H., Professor of General Physiology Emeritus, University of Pennsylvania
Jones, Sarah R., Instructor in Zoology, Connecticut College
Kaan, Helen W., Indexer, National Academy of Sciences
Karab, Elvin A., Professor of Microbiology, Columbia University
Kavush, Fred, Professor of Immunochemistry, University of Pennsylvania School of Medicine
Koenig, John, Professor of Biology, Rutgers University
Kindred, James E., Professor of Anatomy, University of Virginia
Klein, Morton, Professor of Microbiology, Temple University School of Medicine
Lazzarini, Abel A., Associate Professor of Research Surgery, New York University
Lionetti, Fabian J., Associate Professor of Microbiology, Boston University School of Medicine
Lochhead, John H., Professor of Zoology, University of Vermont
Lowenstein, Otto, Research Associate in Ophthalmology, Columbia University
McDonald, Sister Elizabeth Seton, Chairman, Department of Biology, College of Mt. St. Joseph
Markey, S. Peter, Research Associate, Princeton University
Marshall, Alfred, Marine Biological Laboratory
Mayor, James, Professor Emeritus, Union College
Moul, Edwin T., Associate Professor of Botany, Rutgers University
Overton, Jane H., Assistant Professor of Natural Sciences, University of Chicago
Price, Winston H., Associate Professor of Epidemiology and Biochemistry, Johns Hopkins University, School of Hygiene and Public Health
Pullman, Bernard, Professor of Theoretical Chemistry, University of Paris
Roth, Jay S., Associate Professor of Biochemistry, Hahnemann Medical College
Sonnennial, B. P., Professor of Biology, Rutgers University
Sulkin, S. Edward, Professor and Chairman, University of Texas Southwestern Medical School
Swanson, Carl P., Gill Professor in Biology, Johns Hopkins University
Trumit, Hans J., Principal Scientist, Research Institute for Advanced Studies
Uziel, Mayo, Instructor in Biochemistry, Tufts University Medical School
Wheeler, George Edward, Instructor in Biology, Brooklyn College
REPORT OF THE DIRECTOR

YNTEMA, Chester L., Professor of Anatomy, State University of New York, Upstate Medical Center
ZINN, Donald J., Associate Professor of Zoology, University of Rhode Island

Students, 1958

BOTANY

Biebel, Paul J., Indiana University
Cumming, Kenneth B., Harvard University Graduate School
Dawson, William A., Harvard University
Farquharson, Lois I., Franklin College
Fletcher, Joyce V., Cornell University
Garnett, Ellen M., Indiana University
Gibbs, Sarah P., Woods Hole
Goldstein, Melvin E., Indiana University
Goodwin, Mary Linder, Radcliffe College
Grillo, Ramon S., Fordham University
Hancock, Kenneth F., University of Alabama
Hoffman, Larry Ronald, Iowa State College
Kaushik, Nilema, Vassar College
Middletown, Katherine, Vassar College
Moran, Marius R., Fordham University
Morrill, Joy F., University of Alabama
Mumpford, F. Joyce, Smith College
Ropes, Marian C., Radcliffe College

EMBRYOLOGY

Blanchard, Ann M., State University of Iowa
Boass, Agna, Radcliffe College
Cahn, Robert D., Rockefeller Institute
Corlette, Sally L., University of Pennsylvania, Institute for Cancer Research
Crowell, Jane, Radcliffe College
DeBerardino, Marie A., University of Pennsylvania, Institute for Cancer Research
Finch, Cynthia L., Oberlin College
Hunter, Roy, Jr., Brown University
Kaighn, Morris E., Massachusetts Institute of Technology
Mindich, Leonard E., Rockefeller Institute
Roberts, B. Dewayne, Roswell Park Memorial Institute
Roth, Willard D., Harvard Medical School
Sargent, Dorothy J., Mount Holyoke College
Siegel, Paula H., University of Rochester
Sonneborn, David R., Rockefeller Institute
Thompson-Upham, A. E., Amherst College
Troffkin, Walter H., Brooklyn College
Tumasonis, Rev. Casimir, Fordham University
Vanable, Joseph W., Brown University
Vining, George Joseph, Yale University
Weiss, Leon P., Harvard Medical School
Weston, Charles R., Princeton University

PHYSIOLOGY

Aschem, Emil, New York University
Axelrod, David, Harvard Medical School
Beaulnes, Audele, University of Montreal
CARDELL, ROBERT R., JR., University of Virginia
CEGLER, ANNELEISE M., Marquette University
CURTIS, BRIAN A., University of Rochester
CZERLINSKI, GEORG H., Max Planck Inst. physikal Chemie
DEMOVSKY, RONALD A., University of Illinois, College of Medicine
ELLIOTT, PAUL R., University of Michigan
FAUST, ROBERT G., Princeton University
FERRANS, VICTOR J., Tulane Medical School
FRANZEN, JAMES S., University of Illinois
GOLDBERG, EDWARD, Johns Hopkins University
GOUR, ROBERT A., St. Louis University
GRiffin, Joe Lee, Princeton University
HASELKORN, ROBERT, Harvard University
HOEBEL, BART, Rockefeller Institute
Hutton, KENNETH, C., San Jose State College
KRAUSE, ROBERT L., Haverford College
MARKS, WILLIAM B., Massachusetts Institute of Technology
NOVICK, RICHARD P., New York University
RALLER, ANN, California Institute of Technology
ROSENKRANZ, HERBERT, Sloan-Kettering Institute
RUECKERT, ROLAND R., McArdle Memorial Institute, University of Wisconsin
TRYGSTAD, CARL W., University of Florida
WEISBERG, ROBERT A., Harvard College
WYLIE, RICHARD M., Harvard University

INVERTEBRATE ZOOLOGY

ASHMAN, ROBERT F., Wabash College
BARRY, CORNELIUS, University of Maryland
BAY, ERNEST C., Cornell University
BIRKY, CARL WILLIAM, JR., Indiana University
BLANK, FENJA, City College of New York
BROSEGINI, ALBERT L., Iowa State College
CARDELL, ROBERT R., JR., University of Virginia
CLARK, JAMES M., Franklin and Marshall College
COoper, EDWIN L., Atlanta University
DAVIS, ROBERT P., Cornell University
Dawson, RICHARD G., Shawnee-Mission High School
DRAINVILLE, PATER N GÉRARD, Université de Montréal
DUNAGAN, TOMMY T., Purdue University
ELDRIDGE, PETER J., University of Massachusetts
FERNOW, LEONARD R., Cornell University
FIGGE, ROSALIE A., Oberlin College
FISKE, TIMOTHY, University of Minnesota
FORREST, HELEN F., Rutgers University
FOX, SISTER M. ALICE MARIE, Saint Louis University
GOLD, KENNETH, New York University
GOULD, EDWIN, Tulane University
GRANT, DAVID C., College of Wooster
GUSSIN, ARNOLD ELY, Tulane University
GUTTMAN, BURTON S., University of Minnesota
HALL, DONALD J., University of Michigan
HARRER, LORA, Marquette University
HENNEN, SALLY H., Indiana University
HILTY, CAROL R., Oberlin College
KELSO, JUDITH L., Brown University
REPORT OF THE DIRECTOR

KROECKEL, Rev. CLARENCE J., St. Joseph's College
LEARY, DONALD E., Notre Dame
LEET, ROSEMARY, Chatham College
LICHT, PAUL, Washington University
LINDSAY, DAVID T., Johns Hopkins University
LUNING, ANNE, Vassar College
MACADIE, Fr. LAZARUS, University of Wisconsin
MACMULLEN, JOYCE, Cornell University
McCREASH, ARTHUR H., Temple University
McRITCHIE, ROBERT G., Vanderbilt University
PAINE, ROBERT T., III, University of Michigan
Peel, ROSEMARY E., Drew University
PERNA, Judith E., Cornell University
ROBINSON, MARTHA A., Oberlin College
ROTH, THOMAS F., Harvard University
SANCHEZ, PATRICIO, Rockefeller Foundation
SAVAGE, ALICE M., Brown University
SCHMIDT, Rev. MATTHIAS, St. Benedict's College
SMITH, WILLIE R., Fordham University
SNOW, ISABEL W., Hunter College
STILWELL, SHIRLEY E., Wheaton College
TUNNOCK, SHEILA M., Colby College
VAHARU, TIIU, Syracuse University
WESTON, JAMES A., Yale University
WETZEL, BRUCE K., Harvard University
WILLIAMS, DEBORAH C., Tufts University

ECOLOGY

BEYERS, ROBERT J., University of Texas
CHOI, KI-CHUL, Seoul National University
CUMMING, KENNETH B., Harvard University
FONDA, SHIRLEY L., Oberlin College
GOUDSMIT, ESTHER M., University of Michigan
Hochman, Robert A., Lafayette College
MOLL, CAROLYN J., Mount Holyoke College
MUELLER, WAYNE PAUL, Indiana University
PAtchen, joan d., Drew University
ROSEN, DONN ERIC, American Museum of National History
SCULLY, MARGARET A., Framingham State Teachers College
SEWALL, JANE, Goucher College
SIMCOX, RICHARD F., Los Angeles State College
STAGNER, MARYLYN L., Duke University
WILLIAMS, RICHARD B., Harvard University
WILSON, RONALD F., Dartmouth College

3. FELLOWSHIPS AND SCHOLARSHIPS, 1958

Lucretia Crocker Scholarship:
   LARRY R. HOFFMAN, Botany Course
Calkins Scholarship:
   DONALD J. HALL, Invertebrate Zoology Course
   PAULA SIEGEL, Embryology Course
   WALTER TROFFKIN, Embryology Course
Bio Club Scholarship:
   FENJA BLANK, Invertebrate Zoology
4. Tabular View of Attendance, 1954–58

<table>
<thead>
<tr>
<th>Year</th>
<th>Investigators—Total</th>
<th>Independent</th>
<th>Under Instruction</th>
<th>Library Readers</th>
<th>Research Assistants</th>
<th>Students—Total</th>
<th>Invertebrate Zoology</th>
<th>Embryology</th>
<th>Physiology</th>
<th>Botany</th>
<th>Ecology</th>
<th>Total Attendance</th>
<th>Less persons represented as both investigators and students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>298</td>
<td>180</td>
<td>20</td>
<td>52</td>
<td>46</td>
<td>134</td>
<td>56</td>
<td>29</td>
<td>28</td>
<td>12</td>
<td>9</td>
<td>432</td>
<td>5</td>
</tr>
<tr>
<td>1955</td>
<td>250</td>
<td>162</td>
<td>9</td>
<td>54</td>
<td>25</td>
<td>148</td>
<td>56</td>
<td>30</td>
<td>28</td>
<td>19</td>
<td>13</td>
<td>398</td>
<td>2</td>
</tr>
<tr>
<td>1956</td>
<td>304</td>
<td>184</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>140</td>
<td>55</td>
<td>28</td>
<td>30</td>
<td>18</td>
<td>9</td>
<td>444</td>
<td>3</td>
</tr>
<tr>
<td>1957</td>
<td>326</td>
<td>186</td>
<td>23</td>
<td>42</td>
<td>75</td>
<td>139</td>
<td>55</td>
<td>27</td>
<td>30</td>
<td>18</td>
<td>16</td>
<td>465</td>
<td>5</td>
</tr>
<tr>
<td>1958</td>
<td>410</td>
<td>203</td>
<td>39</td>
<td>54</td>
<td>114</td>
<td>138</td>
<td>55</td>
<td>22</td>
<td>27</td>
<td>18</td>
<td>16</td>
<td>548</td>
<td>5</td>
</tr>
</tbody>
</table>

5. Institutions Represented, 1958

Adelphi College  Chatham College
Agnes Scott College  Chicago, University of
Agricultural Research Center  Cincinnati, University of
Alabama, University of  City College of New York
Albert Einstein Medical School  Colby College
Albion College  Colgate University
American Heart Association  Colorado, University of
American Museum of Natural History  Columbia University
Amherst College  Columbia University College of Physicians
Army Chemical Center  and Surgeons
Atlanta University  Connecticut College
Barnard College  Connecticut, University of
Baylor University  Cornell University
Boston University School of Medicine  Cornell University Medical School
Brandeis University  Dartmouth College
Brooklyn College  Drew University
Brown University  Duke University
Bryn Mawr College  Eli Lilly and Company
Buffalo, University of  Emory University
California Institute of Technology  Florida State University
California, University of  Fordham University
Cancer Institute of Miami  Framingham State Teachers College
Carnegie Institute of Technology  Franklin College
Carnegie Institution of Washington  Franklin and Marshall College
<table>
<thead>
<tr>
<th>Institution</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goucher College</td>
<td>Princeton University</td>
</tr>
<tr>
<td>Hahnemann Medical School</td>
<td>Purdue University</td>
</tr>
<tr>
<td>Harvard University</td>
<td>Queens College</td>
</tr>
<tr>
<td>Harvard University Medical School</td>
<td>Radcliffe College</td>
</tr>
<tr>
<td>Haverford College</td>
<td>Reed College</td>
</tr>
<tr>
<td>Howard Hughes Medical Institute</td>
<td>Research Institute for Advanced Studies</td>
</tr>
<tr>
<td>Hunter College</td>
<td>Rhode Island, University of</td>
</tr>
<tr>
<td>Illinois, University of</td>
<td>Rochester, University of</td>
</tr>
<tr>
<td>Indiana State Teachers College</td>
<td>Rockefeller Institute for Medical Research</td>
</tr>
<tr>
<td>Indiana University</td>
<td>Roswell Park Memorial Institute</td>
</tr>
<tr>
<td>Institute for Muscle Research</td>
<td>Rutgers University</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>St. Benedict's College</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>St. Joseph College for Women</td>
</tr>
<tr>
<td>Lafayette College</td>
<td>St. Joseph's College</td>
</tr>
<tr>
<td>Los Angeles State College</td>
<td>St. Louis University</td>
</tr>
<tr>
<td>Louisiana State University</td>
<td>St. Peter's College</td>
</tr>
<tr>
<td>Maine, University of</td>
<td>San Jose State College</td>
</tr>
<tr>
<td>Marquette University</td>
<td>Seton Hall College</td>
</tr>
<tr>
<td>Maryland, University of</td>
<td>Seton Hill College</td>
</tr>
<tr>
<td>Mass. Eye and Ear Infirmary</td>
<td>Sloan-Kettering Institute</td>
</tr>
<tr>
<td>Mass. General Hospital</td>
<td>Smith College</td>
</tr>
<tr>
<td>Mass. Institute of Technology</td>
<td>Southwest Texas State Teachers College</td>
</tr>
<tr>
<td>Massachusetts, University of</td>
<td>Syracuse University</td>
</tr>
<tr>
<td>Michigan, University of</td>
<td>Temple University</td>
</tr>
<tr>
<td>Minnesota, University of</td>
<td>Texas Lutheran College</td>
</tr>
<tr>
<td>Mount Holyoke College</td>
<td>Texas, University of</td>
</tr>
<tr>
<td>Mt. St. Joseph, College of</td>
<td>Texas, University of, Southwestern Medical School</td>
</tr>
<tr>
<td>National Academy of Sciences</td>
<td>Tufts University</td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>Tufts University Medical School</td>
</tr>
<tr>
<td>Naval Medical Research Institute</td>
<td>Tulane University</td>
</tr>
<tr>
<td>New York, State University of, Medical School at</td>
<td>Tulane University Medical School</td>
</tr>
<tr>
<td>Syracuse</td>
<td>Union College</td>
</tr>
<tr>
<td>New York, State University of, at Brooklyn</td>
<td>U. S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>New York University, Bellevue Medical Center</td>
<td>U. S. Public Health Service</td>
</tr>
<tr>
<td>New York University, School of Dentistry</td>
<td>Vanderbilt University</td>
</tr>
<tr>
<td>New York University, Washington Square College</td>
<td>Vassar College</td>
</tr>
<tr>
<td>North Carolina State College</td>
<td>Vermont, University of</td>
</tr>
<tr>
<td>North Carolina, University of</td>
<td>Veterans' Administration Hospital</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Virginia, University of</td>
</tr>
<tr>
<td>Notre Dame University</td>
<td>Washington University</td>
</tr>
<tr>
<td>Oak Ridge National Laboratory</td>
<td>Washington University Medical School</td>
</tr>
<tr>
<td>Oberlin College</td>
<td>Western Reserve University</td>
</tr>
<tr>
<td>Oklahoma, University of</td>
<td>Wheaton College</td>
</tr>
<tr>
<td>Oregon, University of</td>
<td>Wilson College</td>
</tr>
<tr>
<td>Pennsylvania, University of</td>
<td>Wisconsin, University of</td>
</tr>
<tr>
<td>Pennsylvania Medical School, University of</td>
<td>Wooster, College of</td>
</tr>
<tr>
<td>Pittsburgh, University of</td>
<td>Yale University</td>
</tr>
<tr>
<td>Polytechnic Institute of Brooklyn</td>
<td>Yeshiva University</td>
</tr>
</tbody>
</table>

**Foreign Institutions Represented, 1958**

- Australian National University, Australia
- Universidade de Bahia, Brazil
- Atomic Energy Authority, British Isles
- Kings College, British Isles
- University of Cambridge, British Isles
- University of Reading, British Isles
- McMaster University, Canada
- University of Montreal, Canada
- University of Chile, Chile
- Ecole Scientia et Faculty de Meidnca, France
Max Planck Institut für physikalische Chemie, Germany
Physiological Institute of Heidelberg, Germany
University of Tübingen, Germany
University of Hawaii
Central College, University of Mysore, India
University of Palermo, Italy
Hebrew University, Hadassah Medical School, Jordan
Kogoshima University, Japan
Tokyo Jikei-kai School of Medicine, Japan
University of Tokyo, Japan
Seoul National Institute, Korea
University of Otago, New Zealand
Fagellonian University, Poland
University of Puerto Rico, Puerto Rico
Wenner Grens Institute, Sweden
Institute de Investigaciones Medicas, Venezuela

Supporting Institutions and Agencies, 1958
Abbott Laboratories
American Cancer Society
American Philosophical Society
Associates of the Marine Biological Laboratory
Atomic Energy Commission
Ciba Pharmaceutical Products, Inc.
Josephine B. Crane Foundation
Carter Products Inc.
The Grass Foundation
Hoffman-LaRoche, Inc.
The Lalor Foundation
Eli Lilly and Company
Merck and Company, Inc.
National Institutes of Health
National Science Foundation
Office of Naval Research
The Pfizer Foundation, Inc.
The Rockefeller Foundation
Schering Corporation
Smith, Kline and French Foundation
Wyeth Laboratories
The Upjohn Company

6. Friday Evening Lectures, 1958
July 4
ALBERT SZENT-GYÖRGYI .................... "Muscle and energetics"

July 11
COLIN S. PITTENDRIGH .................... "A coupled oscillator scheme for the daily rhythms of organisms"

July 18
BERNARD D. DAVIS ....................... "Bacterial mutants and the study of cell physiology"

July 25
WARREN O. NELSON ...................... "The physiological control of fertility"

August 1
ROLLIN D. HOTCHKISS .................... "The dissemination of genetic substance"

August 8
STEPHEN W. KUFFLER .................... "A single nerve cell looks at neurophysiology"

August 15
DON W. FAWCETT ......................... "The submicroscopic structure and functional behavior of the membranous components of the cytoplasm"

August 22
BERNARD PULLMAN ..................... "Electronic structure and activity in cancer chemotherapy of purine antimetabolites"

7. Tuesday Evening Seminars, 1958
July 1
EDGAR ZWILLING ......................... "Reconstitution from one germ layer in Cordylophora (hydroid)"
REPORT OF THE DIRECTOR

MAXWELL BRAVERMAN .......................... "Neural and mesodermal hierarchies in chick development"
S. MERYL ROSE ............................... "Mutual growth inhibition in frog tadpoles"
July 8
FREDERICK A. BETTELHEIM ...................... "The nature of chromatographic amylose and amylopectin fractions"
P AUL S. GALTSOFF ............................ "Coordination of ciliary motion and muscular activity in Ostrea virginica"
BENJAMIN LOWENHAUPT ........................ "The carrier for calcium transport in aquatic leaves"
July 15
P. W. WHITING ............................... "Factors and genes in Mormoniella"
SEARS CROWELL ............................... "Tail regeneration in experimentally shortened and lengthened earthworms"
C. C. SPEIDEL ................................. "Motion pictures showing some changes in cells induced by x-ray treatments of tadpoles and tetrahymenae"
July 22
JAMES LASH ................................ "The uptake of radiosulphur during the induction of cartilage"
MENACHEM WURZEL .......................... "Mode of action of choline esters, substrate specificity of their 'receptor protein'
IRVIN ISENBERG ............................ "Free radical formation in riboflavin complexes"
July 29
A. J. BERNATOWICZ ........................ "Ecological isolation of alternate generations of plants"
DEMOR EST DAVENPORT ........................ "A technique of investigating the effect of host-factor on the behavior of polychaete and crustacean commensals"
EVELYN SHAW ................................. "The development of schooling behavior in the silverside fish, Menidia menidia"
CHARLES JENNER ............................. "Schooling behavior in the marine snail, Nassarius obsoletus" (with colored movie)
August 5
ARTHUR L. COLWIN and LAURA H. COLWIN .......................... "Effects of sperm extract and other agents on the egg membranes, in relation to sperm entry in Hydroides"
CHARLES B. METZ ............................. "Fertilization and agglutination inhibitors from Arbacia"
LIONEL I. REBHUN .......................... "Behavior of metachromatic granules during cleavage in Spisula"
August 12
G. W. DE VILLAFRANCA, T. S.
SCHEINBLUM and D. E. PHILPOTT ....... "The a-band of muscle from Limulus polyphemus"
D. W. BISHOP ............................... "Sperm cell models and the question of ATP-induced rhythmic motility"
L. NELSON ................................. "ATP—An energy source for sperm motility"
R. D. Allen .......................... "Polarized optical studies on Ameba"
F. Child .............................. "Isolation and analysis of cilia"
August 19
L. V. Heilbrunn ...................... "A physical study of the ground substance
Carl Feldherr ...................... "Physical properties of lobster nerve axo-
of the Spisula egg"             plasm"
Robert W. Merriam ................. "Some aspects of the nuclear membrane in
                                developing sand dollar eggs"

8. MEMBERS OF THE CORPORATION, 1958

1. LIFE MEMBERS

   Brodie, Mr. Donald M., 522 Fifth Avenue, New York 18, New York
   Calvert, Dr. Philip P., University of Pennsylvania, Philadelphia, Pennsylvania
   Carver, Dr. Gail L., Mercer University, Macon, Georgia
   Cole, Dr. Elbert C., 2 Chipman Park, Middlebury, Vermont
   Cowdry, Dr. E. V., Washington University, St. Louis, Missouri
   Crane, Mrs. W. Murray, Woods Hole, Massachusetts
   DeDecker, Dr. Pauline H., Connecticut College, New London, Connecticut
   Goldfarb, Dr. A. J., College of the City of New York, New York City, New York
   Knowlton, Dr. F. P., 1356 Westmoreland Avenue, Syracuse, New York
   Lewis, Dr. W. H., Johns Hopkins University, Baltimore, Maryland
   Lowther, Dr. Florence del., Barnard College, New York City, New York
   MacNaught, Mr. Frank M., Woods Hole, Massachusetts
   Macklin, Dr. Charles C., 37 Gerard Street, London, Ontario
   Malone, Dr. E. F., 6610 North 11th Street, Philadelphia 26, Pennsylvania
   Means, Dr. J. H., 15 Chestnut Street, Boston, Massachusetts
   Moore, Dr. J. Percy, University of Pennsylvania, Philadelphia, Pennsylvania
   Payne, Dr. Fernandus, Indiana University, Bloomington, Indiana
   Porter, Dr. H. C., University of Pennsylvania, Philadelphia, Pennsylvania
   Riggs, Mr. Lawason, 74 Trinity Place, New York 6, New York
   Scott, Dr. Ernest L., Columbia University, New York City, New York
   Turner, Dr. C. L., Northwestern University, Evanston, Illinois
   Waite, Dr. F. G., 144 Locust Street, Dover, New Hampshire
   Wallace, Dr. Louise B., 359 Lytton Avenue, Palo Alto, California
   Warren, Dr. Herbert S., 610 Montgomery Avenue, Bryn Mawr, Pennsylvania
   Young, Dr. B. P., Cornell University, Ithaca, New York

2. REGULAR MEMBERS

   Abell, Dr. Richard G., 7 Cooper Road, New York City, New York
   Adams, Dr. A. Elizabeth, Mount Holyoke College, South Hadley, Massachusetts
   Addison, Dr. W. H. F., 286 East Sidney Avenue, Mount Vernon, New York
   Adolph, Dr. Edward F., University of Rochester School of Medicine and
     Dentistry, Rochester, New York
   Albert, Dr. Alexander, Mayo Clinic, Rochester, Minnesota
   Allen, Dr. M. Jean, Department of Biology, Wilson College, Chambersburg,
     Pennsylvania
ALLEN, Dr. ROBERT D., Department of Biology, Princeton University, Princeton, New Jersey
ALSCHER, Dr. RUTH, Department of Physiology, Manhattanville College, Purchase, New York
AMBERSON, Dr. WILLIAM R., Department of Physiology, University of Maryland School of Medicine, Baltimore, Maryland
ANDERSON, Dr. J. M., Department of Zoology, Cornell University, Ithaca, New York
ANDERSON, Dr. RUBERT S., Medical Laboratories, Army Chemical Center, Maryland (Box 632 Edgewood, Maryland)
ANDERSON, Dr. T. F., c/o Dr. A. Lurff, Institut Pasteur, 28 Rue du Dr. Roux, Paris 15e, France
ARMSTRONG, Dr. PHILIP B., State University of New York College of Medicine, Syracuse 10, New York
ARNOLD, Dr. WILLIAM A., Division of Biology, Oak Ridge National Laboratory, Oak Ridge, Tennessee
ATWOOD, Dr. KIMBALL C., 6029 University Avenue, Chicago 37, Illinois
AUSTIN, Dr. MARY L., Wellesley College, Wellesley, Massachusetts
AYERS, Dr. JOHN C., Department of Zoology, University of Michigan, Ann Arbor, Michigan
BAITSELL, Dr. GEORGE A., Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
BAKER, Dr. H. B., Department of Zoology, University of Pennsylvania, Philadelphia 4, Pennsylvania
BALL, Dr. ERIC G., Department of Biological Chemistry, Harvard University Medical School, Boston 15, Massachusetts
BALLARD, Dr. WILLIAM W., Dartmouth College, Hanover, New Hampshire
BANG, Dr. F. B., Department of Pathobiology, Johns Hopkins University School of Hygiene, Baltimore 5, Maryland
BARD, Dr. PHILIP, Johns Hopkins Medical School, Baltimore, Maryland
BARTHO, Dr. L. G., Department of Zoology, Columbia University, New York 27, New York
BARTLETT, Dr. JAMES H., Department of Physics, University of Illinois, Urbana, Illinois
BEAMS, Dr. HAROLD W., Department of Zoology, State University of Iowa, Iowa City, Iowa
BECK, Dr. L. V., Department of Physiology and Pharmacology, University of Pittsburgh School of Medicine, Pittsburgh 13, Pennsylvania
BEERS, Dr. C. D., Department of Zoology, University of North Carolina, Chapel Hill, North Carolina
BEIRNE, Dr. ELINOR H., Black Mountain, North Carolina
BENESCH, Dr. REINHOLD, Marine Biological Laboratory, Woods Hole, Massachusetts
BENESCH, Dr. RUTH, Marine Biological Laboratory, Woods Hole, Massachusetts
BENNENET, Dr. MIRIAM F., Department of Biology, Sweet Briar College, Sweet Briar, Virginia
BERG, Dr. WILLIAM E., Department of Zoology, University of California, Berkeley 4, California
BERMAN, DR. MONES, Institute for Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda 14, Maryland
BERNHIMER, DR. ALAN W., New York University College of Medicine, New York 16, New York
BERNSTEIN, DR. MAURICE, Department of Anatomy, Wayne University College of Medicine, Detroit 7, Michigan
BERTHOLF, DR. LLOYD, Illinois Wesleyan University, Bloomington, Illinois
BEVELANDER, DR. GERRIT, New York University School of Medicine, New York 16, New York
BEGLOW, DR. HENRY B., Museum of Comparative Zoology, Harvard University, Cambridge 38, Massachusetts
BISHOP, DR. DAVID W., Department of Embryology, Carnegie Institution of Washington, Baltimore 5, Maryland
BLANCHARD, DR. K. C., Johns Hopkins Medical School, Baltimore, Maryland
BLOCH, DR. ROBERT, 518 South 42nd Street, Apt. C 7, Philadelphia 4, Pennsylvania
BLUM, DR. HAROLD F., Department of Biology, Princeton University, Princeton, New Jersey
BODANSKY, DR. OSCAR, Department of Biochemistry, Memorial Cancer Center, 444 East 68th Street, New York 21, New York
BODIAN, DR. DAVID, Department of Anatomy, Johns Hopkins University, 709 North Wolfe Street, Baltimore 5, Maryland
BOELL, DR. EDGAR J., Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
BOETTGER, DR. EDWARD G., Department of Zoology, University of Connecticut, Storrs, Connecticut
BOLD, DR. HAROLD C., Department of Botany, University of Texas, Austin, Texas
BOREL, DR. HANS, Department of Zoology, University of Pennsylvania, Philadelphia 4, Pennsylvania
BOWEN, DR. VAUGHAN T., Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
BRADLEY, DR. HAROLD C., 2639 Durant Avenue, Berkeley 4, California
BRIDGMAN, DR. ANNA J., Department of Biology, Agnes Scott College, Decatur, Georgia
BRONK, DR. DETLEY W., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
BROOKS, DR. MATILDA M., Department of Physiology, University of California, Berkeley 4, California
BROWN, DR. DUGALD E. S., Department of Zoology, University of Michigan, Ann Arbor, Michigan
BROWN, DR. FRANK A., JR., Department of Biological Sciences, Northwestern University, Evanston, Illinois
BROWNELL, DR. KATHERINE A., Department of Physiology, Ohio State University, Columbus, Ohio
BUCK, DR. JOHN B., Laboratory of Physical Biology, National Institutes of Health, Bethesda 14, Maryland
BULLINGTON, DR. W. E., Randolph-Macon College, Ashland, Virginia
BULLOCK, Dr. T. H., Department of Zoology, University of California, Los Angeles 24, California
BURBANK, Dr. WILLIAM D., Box 721, Woods Hole, Massachusetts
BURDICK, Dr. C. LALOR, The Lalor Foundation, 4400 Lancaster Pike, Wilmington, Delaware
BURKENROAD, Dr. M. D., c/o Lab. Nat. de Pesca, Apartado 3318, Estofeta #1, Olindania, Republic of Panama
BUTLER, Dr. E. G., Department of Biology, P.O. Box 704, Princeton University, Princeton, New Jersey
CAMERON, Dr. J. A., Baylor College of Dentistry, Dallas, Texas
CANTONI, Dr. GIULIO, National Institutes of Health, Mental Health, Bethesda 14, Maryland
CARLSON, Dr. FRANCIS D., Department of Biophysics, Johns Hopkins University, Baltimore 18, Maryland
CARPENTER, Dr. RUSSELL L., Tufts University, Medford 55, Massachusetts
CARSON, Miss RACHEL, 11701 Berwick Road, Silver Spring, Maryland
CASE, Dr. JAMES, Department of Zoology, State University of Iowa, Iowa City, Iowa
CATTELL, Dr. McKeen, Cornell University Medical College, 1300 York Avenue, New York City, New York
CATTELL, Mr. WARE, Cosmos Club, Washington 5, D. C.
CHAET, Dr. ALFRED B., Department of Biology, American University, Washington 16, D. C.
CHAMBERS, Dr. EDWARD, Department of Physiology, University of Miami Medical School, Coral Gables, Florida
CHANG, Dr. JOSEPH J., National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland
CHASE, Dr. AURIN M., Department of Biology, Princeton University, Princeton, New Jersey
CHENEY, Dr. RALPH H., Biology Department, Brooklyn College, Brooklyn 10, New York
CLAFF, Dr. C. LLOYD, 5 Van Beal Road, Randolph, Massachusetts
CLARK, Dr. A. M., Department of Biology, University of Delaware, Newark, Delaware
CLARK, Dr. E. R., The Wistar Institute, Woodland Avenue and 36th Street, Philadelphia 4, Pennsylvania
CLARK, Dr. LEONARD B., Department of Biology, Union College, Schenectady, New York
CLARKE, Dr. GEORGE L., Harvard University, Biological Laboratories, Cambridge 38, Massachusetts
CLELAND, Dr. RALPH E., Indiana University, Bloomington, Indiana
CLEMENT, Dr. A. C., Department of Biology, Emory University, Atlanta, Georgia
CLOWES, Dr. G. H. A., Eli Lilly and Company, Indianapolis, Indiana
COE, Dr. W. R., 183 Third Avenue, Chula Vista, California
COHEN, Dr. SEYMOUR S., Department of Physiological Chemistry, University of Pennsylvania, Philadelphia 4, Pennsylvania
COLE, DR. KENNETH S., National Institutes of Health (NINDB), Bethesda 14, Maryland
COLLETT, DR. MARY E., 34 Weston Road, Wellesley 81, Massachusetts
COLLIER, DR. J ACK R., Department of Zoology, Louisiana State University, Baton Rouge, Louisiana
COLTON, DR. H. S., Box 601, Flagstaff, Arizona
COLWIN, DR. ARTHUR L., Department of Biology, Queens College, Flushing, New York
COLWIN, DR. LAURA H., Department of Biology, Queens College, Flushing, New York
COOPER, DR. KENNETH W., Department of Zoology, University of Florida, Gainesville, Florida
COOPERSTEIN, DR. SHERWIN J., Department of Anatomy, Western Reserve University Medical School, Cleveland, Ohio
COPELAND, DR. D. E., 8705 Susanna Lane, Chevy Chase 15, Maryland
COPELAND, DR. MANTON, Bowdoin College, Brunswick, Maine
CORNMAN, DR. IVOR, Hazleton Laboratories, Box 333, Falls Church, Virginia
COSTELLO, DR. DONALD P., Department of Zoology, University of North Carolina, Chapel Hill, North Carolina
COSTELLO, DR. HELEN MILLER, Department of Zoology, University of North Carolina, Chapel Hill, North Carolina
CRANE, MR. JOHN O., Woods Hole, Massachusetts
CRANE, DR. ROBERT K., Department of Biological Chemistry, Washington University Medical School, St. Louis, Missouri
CROASDALE, DR. HANNAH T., Dartmouth College, Hanover, New Hampshire
CROUSE, DR. HELEN V., Goucher College, Towson, Baltimore 4, Maryland
CROWELL, DR. P. S., JR., Department of Zoology, Indiana University, Bloomington, Indiana
CSAPO, DR. ARPAD I., Rockefeller Institute for Medical Research, 66th Street and York Avenue, New York 21, New York
CURTIS, DR. MAYNIE R., University of Miami, Box 1015, South Miami, Florida
CURTIS, DR. W. C., University of Missouri, Columbia, Missouri
DAN, DR. JEAN CLARK, Misaki Biological Station, Misaki, Japan
DAN, DR. KATSUMA, Misaki Biological Station, Misaki, Japan
DANIELLI, DR. JAMES F., Department of Zoology, King's College, London, England
DAVIS, DR. BERNARD D., Harvard Medical School, 25 Shattuck Street, Boston 15, Massachusetts
DAWSON, DR. A. B., Biological Laboratories, Harvard University, Cambridge 38, Massachusetts
DAWSON, DR. A. J., College of the City of New York, New York City, New York
DEANE, DR. HELEN W., Albert Einstein College of Medicine, New York 61, New York
DILLER, DR. IRENE C., Institute for Cancer Research, Fox Chase, Philadelphia, Pennsylvania
DILLER, DR. WILLIAM F., 2417 Fairhill Avenue, Glenside, Pennsylvania
DIXON, DR. FRANK J., Department of Pathology, University of Pittsburgh School of Medicine, Pittsburgh 13, Pennsylvania
DODDS, DR. G. S., West Virginia University School of Medicine, Morgantown, West Virginia
DOLLEY, DR. WILLIAM L., Department of Biology, Randolph-Macon College, Ashland, Virginia
DONALDSON, DR. JOHN C., University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania
DOTY, DR. MAXWELL S., Department of Biology, University of Hawaii, Honolulu, T. H.
DUBois, DR. EUGENE F., 200 East End Avenue, New York 28, New York
DURYEE, DR. WILLIAM R., George Washington University School of Medicine, Department of Physiology, Washington 5, D. C.
EDDS, DR. MAC V., Jr., Department of Biology, Brown University, Providence 12, Rhode Island
EDWARDS, DR. CHARLES, University of Utah, Salt Lake City, Utah
EICHEL, DR. HERBERT J., Hahnemann Medical College, Philadelphia, Pennsylvania
ELLIOT, DR. ALFRED M., Department of Zoology, University of Michigan, Ann Arbor, Michigan
ESSNER, DR. EDWARD S., Department of Pathology, Albert Einstein College of Medicine, New York 61, New York
EVANS, DR. TITUS C., State University of Iowa, Iowa City, Iowa
FAILLA, DR. G., Columbia University, College of Physicians and Surgeons, New York 32, New York
FAURé-FREMIET, DR. EMANUEL, Collège de France, Paris, France
FERGUSON, DR. F. P., Department of Physiology, University of Maryland Medical School, Baltimore 1, Maryland
FERGUSON, DR. JAMES K. W., Connought Laboratories, University of Toronto, Ontario, Canada
FIGGE, DR. F. H. J., University of Maryland Medical School, Lombard and Green Streets, Baltimore 1, Maryland
FINGERMAN, DR. MILTON, Department of Zoology, Newcomb College, Tulane University, New Orleans 18, Louisiana
FISCHER, DR. ERNST, Department of Physiology, Medical College of Virginia, Richmond 19, Virginia
FISHER, DR. JEANNE M., Department of Biochemistry, University of Toronto, Toronto, Canada
FISHER, DR. KENNETH C., Department of Biology, University of Toronto, Toronto, Canada
FORBES, DR. ALEXANDER, Biological Laboratories, Harvard University, Cambridge 38, Massachusetts
FRAENKEL, DR. GOTTFRIED S., Department of Entomology, University of Illinois, Urbana, Illinois
FREGANG, DR. WALTER H., Jr., P. O. Box 11, Poolesville, Maryland
FRIES, DR. ERIK F. B., Box 605, Woods Hole, Massachusetts
FRISCH, DR. JOHN A., Canisius College, Buffalo, New York
FURTH, DR. JACOB, 18 Springdale Road, Wellesley Farms, Massachusetts
FYE, DR. PAUL M., Director, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
GABRIEL, Dr. MORDECAI, Department of Biology, Brooklyn College, Brooklyn 10, New York
GAFFRON, Dr. HANS, Research Institutes, University of Chicago, 5650 Ellis Avenue, Chicago 37, Illinois
GALL, Dr. JOSEPH G., Department of Zoology, University of Minnesota, Minneapolis 14, Minnesota
GALTSSOFF, Dr. PAUL S., Woods Hole, Massachusetts
GASSER, Dr. HERBERT S., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
GILMAN, Dr. LAUREN C., Department of Zoology, University of Miami, Coral Gables, Florida
GINSBERG, Dr. HAROLD S., Western Reserve University School of Medicine, Cleveland, Ohio
GOODCHILD, Dr. CHAUNCEY G., Department of Biology, Emory University, Atlanta 22, Georgia
GOODRICH, Dr. H. B., Wesleyan University, Middletown, Connecticut
GOTSCHALL, Dr. GERTRUDE Y., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
GOULD, Dr. H. N., Biological Sciences Information Exchange, 1113 Dupont Circle Building, Washington, D. C.
GRAHAM, Dr. HERBERT, U. S. Fish and Wildlife Service, Woods Hole, Massachusetts
GRAND, Mr. C. G., Dade County Cancer Institute, 1155 N. W. 15th Street, Miami, Florida
GRANT, Dr. M. P., Sarah Lawrence College, Bronxville, New York
GRANT, Dr. PHILIP, Department of Pathobiology, Johns Hopkins University School of Hygiene, Baltimore 5, Maryland
GRAY, Dr. IRVING E., Department of Zoology, Duke University, Durham, North Carolina
GREEN, Dr. JAMES W., Department of Physiology, Rutgers University, New Brunswick, New Jersey
GREEN, Dr. MAURICE, Microbiology Department, St. Louis University Medical School, St. Louis, Missouri
GREGG, Dr. JAMES H., Department of Biological Sciences, University of Florida, Gainesville, Florida
GREGG, Dr. JOHN R., Department of Zoology, Duke University, Durham, North Carolina
GREIF, Dr. ROGER L., Department of Physiology, Cornell University Medical College, New York 21, New York
GRIFFIN, Dr. DONALD R., Harvard University, Biological Laboratories, Cambridge 38, Massachusetts
GROSCH, Dr. DANIEL S., Department of Genetics, Gardner Hall, North Carolina State College, Raleigh, North Carolina
GROSS, Dr. PAUL, Department of Biology, New York University, University Heights, New York 53, New York
GRUNDFEST, Dr. HARRY, Columbia University, College of Physicians and Surgeons, New York City, New York
GUDERNATSCH, DR. FREDERICK, 41 Fifth Avenue, New York 3, New York
GUTHERIE, DR. MARY J., Detroit Institute for Cancer Research, 4811 John R. Street, Detroit, Michigan
GUTTMAN, DR. RITA, Department of Physiology, Brooklyn College, Brooklyn 10, New York
GUYER, DR. MICHAEL F., University of Wisconsin, Madison, Wisconsin
HAIJDU, DR. STEPHEN, U. S. Public Health Institute, Bethesda 14, Maryland
HALL, DR. FRANK G., Department of Physiology, Duke University Medical School, Durham, North Carolina
HAMBURGER, DR. VIKTOR, Department of Zoology, Washington University, St. Louis, Missouri
HAMILTON, DR. HOWARD L., Department of Zoology, Iowa State College, Ames, Iowa
HANCE, DR. ROBERT T., Box R.R. #3, Loveland, Ohio
HARDING, DR. CLIFFORD V., Jr., Columbia University Medical School, New York City, New York
HARRISON, DR. ROSS G., Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
HARTLINE, DR. H. KEFFER, Rockefeller Institute for Medical Research, 66th Street and York Avenue, New York 21, New York
HARTMAN, DR. FRANK A., Hamilton Hall, Ohio State University, Columbus, Ohio
HARVEY, DR. E. NEWTON, Guyot Hall, Princeton University, Princeton, New Jersey
HARVEY, DR. ETHEL BROWNE, 48 Cleveland Lane, Princeton, New Jersey
HAUSCHKA, DR. T. S., Roswell Park Memorial Institute, 666 Elm Street, Buffalo 3, New York
HAXO, DR. FRANCIS T., Division of Marine Botany, Scripps Institute of Oceanography, University of California, La Jolla, California
HAYASHI, DR. TERU, Department of Zoology, Columbia University, New York 27, New York
HAYDEN, DR. MARGARET A., 34 Weston Road, Wellesley 81, Massachusetts
HAYWOOD, DR. CHARLOTTE, Mount Holyoke College, South Hadley, Massachusetts
HEILBRUNN, DR. L. V., Department of Zoology, University of Pennsylvania, Philadelphia 4, Penna.
HENDELEY, DR. CHARLES D., 615 South Second Avenue, Highland Park, New Jersey
HENLEY, DR. CATHERINE, Department of Zoology, University of North Carolina, Chapel Hill, North Carolina
HERVEY, DR. JOHN P., Box 735, Woods Hole, Massachusetts
HESS, DR. WALTER N., Hamilton College, Clinton, New York
HIIATT, DR. HOWARD H., Department of Medicine, Harvard Medical School, Boston 15, Massachusetts
HIBBARD, DR. HOPE, Department of Zoology, Oberlin College, Oberlin, Ohio
HILL, DR. SAMUEL E., 135 Brunswick Road, Troy, New York
HINRICHs, DR. MARIE, 344E Quincy Street, Riverside, Illinois
Hisaw, Dr. F. L., Biological Laboratories, Harvard University, Cambridge 38, Massachusetts

Hoadley, Dr. Leigh, Biological Laboratories, Harvard University, Cambridge 38, Massachusetts

Hodge, Dr. Charles, IV, Department of Biology, Temple University, Philadelphia, Pennsylvania

Hoffman, Dr. Joseph, National Heart Institute, National Institutes of Health, Bethesda 14, Maryland

Hogue, Dr. Mary J., University of Pennsylvania Medical School, Philadelphia, Pennsylvania

Hollaender, Dr. Alexander, Biology Division, O.R.N.L., Oak Ridge, Tennessee

Hopkins, Dr. Hoyt S., New York University College of Dentistry, New York City, New York

Hunter, Dr. Francis R., University of the Andes, Calle 18-a Carreral-E, Bogata, Colombia, South America

Hutchens, Dr. John O., Department of Physiology, University of Chicago, Chicago 37, Illinois

Hyde, Dr. Beal B., Department of Plant Sciences, University of Oklahoma, Norman, Oklahoma

Hyman, Dr. Libbie H., American Museum of Natural History, Central Park West at 79th Street, New York 24, New York

Irving, Dr. Laurence, U. S. Public Health Service, Anchorage, Alaska

Iselin, Mr. Columbus O'D., Woods Hole, Massachusetts

Jacobs, Dr. M. H., University of Pennsylvania School of Medicine, Philadelphia 4, Pennsylvania

Jacobs, Dr. William P., Department of Biology, Princeton University, Princeton, New Jersey

Jenner, Dr. Charles E., Department of Zoology, University of North Carolina, Chapel Hill, North Carolina

Johnson, Dr. Frank H., Biology Department, Princeton University, Princeton, New Jersey

Jones, Dr. E. Ruffin, Jr., Department of Biological Sciences, University of Florida, Gainesville, Florida

Kaan, Dr. Helen W., Marine Biological Laboratory, Woods Hole, Massachusetts

Kabat, Dr. E. A., Neurological Institute, College of Physicians and Surgeons, New York City, New York

Karush, Dr. Fred, Department of Pediatrics, University of Pennsylvania, Philadelphia, Pennsylvania

Kaufmann, Dr. B. P., Carnegie Institution, Cold Spring Harbor, Long Island, New York

Kemp, Dr. Norman E., Department of Zoology, University of Michigan, Ann Arbor, Michigan

Kempton, Dr. Rudolf T., Department of Zoology, Vassar College, Poughkeepsie, New York

Keosian, Dr. John, Department of Biology, Rutgers University, Newark 2, New Jersey
KETCHUM, Dr. Bostwick, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
KILLE, Dr. Frank R., State Department of Education, Albany 1, New York
KIND, Dr. C. Albert, Department of Chemistry, University of Connecticut, Storrs, Connecticut
KINDRED, Dr. J. E., University of Virginia, Charlottesville, Virginia
KING, Dr. John W., Morgan State College, Baltimore 12, Maryland
KING, Dr. Robert L., State University of Iowa, Iowa City, Iowa
KISCH, Dr. Bruno, 845 West End Avenue, New York City, New York
KLEINHOLZ, Dr. Lewis H., Department of Biology, Reed College, Portland, Oregon
KLOTZ, Dr. I. M., Department of Chemistry, Northwestern University, Evanston, Illinois
KOLIN, Dr. Alexander, Department of Biophysics, California Medical School, Los Angeles 24, California
KORR, Dr. I. M., Department of Physiology, Kirksville College of Osteopathy, Kirksville, Missouri
KRAHL, Dr. M. E., Department of Physiology, University of Chicago, Chicago 37, Illinois
KRAUSS, Dr. Robert, Department of Botany, University of Maryland, Baltimore 5, Maryland
KREIG, Dr. Wendell J. S., 303 East Chicago Avenue, Chicago, Illinois
KUFFLER, Dr. Stephen, Department of Ophthalmology, Johns Hopkins Hospital, Baltimore 5, Maryland
KUNITZ, Dr. Moses, Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
LACKEY, Dr. James B., Box 497, Melrose, Florida
LANCEFIELD, Dr. D. E., Queens College, Flushing, New York
LANCEFIELD, Dr. Rebecca C., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
LANDIS, Dr. E. M., Harvard Medical School, Boston 15, Massachusetts
LANSING, Dr. Albert I., Department of Anatomy, University of Pittsburgh Medical School, Pittsburgh 13, Pennsylvania
LAPPAN, Dr. Max A., Department of Biophysics, University of Pittsburgh, Pittsburgh, Pennsylvania
LAVIN, Dr. George I., 3714 Springdale Avenue, Baltimore, Maryland
LAZAROW, Dr. Arnold, Department of Anatomy, University of Minnesota Medical School, Minneapolis 14, Minnesota
LEDERBERG, Dr. Joshua, Department of Genetics, University of Wisconsin, Madison 6, Wisconsin
LEE, Dr. Richard E., Cornell University College of Medicine, New York City, New York
LEFÈVRE, Dr. Paul G., Brookhaven Apartments, Upton, Long Island, New York
LEHMANN, Dr. Fritz, Zoologische Institut, University of Berne, Berne, Switzerland
LESSLER, Dr. Milton A., Department of Physiology, Ohio State University, Columbus, Ohio
LEVINE, Dr. Rachmiel, Michael Rees Hospital, Chicago, 16, Illinois
LEVY, DR. MILTON, Biochemistry Department, New York University School of Dentistry, New York 10, New York
LEWIN, DR. RALPH A., Marine Biological Laboratory, Woods Hole, Massachusetts
LEWIS, DR. IVEY F., 1110 Rugby Road, Charlottesville, Virginia
LING, DR. GILBERT, 307 Berkeley Road, Merion, Pennsylvania
LITTLE, DR. E. P., 216 High Street, West Newton, Massachusetts
LLOYD, DR. DAVID P. C., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
LOCHHEAD, DR. JOHN H., Department of Zoology, University of Vermont, Burlington, Vermont
LOEWI, DR. OTTO, 155 East 93rd Street, New York City, New York
LOEWI, DR. ROBERT F., Presbyterian Hospital, 620 West 168th Street, New York 32, New York
LOEWI, DR. OTTO, 155 East 93rd Street, New York City, New York
LORAND, DR. LASZLO, Department of Chemistry, Northwestern University, Evanston, Illinois
LOVE, DR. LOIS H., 4233 Regent Street, Philadelphia 4, Pennsylvania
LOVE, DR. WARNER E., 1043 Marlow Drive, Baltimore 12, Maryland
LUBIN, DR. MARTIN, Department of Pharmacology, Harvard Medical School, Boston 15, Massachusetts
LYNCH, DR. CLARA J., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
LYNCH, DR. RUTH STOCKING, Department of Botany, University of California, Los Angeles 24, California
LYNCH, DR. WILLIAM, Department of Biology, St. Ambrose College, Davenport, Iowa
LYNN, DR. W. GARDNER, Department of Biology, Catholic University of America, Washington, D. C.
McCouch, DR. MARGARET SUMWALT, University of Pennsylvania Medical School, Philadelphia, Pennsylvania
McDonald, SISTER ELIZABETH SETON, Department of Biology, College of Mt. St. Joseph, Mt. St. Joseph, Ohio
McElroy, DR. WILLIAM D., Department of Biology, Johns Hopkins University, Baltimore, Maryland
Maas, DR. WERNER K., New York University College of Medicine, New York City, New York
MacDougall, DR. MARY STUART, Mt. Vernon Apartments, 423 Clairmont Avenue, Decatur, Georgia
Magruder, DR. SAMUEL R., Department of Anatomy, Tufts Medical School, 136 Harrison Avenue, Boston, Massachusetts
Manwell, DR. REGINALD D., Syracuse University, Syracuse, New York
Marshak, DR. ALFRED, Department of Biology, University of Notre Dame, Notre Dame, Indiana
Martin, DR. EARL A., Department of Biology, Brooklyn College, Brooklyn 10, New York
REPORT OF THE DIRECTOR

MATHEWS, DR. SAMUEL A., Thompson Biological Laboratory, Williams College, Williamstown, Massachusetts

MAJOR, DR. JAMES W., 8 Gracewood Park, Cambridge 58, Massachusetts

MAZIA, DR. DANIEL, Department of Zoology, University of California, Berkeley 4, California

MEDES, DR. GRACE, Lankenau Research Institute, Philadelphia, Pennsylvania

MEINKOTH, DR. NORMAN A., Department of Biology, Swarthmore College, Swarthmore, Pennsylvania

MENKIN, DR. VALY, Agnes Barr Chase Foundation for Cancer Research, Temple University Medical School, Philadelphia, Pennsylvania

METZ, DR. C. B., Oceanographic Institute, Florida State University, Tallahassee, Florida

METZ, DR. CHARLES W., Department of Zoology, University of Pennsylvania, Philadelphia 4, Pennsylvania

MIDDLEBROOK, DR. ROBERT, Institute for Muscle Research, Marine Biological Laboratory, Woods Hole, Massachusetts

MILLER, DR. J. A., JR., Department of Anatomy, Emory University, Atlanta 22, Georgia

MILNE, DR. LORUS J., Department of Zoology, University of New Hampshire, Durham, New Hampshire

MOE, MR. HENRY A., Guggenheim Memorial Foundation, 551 Fifth Avenue, New York 17, New York

MONROY, DR. ALBERTO, Institute of Comparative Anatomy, University of Palermo, Italy

MOORE, DR. GEORGE M., Department of Zoology, University of New Hampshire, Durham, New Hampshire

MOORE, DR. JOHN A., Department of Zoology, Columbia University, New York 27, New York

MOORE, DR. JOHN W., Laboratory of Biophysics, NINDB, National Institutes of Health, Bethesda 14, Maryland

MOUL, DR. E. T., Department of Botany, Rutgers University, New Brunswick, New Jersey

MOUNTAIN, MRS. J. D., 8 Coolidge Avenue, White Plains, New York

MULLER, DR. H. J., Department of Zoology, Indiana University, Bloomington, Indiana

MULLINS, DR. LORIN J., Biophysical Laboratory, Purdue University, Lafayette, Indiana

MUSACCHIA, DR. XAVIER J., Department of Biology, St. Louis University, St. Louis 4, Missouri

NABRIT, DR. S. M., President, Texas Southern University, 3201 Wheeler Avenue, Houston 4, Texas

NACE, DR. PAUL FOLEY, Department of Biology, Hamilton College, McMaster University, Hamilton, Ontario, Canada

NACHMANSON, DR. DAVID, Columbia University, College of Physicians and Surgeons, New York City, New York

NAVEZ, DR. ALBERT E., 206 Churchill's Lane, Milton 86, Massachusetts

NELSON, DR. LEONARD, Department of Anatomy, University of Chicago, Chicago, Illinois
NEURATH, Dr. H., Department of Biochemistry, University of Washington, Seattle 5, Washington
Nicol, Dr. Paul A., Indiana Contract, Box K, A.P.O. 474, San Francisco, California
NIU, Dr. MAN-CHIANG, Rockefeller Institute for Medical Research, 66th Street and York Avenue, New York 21, New York
OCHOA, Dr. Severo, New York University College of Medicine, New York 16, New York
ODUM, Dr. Eugene, Department of Zoology, University of Georgia, Athens, Georgia
OPPENHEIMER, Dr. Jane M., Department of Biology, Bryn Mawr College, Bryn Mawr, Pennsylvania
OSTER, Dr. Robert H., University of Maryland School of Medicine, Baltimore 1, Maryland
OSTERHOUT, MRS. Marion Irwin, Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
OSTERHOUT, Dr. W. J. V., Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
PACKARD, Dr. Charles, Woods Hole, Massachusetts
PAGE, Dr. Irvine H., Cleveland Clinic, Cleveland, Ohio
PARMENTER, Dr. Charles L., Department of Zoology, University of Pennsylvania, Philadelphia 4, Pennsylvania
PARFITT, Dr. Arthur K., Department of Biology, Princeton University, Princeton, New Jersey
PASSANO, Dr. Leonard M., Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
PATTER, DR. BRADLEY M., University of Michigan School of Medicine, Ann Arbor, Michigan
PERKINS, Dr. John F., Jr., Department of Physiology, University of Chicago, Chicago 37, Illinois
PERSON, Dr. Philip, Chief, Special Dental Research Program, Veterans Administration Hospital, Brooklyn 9, New York
PETTIBONE, Dr. Marian H., Department of Zoology, University of New Hampshire, Durham, New Hampshire
PHILPOTT, Mr. Delbert E., 496 Palmer Avenue, Falmouth, Massachusetts
PICK, Dr. Joseph, Department of Anatomy, New York University, Bellevue Medical Center, New York City, New York
PIERCE, Dr. Madeleine E., Vassar College, Poughkeepsie, New York
PLOUGH, DR. HAROLD H., Department of Biology, Amherst College, Amherst, Massachusetts
POLISTER, Dr. A. W., Department of Zoology, Columbia University, New York 27, New York
POND, Dr. Samuel E., 53 Alexander Street, Manchester, Connecticut
PRATT, DR. FREDERICK H., 105 Hundreds Road, Wellesley Hills 82, Massachusetts
PROCTOR, Dr. Nathaniel, Department of Biology, Morgan State College, Baltimore 12, Maryland
PROSSER, Dr. C. Ladd, 401 Natural History Building, University of Illinois, Urbana, Illinois
REPORT OF THE DIRECTOR

PROVASOLI, DR. LUIGI, Haskins Laboratories, 305 E. 43rd Street, New York 17, New York

RAMSEY, DR. ROBERT W., Medical College of Virginia, Richmond, Virginia

RAND, DR. HERBERT W., 7 Siders Pond Road, Falmouth, Massachusetts

RANKIN, DR. JOHN S., Department of Zoology, University of Connecticut, Storrs, Connecticut

RATNER, DR. SARAH, Public Health Research Institute of the City of New York, Foot East 15th Street, New York 9, New York

RAY, DR. CHARLES, JR., Department of Biology, Emory University, Atlanta 22, Georgia

READ, DR. CLARK P., Johns Hopkins University, Baltimore, Maryland

REBHUN, DR. LIONEL I., Department of Biology, Box 704, Princeton University, Princeton, New Jersey

RECHNAGEL, DR. R. O., Department of Physiology, Western Reserve University, Cleveland, Ohio

REDFIELD, DR. ALFRED C., Woods Hole, Massachusetts

REINER, DR. J. M., V. A. Hospital, Albany, New York

RENN, DR. CHARLES E., 509 Ames Hall, Johns Hopkins University, Baltimore 18, Maryland

REZNICKOFF, DR. PAUL, Cornell University Medical College, 1300 York Avenue, New York City, New York

RICE, DR. E. L., 2241 Seneca Avenue, Alliance, Ohio

RICHARDS, DR. A. GLENN, Entomology Department, University of Minnesota, St. Paul 1, Minnesota

RICHARDS, DR. OSCAR W., American Optical Company, Research Center, Southbridge, Massachusetts

ROCKSTEIN, DR. MORRIS, Department of Physiology, New York University College of Medicine, New York 16, New York

ROGICK, DR. MARY D., College of New Rochelle, New Rochelle, New York

ROMER, DR. ALFRED S., Harvard University, Museum of Comparative Zoology, Cambridge, Massachusetts

RONKIN, DR. RAFAEL R., Department of Physiology, University of Delaware, Newark, Delaware

ROOT, DR. R. W., Department of Biology, College of the City of New York, New York City, New York

ROOT, DR. W. S., Columbia University, College of Physicians and Surgeons, Department of Physiology, New York City, New York

ROSE, DR. S. MERYL, Department of Zoology, University of Illinois, Champaign, Illinois

ROSENBERG, DR. EVELYN K., Department of Pathology, New York University, Bellevue Medical Center, New York 16, New York

ROSENTHAL, DR. THEODORE B., Department of Anatomy, University of Pittsburgh Medical School, Pittsburgh 13, Pennsylvania

ROSSI, DR. HAROLD H., Department of Radiology, Columbia University, 630 West 168th Street, New York 32, New York

ROTH, DR. JAY S., Department of Biochemistry, Hahnemann Medical College, Philadelphia 2, Pennsylvania
Rothenberg, Dr. M. A., Scientific Director, Dugway Proving Ground, Dugway, Utah
Rugh, Dr. Roberts, Radiological Research Laboratory, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York
Runnström, Dr. John, Wenner-Grens Institute, Stockholm, Sweden
Rutman, Dr. Robert J., Department of Zoology, University of Pennsylvania, Philadelphia 4, Pennsylvania
Ryther, Dr. John H., Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
Sandeen, Dr. Muriel I., Department of Zoology, Duke University, Durham, North Carolina
Saunders, Mr. Lawrence, R. D. 7, Bryn Mawr, Pennsylvania
Schachman, Dr. Howard K., Department of Biochemistry, University of California, Berkeley 4, California
Scharrer, Dr. Ernst A., Albert Einstein College of Medicine, 1710 Newport Avenue, New York 61, New York
Schecter, Dr. Victor, College of the City of New York, New York City, New York
Schlesinger, Dr. R. Walter, Department of Microbiology, St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis 4, Missouri
Schmidt, Dr. L. H., Christ Hospital, Cincinnati, Ohio
Schmitt, Dr. Francis O., Department of Biology, Massachusetts Institute of Technology, Cambridge, Massachusetts
Schmitt, Dr. O. H., Department of Physics, University of Minnesota, Minneapolis 14, Minnesota
Schneiderman, Dr. Howard A., Department of Zoology, Cornell University, Ithaca, New York
Scholander, Dr. P. F., Scripps Institute of Oceanography, La Jolla, California
Schotté, Dr. Oscar E., Department of Biology, Amherst College, Amherst, Massachusetts
Schrader, Dr. Franz, Department of Zoology, Columbia University, New York 27, New York
Schrader, Dr. Sally Hughes, Department of Zoology, Columbia University, New York 27, New York
Schramm, Dr. J. R., Department of Botany, Indiana University, Bloomington, Indiana
Scott, Dr. Allan C., Colby College, Waterville, Maine
Scott, Dr. D. B. McNair, Botany Annex, Cancer Chemotherapy Laboratory, University of Pennsylvania, Philadelphia, Pennsylvania
Scott, Sister Florence Marie, Seton Hill College, Greensburg, Pennsylvania
Scott, Dr. George T., Department of Zoology, Oberlin College, Oberlin, Ohio
Sears, Dr. Mary, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
Senft, Dr. Alfred W., Woods Hole, Massachusetts
Severinghaus, Dr. Aura E., Department of Anatomy, College of Physicians and Surgeons, New York City, New York
Shanes, Dr. Abraham M., Experimental Biology and Medicine Institute, National Institutes of Health, Bethesda 14, Maryland
SHAPIRO, DR. HERBERT, 5800 North Camac Street, Philadelphia 41, Pennsylvania

SHAVER, DR. JOHN R., Department of Zoology, Michigan State University, East Lansing, Michigan

SHELDON, DR. THEODORE, Rockefeller Institute, 66th Street and York Avenue, New York 21, New York

SICHEL, DR. FERDINAND J. M., University of Vermont, Burlington, Vermont

SICHEL, MRS. F. J. M., 35 Henderson Terrace, Burlington, Vermont

SILVA, DR. PAUL, Department of Botany, University of Illinois, Urbana, Illinois

SLIFER, DR. ELEANOR H., Department of Zoology, State University of Iowa, Iowa City, Iowa

SMITH, DR. DIETRICH C., Department of Physiology, University of Maryland School of Medicine, Baltimore, Maryland

SMITH, MR. HOMER P., General Manager, Marine Biological Laboratory, Woods Hole, Massachusetts

SMITH, MR. PAUL FERRIS, Marine Biological Laboratory, Woods Hole, Massachusetts

SMITH, DR. RALPH I., Department of Zoology, University of California, Berkeley 4, California

SONNEBORN, DR. T. M., Department of Zoology, Indiana University, Bloomington, Indiana

SPROPOULOS, DR. C. S., Department of Neurophysiology, National Institutes of Health, Bethesda 14, Maryland

STEINBERG, DR. MALCOLM S., Department of Biology, Johns Hopkins University, Baltimore 18, Maryland

STEWART, DR. DOROTHY, Rockford College, Rockford, Illinois

STOKEY, DR. ALMA G., Department of Botany, Mount Holyoke College, South Hadley, Massachusetts

STONE, DR. WILLIAM, Ophthalmic Plastics Laboratory, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts

STRAUS, DR. W. L., JR., Department of Anatomy, Johns Hopkins University Medical School, Baltimore 5, Maryland

STUNKARD, DR. HORACE W., American Museum of Natural History, New York 24, New York

STURTEVANT, DR. ALFRED H., California Institute of Technology, Pasadena 4, California
SULKIN, Dr. S. EDWARD, Department of Bacteriology, University of Texas, Southwestern Medical School, Dallas, Texas
SWOPE, Mr. GERARD, Jr., 570 Lexington Avenue, New York 22, New York
SZENT-GYöRGYI, Dr. ALBERT, Marine Biological Laboratory, Woods Hole, Massachusetts
SZENT-GYöRGYI, Dr. ANDREW G., Marine Biological Laboratory, Woods Hole, Massachusetts
TASAKI, Dr. ICHII, Laboratory of Neurophysiology, National Institute of Neurological Diseases and Blindness, Bethesda 14, Maryland
TASHIRO, Dr. SHIRO, University of Cincinnati, Medical College, Cincinnati, Ohio
TAYLOR, Dr. ROBERT E., Laboratory of Neurophysiology, National Institute of Neurological Diseases and Blindness, Bethesda 14, Maryland
TAYLOR, Dr. WM. RANDOLPH, Department of Botany, University of Michigan, Ann Arbor, Michigan
TEWINKEL, Dr. LOIS E., Department of Zoology, Smith College, Northampton, Massachusetts
TOBIAS, Dr. JULIAN, Department of Physiology, University of Chicago, Chicago, Illinois
TRACY, Dr. HENRY C., General Delivery, Oxford, Mississippi
TRAGER, Dr. WILLIAM, Rockefeller Institute, 66th Street and York Avenue, New York 21, New York
TRINKAUS, Dr. J. PHILIP, Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
TROLL, Dr. WALTER, Department of Industrial Medicine, New York University College of Medicine, New York City, New York
TWEDEDELL, Dr. KENYON S., Department of Biology, University of Notre Dame, Notre Dame, Indiana
TYLER, Dr. ALBERT, Division of Biology, California Institute of Technology, Pasadena 4, California
UHLENHUTH, Dr. EDWARD, University of Maryland School of Medicine, Baltimore, Maryland
URETZ, Dr. ROBERT B., Department of Biophysics, University of Chicago, Chicago, Illinois
DEVILLAFRANCA, Dr. GEORGE M., Department of Zoology, Smith College, Northampton, Massachusetts
VILLEE, Dr. CLAUDE A., Department of Biological Chemistry, Harvard Medical School, Boston 15, Massachusetts
VINCENT, Dr. WALTER S., Department of Anatomy, State University of New York School of Medicine, Syracuse 10, New York
WAINIO, Dr. W. W., Bureau of Biological Research, Rutgers University, New Brunswick, New Jersey
WALD, Dr. GEORGE, Biological Laboratories, Harvard University, Cambridge 38, Massachusetts
WARNER, Dr. ROBERT C., Department of Chemistry, New York University, College of Medicine, New York 16, New York
WATERMAN, Dr. T. H., Osborn Zoological Laboratories, Yale University, New Haven, Connecticut
WEBB, Dr. MARGUERITE, Department of Physiology and Bacteriology, Goucher College, Towson, Baltimore 4, Maryland
REPORT OF THE DIRECTOR

WEISS, DR. PAUL A., Laboratory of Developmental Biology, Rockefeller Institute, 66th Street and York Avenue, New York 21, New York

WENRICH, DR. D. H., University of Pennsylvania, Philadelphia 4, Pennsylvania

WHEDON, DR. A. D., 21 Lawncrest, Danbury, Connecticut

WHITAKER, DR. DOUGLAS M., Rockefeller Institute for Medical Research, 66th Street and York Avenue, New York 21, New York

WHITE, DR. E. GRACE, Wilson College, Chambersburg, Pennsylvania

WHITING, DR. ANNA R., University of Pennsylvania, Philadelphia 4, Pennsylvania

WHITING, DR. PHINEAS W., Zoological Laboratory, University of Pennsylvania, Philadelphia 4, Pennsylvania

WICHTERMAN, DR. RALPH, Biology Department, Temple University, Philadelphia, Pennsylvania

WICKERSHAM, MR. JAMES H., 530 Fifth Avenue, New York 36, New York

WIEMAN, DR. H. L., Box 485, Falmouth, Massachusetts

WIERCINSKI, DR. FLOYD J., Department of Biological Sciences, Drexel Institute of Technology, 32nd and Chestnut Streets, Philadelphia 4, Pennsylvania

WILLER, DR. C. G., Medical Laboratories, Applied Physiology Branch, Army Chemical Center, Maryland

WILLIER, DR. R. H., Department of Biology, Johns Hopkins University, Baltimore 18, Maryland

WILSON, DR. J. WALTER, Department of Biology, Brown University, Providence 12, Rhode Island

WILSON, DR. WALTER L., Department of Physiology, University of Vermont College of Medicine, Burlington, Vermont

WITSCHI, DR. EMIL, Department of Zoology, State University of Iowa, Iowa City, Iowa

WITTENBERG, DR. JONATHAN B., Department of Physiology and Biochemistry, Albert Einstein College of Medicine, New York 61, New York

WOLF, DR. ERNST, Pendleton Hall, Wellesley College, Wellesley, Massachusetts

WOODWARD, DR. ARTHUR A., Army Chemical Center, Maryland (Applied Physiology Branch, Army Chemical Corps, Medical Laboratory)

WRIGHT, DR. PAUL A., Department of Zoology, University of New Hampshire, Durham, New Hampshire

WRINCH, DR. DOROTHY, Department of Physics, Smith College, Northampton, Massachusetts

YNTEMA, DR. C. L., Department of Anatomy, State University of New York College of Medicine, Syracuse 10, New York

YOUNG, DR. D. B., Main Street, North Hanover, Massachusetts

ZINN, DR. DONALD J., Department of Zoology, University of Rhode Island, Kingston, Rhode Island

ZIRKLE, DR. RAYMOND E., Department of Radiobiology, University of Chicago, Chicago 37, Illinois

ZORZOLI, DR. ANITA, Department of Physiology, Vassar College, Poughkeepsie, New York

ZWEIFACH, DR. BENJAMIN, New York University-Bellevue Medical Center, New York City, New York

ZWILLING, DR. EDGAR, Department of Genetics, University of Connecticut, Storrs, Connecticut
3. ASSOCIATE MEMBERS

ALDRICH, MISS AMY
ALTON, DR. AND MRS. BENJAMIN H.
ARMSTRONG, DR. AND MRS. P. B.
BACON, MRS. ROBERT
BAITSELL, MRS. GEORGE
BALL, MRS. ERIC
BARBOUR, MR. LUCIUS H.
BARTOW, MR. AND MRS. CLARENCE
BARTOW, MRS. FRANCIS D.
BARTOW, MR. AND MRS. PHILIP K.
BELL, MRS. ARTHUR W.
BRADLEY, MR. AND MRS. ALBERT L.
BRADLEY, MR. AND MRS. CHARLES
BROWN, MRS. THORNTON
BURDICK, DR. C. LALOR
BURLINGAME, MRS. F. A.
CAHOÔN, MRS. SAMUEL, SR.
CALKINS, MRS. GARY N.
CALKINS, MRS. G. NATHAN, JR.
CALKINS, MR. AND MRS. SAMUEL W.
CARLTON, MR. AND MRS. WINSLOW
CLAFF, DR. AND MRS. C. LLOYD
CLARK, DR. AND MRS. ALFRED HULL
CLARK, MRS. LEROY
CLARK, MR. AND MRS. W. VAN ALAN
CLOWES, MR. ALLEN W.
CLOWES, MRS. G. H. A.
CLOWES, DR. AND MRS. G. H. A., JR.
COLTON, MR. AND MRS. H. SEYMOUR
CRANE, MR. AND MRS. BRUCE
CRANE, MR. JOHN
CRANE, MISS LOUISE
CRANE, MRS. MURRAY
CRANE, MR. STEPHEN
CRANE, MRS. W. CAREY
COWDRY, DR. AND MRS. E. V.
CROSSLEY, MR. AND MRS. ARCHIBALD M.
CROWELL, MR. AND MRS. PRINCE S.
CURTIS, DR. AND MRS. W. D.
DANIELS, MR. AND MRS. F. HAROLD
DAY, MR. AND MRS. POMEROY
DRAKER, MRS. MARY C.
DREYER, MR. AND MRS. FRANK A.
ELSITHM, MRS. DOROTHY
ENDER, MR. AND MRS. FREDERICK
EWING, MR. AND MRS. FREDERIC
FAY, MR. AND MRS. HENRY H.
FISHER, MR. AND MRS. B. C.
FRANCIS, MRS. LEWIS H., JR.
FROST, MRS. FRANK J.
GALTSOFF, MRS. PAUL S.
GIFFORD, MR. AND MRS. JOHN A.
GILCHRIST, MR. AND MRS. JOHN M.
GILDEA, DR. AND MRS. E. F.
GREEN, MISS GLADYS M.
HAIG, MRS. R. H.
HAMLEN, MR. AND MRS. J. MONROE
HARRELL, MR. AND MRS. JOEL E.
HARRINGTON, MR. AND MRS. ROBERT
HERRINGTON, MRS. A. W. S.
HERVEY, DR. AND MRS. JOHN P.
HIRSCHFELD, MRS. NATHAN B.
HOUSTON, MR. AND MRS. HOWARD
JEWETT, MRS. G. F.
KEITH, MR. AND MRS. HAROLD C.
KING, MR. AND MRS. FRANKLIN
KOLLMAN, MRS. BENJAMIN
LOBB, MRS. JOHN
LOEB, DR. AND MRS. ROBERT F.
MCCUSKER, MR. AND MRS. PAUL J.
MCKELVY, MR. JOHN E.
MARSLAND, MRS. DOUGLAS A.
MARVIN, MRS. WALTER T.
MST, MRS. S. O.
MEIGS, DR. AND MRS. J. WISTER
MITCHELL, MRS. JAMES McC.
MIXTER, MRS. W. JASON
MOSSER, MRS. BENJAMIN D.
MOTLEY, MRS. THOMAS
NEWTON, MISS HELEN
NICHOLS, MRS. GEORGE
NICHOLSON, REV. ROBERT W.
NIMS, MRS. E. D.
NORMAN FUND, INC., AARON E.
PARK, MR. AND MRS. M. S.
PENNINGTON, MISS ANNE H.
REDFIELD, DR. AND MRS. ALFRED C.
REZNIKOFF, DR. AND MRS. PAUL
RIGGS, MR. AND MRS. LAWSON
RIVINUS, MRS. F. M., JR.
ROOT, MRS. WALTER S.
RZENDAAL, DR. H. M.
RUDD, MR. AND MRS. H. W. DWIGHT
SANDS, MISS ADELAIDE G.
V. REPORT OF THE LIBRARIAN

In 1958, fifty-eight new journals were acquired, bringing the total number of currently received titles to 1654. Of these, there were 494 (11 new) Marine Biological Laboratory subscriptions, 621 (18 new) exchanges and 188 (9 new) gifts; 95 (5 new) were Woods Hole Oceanographic Institution subscriptions; 195 (4 new) were exchanges and 61 (11 new) were gifts.

The Laboratory purchased 145 books, received 84 complimentary copies (5 from authors and 79 from publishers) and accepted 38 miscellaneous gifts. The Institution purchased 75 titles and received 12 gifts. The total number of books accessioned totalled 354. Many books in the physical sciences were purchased, thus filling a demand that has been apparent for many years.

Through purchase, exchange and gift the Laboratory completed 8 journal sets and partially completed 32. The Institution completed 3 sets and partially completed 5. There were 3873 reprints added to the collection of which 1722 were of current issue.

At the close of the year, the Library contained 74,590 bound volumes and 209,998 reprints.

The Library sent out on inter-library loan 332 volumes and borrowed 112, a decided increase over 1957. Several copying machines were tried out, none of which met the necessary requirements. About 970 volumes and 198 pamphlets were bound.

A large reprint collection was presented by Dr. J. Percy Moore of which about 1000 papers were added to the shelves. A large percentage of the duplicate material was presented to the U. S. Fish and Wildlife Service Library and to the Library of the Narragansett Laboratory. Many zoological papers were stored for future replacement copies of articles used in the Invertebrate Course. Through Dr. Arnold Lazarow a collection was received from the University of Minnesota containing hundreds of papers published during the 19th century.

Smaller pamphlet collections were received from the Dept. of Biological Chemistry, Harvard Medical School; Dr. Benj. P. Sonnenblick, and the estate of the late Dr. Chas. R. Stockard. Mrs. A. R. Memhard presented fourteen books belonging to her late husband. Two books were received from Dr. Alfred G. Marshak; four from Dr. Henry Stommel; two from Dr. Albert Szent-Györgyi; several early Reports of the Division of Fish and Game, State of Massachusetts, from Dr. David Belding; and early numbers of the “Biological Bulletin” were returned to stock by Dr. Carl Gans and by Dr. P. W. Whiting.
The Library extends grateful acknowledgement to all of its friends who have so generously made the donations mentioned above.

During the year, some of the visiting scientists from foreign countries selected duplicate material which was shipped to the following institutions: Caribbean Marine Biological Institute, Curacao; Faculty of Fisheries, Hokkaido University, Japan; Chulalongkorn University, Bangkok; and the New Zealand Oceanographic Institution, Wellington.

The willing assistance given by the members of the Library Committee and the Book Committee has made the year a progressive one.

Respectfully submitted,

DEBORAH L. HARLOW,
Librarian

VI. REPORT OF THE TREASURER

The market value of both the General Endowment Fund and the fund for the Library at December 31, 1958, amounted to $1,719,105 as compared with the total of $1,461,278 as of December 31, 1957. The average yield on the Securities was 3.48% of market value and 5.90% of book value. The total uninvested principal cash in the above accounts as of December 31, 1958, was $2,840. Classification of the Securities held in the Endowment Funds appears in the auditor's report.

The market value of the pooled securities as of December 31, 1958, was $297,441 with uninvested principal cash of $469; the value at December 31, 1957, being $247,629. The book value of the securities in this account was $243,958 on December 31, 1958, compared with $236,735 a year earlier. The average yield on market value was 3.64% and 4.44% of book value.

The proportionate interest in the Pool Fund Account of the various Funds as of December 31, 1958, is as follows:

<table>
<thead>
<tr>
<th>Fund</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pension Funds</td>
<td>19.495%</td>
</tr>
<tr>
<td>General Laboratory Investment</td>
<td>56.540</td>
</tr>
<tr>
<td>Bio Club Scholarship Fund</td>
<td>1.648</td>
</tr>
<tr>
<td>Rev. Arsenious Boyer Scholarship Fund</td>
<td>2.017</td>
</tr>
<tr>
<td>Gary N. Calkins Fund</td>
<td>1.889</td>
</tr>
<tr>
<td>Allen R. Memhard Fund</td>
<td>.366</td>
</tr>
<tr>
<td>F. R. Lillie Memorial Fund</td>
<td>6.366</td>
</tr>
<tr>
<td>Lucretia Crocker Fund</td>
<td>6.892</td>
</tr>
<tr>
<td>E. G. Conklin Fund</td>
<td>1.166</td>
</tr>
<tr>
<td>M. H. Jacobs Scholarship Fund</td>
<td>.831</td>
</tr>
<tr>
<td>Jewett Memorial Fund</td>
<td>.612</td>
</tr>
<tr>
<td>Anonymous Gift</td>
<td>2.178</td>
</tr>
</tbody>
</table>

The Jewett Memorial Fund and the Anonymous Gift Fund are included in the Pool Fund Account; however, it has not been determined how these funds are to be used.
REPORT OF THE TREASURER 49

The special Custodian account which was used to activate available funds of a temporary nature last year yielded income of $5,957, plus $1,487 interest from Savings Bank deposits of a similar nature. This income is being reserved for capital improvements.

The Securities pledged to cover the M.B.L. Club Loan matured in May, 1958. These Securities were converted into cash on deposit in a savings account with the Falmouth National Bank in the amount of $3,046. The amount of the Loan is approximately $2,000.

Donations from the M.B.L. Associates for 1958 were $3,150 as compared with $3,481 for 1957. Unrestricted gifts from foundations, societies and companies amounted to $38,579.

We are administering 21 grants for investigators in addition to those directly to the M.B.L. The amounts of the grants vary in accordance with the investigator's project of research. An amount of 15% based on the amount expended is allowed the Laboratory as overhead.

Major new construction grants awarded during 1958 are as follows:

New Laboratory Building:
- Rockefeller Institute .................. $ 738,500
- National Institutes of Health ........... 369,250
- National Science Foundation ............ 369,250

$1,477,000

Devil's Lane Housing:
- National Science Foundation ............ $ 175,000
- Grass Foundation ................... 10,000

$ 185,000

Lybrand, Ross Bros. & Montgomery have examined our books and submitted financial statements for examination.

Following is a statement of the auditors:

To the Trustees of the Marine Biological Laboratory, Woods Hole, Massachusetts:

We have examined the balance sheets of Marine Biological Laboratory as at December 31, 1958 and 1957, the related statements of operation expenditures and income for the years then ended, and statement of current fund for the year ended December 31, 1958. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we consider necessary in the circumstances.

In our opinion, the accompanying financial statements present fairly the assets, liabilities and funds of Marine Biological Laboratory at December 31, 1958 and 1957, and the expenditures and income for the years then ended.

Lybrand, Ross Bros. & Montgomery

Boston, Massachusetts
June 3, 1959

James H. Wickersham,
Treasurer
BALANCE SHEETS

December 31, 1958

Investments

Investments held by Trustee:

- Securities, at cost (approximate market quotation 1958—$1,719,105; 1957—$1,461,278) $1,014,460
- Cash 2,840

$1,017,300

Investments of other endowment and unrestricted funds:

- Pooled investments, at cost (approximate market quotation 1958—$297,441; 1957—$247,629) 243,958
- Less temporary investment of current fund cash 5,728

$238,230

- Other investments 69,756
- Cash (note A) 13,401
- Accounts receivable 2,435

$323,822

Plant Assets

- Land, buildings, library and equipment (note B) 2,970,655
- Less allowance for depreciation (note B) 1,063,577

1,907,078

- Construction in progress 156,301
- Cash 9,255
- Accounts receivable 11,757

U. S. Government obligations, at cost:

- $720,000 Treasury notes, 3s, 11/15/59 722,025

2,806,416

Current Assets

- Cash 118,480

- U. S. Government obligations, at cost:
  - $30,000 Treasury notes, 3s, 11/15/59 30,020
- Temporary investment in pooled securities 5,728
- Accounts receivable (U. S. Government, 1958—$32,808; 1957—$19,605) 52,379
- Inventories of specimens and Bulletins 71,110
- Prepaid insurance and other 15,383

$4,440,638
REPORT OF THE TREASURER

MARINE BIOLOGICAL LABORATORY

BALANCE SHEETS

December 31, 1958

Endowment Funds

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment funds given in trust for benefit of the Marine Biological Laboratory</td>
<td>$1,017,300</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment funds for awards and scholarships:</td>
<td></td>
</tr>
<tr>
<td>Principal</td>
<td>64,415</td>
</tr>
<tr>
<td>Unexpended income</td>
<td>3,144</td>
</tr>
<tr>
<td>Unrestricted funds functioning as endowment</td>
<td>206,378</td>
</tr>
<tr>
<td>Retirement fund</td>
<td>52,759</td>
</tr>
<tr>
<td>Pooled investments—accumulated gain or (loss)</td>
<td>(2,874)</td>
</tr>
<tr>
<td></td>
<td>323,822</td>
</tr>
</tbody>
</table>

Plant Liability and Funds

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds expended for plant, less retirements</td>
<td>3,103,854</td>
</tr>
<tr>
<td>Less allowance for depreciation charged thereto</td>
<td>1,063,577</td>
</tr>
<tr>
<td></td>
<td>2,040,277</td>
</tr>
<tr>
<td>Unexpended plant funds</td>
<td>743,037</td>
</tr>
<tr>
<td></td>
<td>2,783,314</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>23,102</td>
</tr>
<tr>
<td></td>
<td>2,806,416</td>
</tr>
</tbody>
</table>

Current Liabilities and Funds

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts payable</td>
<td>33,155</td>
</tr>
<tr>
<td>Unexpended balances of gifts for designated purposes</td>
<td>9,767</td>
</tr>
<tr>
<td>Advance payments on research contracts</td>
<td>109,792</td>
</tr>
<tr>
<td>Current fund</td>
<td>140,386</td>
</tr>
<tr>
<td></td>
<td>$4,440,638</td>
</tr>
</tbody>
</table>

Notes:

A—The Laboratory has guaranteed a note of approximately $2,000 of the M.B.L. Club and has deposited as security therefor the passbook for a savings account deposit of $3,046, included in cash.

B—The Laboratory has since January 1, 1916, provided for reduction of book amounts of plant assets and funds invested in plant at annual rates ranging from 1% to 5% of the original cost of the assets.
MARINE BIOLOGICAL LABORATORY

STATEMENTS OF OPERATING EXPENDITURES AND INCOME
Year Ended December 31, 1958

Operating Expenditures

Direct expenditures of departments:
- Research and accessory services: $162,011
- Instruction: 39,190
- Library, including book purchases: 35,270
- Biological Bulletin: 22,050

258,521

Operating Expenditures

Less depreciation included in plant operation and dormitories and dining services above but charged to plant funds: 38,884

709,443

Income

Direct income of departments:
- Research fees: 47,269
- Accessory services (including sales of biological specimens, 1958—$73,354): 116,366
- Instruction fees: 16,865
- Library fees and income: 9,586
- Biological Bulletin, subscriptions and sales: 16,071

206,157

Reimbursement and allowance for direct and indirect costs on research contracts: 146,394

Dormitories and dining services income: 108,419

460,970

Investment income used for current expenses:
- Endowment funds: 88,106
- Current fund investments: 7,781
- Gifts used for current expenses: 105,829
- Sundry income: 5

Total current income: 662,691

Excess of income or (operating expenditures): ($ 7,868)

MARINE BIOLOGICAL LABORATORY

STATEMENT OF CURRENT FUND
Year Ended December 31, 1958


Excess of operating expenditures over income 1958: ($ 7,868)

Balance December 31, 1958: $140,386
# REPORT OF THE TREASURER

MARINE BIOLOGICAL LABORATORY

## SUMMARY OF INVESTMENTS OF ENDOWMENT FUNDS

December 31, 1958

<table>
<thead>
<tr>
<th>Securities held by Trustee:</th>
<th>Cost</th>
<th>% of Total</th>
<th>Approximate Market Quotations</th>
<th>% of Total</th>
<th>Investment Income 1958</th>
</tr>
</thead>
<tbody>
<tr>
<td>General endowment fund:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U. S. Government bonds</td>
<td>387</td>
<td>58.7</td>
<td>479,575</td>
<td>33.9</td>
<td>15,072</td>
</tr>
<tr>
<td>Other bonds</td>
<td>499,403</td>
<td>58.7</td>
<td>479,575</td>
<td>33.9</td>
<td>15,459</td>
</tr>
<tr>
<td>Preferred stocks</td>
<td>85,788</td>
<td>10.1</td>
<td>71,025</td>
<td>5.0</td>
<td>3,370</td>
</tr>
<tr>
<td>Common stocks</td>
<td>265,979</td>
<td>31.2</td>
<td>862,808</td>
<td>61.1</td>
<td>30,824</td>
</tr>
<tr>
<td></td>
<td>851,170</td>
<td>100.0</td>
<td>1,413,408</td>
<td>100.0</td>
<td>49,653</td>
</tr>
<tr>
<td>General Educational Board endowment fund:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U. S. Government bonds</td>
<td>312</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other bonds</td>
<td>95,004</td>
<td>58.2</td>
<td>89,525</td>
<td>29.3</td>
<td>3,275</td>
</tr>
<tr>
<td>Preferred stocks</td>
<td>27,281</td>
<td>16.7</td>
<td>24,268</td>
<td>7.9</td>
<td>1,130</td>
</tr>
<tr>
<td>Common stocks</td>
<td>41,005</td>
<td>25.1</td>
<td>191,904</td>
<td>62.8</td>
<td>5,839</td>
</tr>
<tr>
<td></td>
<td>163,290</td>
<td>100.0</td>
<td>305,697</td>
<td>100.0</td>
<td>10,244</td>
</tr>
<tr>
<td>Total securities held by Trustee</td>
<td>$1,014,460</td>
<td></td>
<td>$1,719,105</td>
<td></td>
<td>$59,897</td>
</tr>
<tr>
<td>Investments of other endowment and unrestricted funds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pooled investments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other bonds</td>
<td>135,666</td>
<td>55.6</td>
<td>137,816</td>
<td>46.3</td>
<td>5,201</td>
</tr>
<tr>
<td>Preferred stocks</td>
<td>10,531</td>
<td>4.3</td>
<td>11,350</td>
<td>3.8</td>
<td>73</td>
</tr>
<tr>
<td>Common stocks</td>
<td>97,761</td>
<td>40.1</td>
<td>148,275</td>
<td>49.9</td>
<td>5,547</td>
</tr>
<tr>
<td></td>
<td>243,958</td>
<td>100.0</td>
<td>$ 297,441</td>
<td>100.0</td>
<td>10,821</td>
</tr>
<tr>
<td>Other investments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U. S. Government bonds</td>
<td>43,600</td>
<td></td>
<td></td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Common stocks</td>
<td>26,156</td>
<td></td>
<td></td>
<td></td>
<td>167</td>
</tr>
<tr>
<td>Real estate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>69,756</td>
<td></td>
<td></td>
<td></td>
<td>22,740</td>
</tr>
<tr>
<td>Total investments of other endowment and unrestricted funds</td>
<td>$ 313,714</td>
<td></td>
<td></td>
<td></td>
<td>$33,561</td>
</tr>
<tr>
<td>Total investment income</td>
<td>93,458</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custodian's fees charged thereto</td>
<td>(885)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income of current funds temporarily invested in pooled securities</td>
<td>(220)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment income distributed to funds</td>
<td>$92,353</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>