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The Rockefeller University

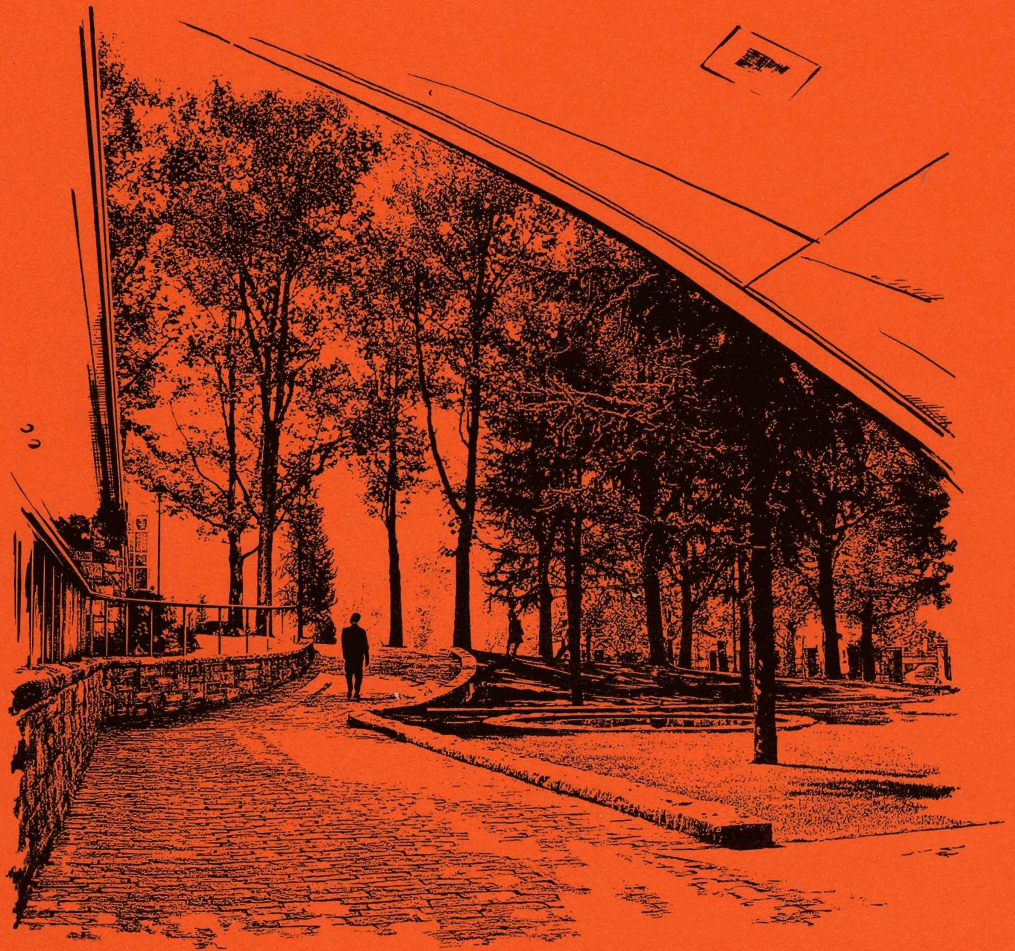
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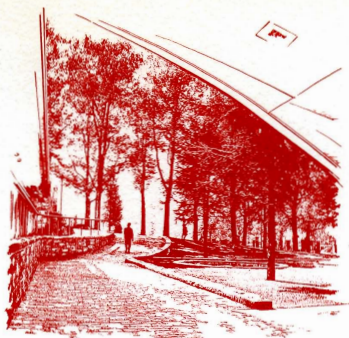
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THE ROCKEFELLER INSTITUTE
Quarterly WINTER • 1961



THE ROCKEFELLER INSTITUTE · A GRADUATE UNIVERSITY AND RESEARCH CENTER



The park-like character of the Institute's campus is shown on the cover of this issue. The view is toward the south from Caspary Auditorium across the 66th street driveway lined with sycamores nearly half a century old. In the distance is the facade of the South Laboratory, two blocks away, past the lawn and the gardens facing the Graduate Students Residence Hall. The photograph is by Vandivert, photomechanically processed to simulate a pen drawing.

THE RISE OF BIOLOGICAL CHEMISTRY: THE INSTITUTE AND THE SOCIETY

PROFESSOR FRITZ LIPMANN'S term as President of the American Society of Biological Chemists during 1960-1961 is a reminder of the parallel and often interdependent histories of the Society and The Rockefeller Institute during the past half-century. The year of the founding of the Society, 1906, was also the year of the opening of the Institute's laboratories; many distinguished scientists have been associated with both; and for a critical decade the Institute published what became the Society's journal, the *Journal of Biological Chemistry*.

Soon after the founding of the Institute in 1901, biological chemistry began to play an important part in its program. In 1905, Simon Flexner, recognizing the growing importance of biochemistry, appointed P.A. Levene, who at thirty-five had become a pioneer in biochemical research in its fundamental aspects in this country.

FOUNDING THE SOCIETY

When the Society of Biological Chemists was officially organized in the winter of 1906 in New York City, John J. Abel of The Johns Hopkins University stated at the organizational meeting that there were then "about 100 active workers in this field, using the term in its widest sense." Though the entire scientific staff of The Rockefeller Institute at that time numbered less than a score, two were among the charter members of the Society: P. A. Levene and W. A. Beatty. Two other charter members, Edward K. Dunham and G. M. Meyer, joined the Institute

staff in 1908, and Christian A. Herter, first Treasurer of the Institute, was also a charter member. Other charter members of the Society in 1906 were to come to the Institute: Jacques Loeb, then at the University of California, and Francis H. McCrudden, then at Harvard, both of whom came in 1910. Two junior members of the Institute staff appointed in 1907 and today Members Emeriti, D. D. Van Slyke and Walter A. Jacobs, were elected to the Society at its third annual meeting.

Dr. P. A. Levene, the Institute's first biological chemist, regarded the potentialities of the Society as important to the development of biological chemistry, as can be seen from an address he gave at the annual meeting of the Society in 1919. He drew attention to the very great debt modern science owes to the efforts of the ancient societies and academies of science. By contrast, he said, most modern societies did far less to advance the cause of science. Referring to the aim of the Society of Biological Chemists as being "to enhance the social usefulness of the biological chemist, on the one hand and, on the other, to improve his facilities for work, whether his work be teaching or investigating," he asked: "Will this...society live to record important service, or will it vegetate a pale, colourless existence? This will depend on the spirit in which you join it."

The *Journal of Biological Chemistry* was established shortly before the Society itself was organized. Indeed, it was the *Journal's* editorial committee that formed the nucleus of the Society. Among the twenty-four listed as "collaborators" of the

editors, Christian A. Herter and John J. Abel, were Levene and Jacques Loeb. Abel and Herter considered it important for the long-range stability of the *Journal* that it should be incorporated. Accordingly this was arranged under the laws of the State of New York, the original incorporators being Abel, E. K. Dunham, soon to come to the Institute, Christian Herter, Reid Hunt, and A. N. Richards, who, in 1901 had been one of the first Rockefeller Institute scholars.

Dr. Richards, who last Spring received the Institute's degree of Doctor of Science, *honoris causa*, had done research on problems of interest to Herter, and because of their association Dr. Herter turned to him for assistance with the new journal. Richards served as assistant editor from the beginning, much involved in dealings with the printer.

THE JBC COMES TO THE INSTITUTE

In 1910 Christian Herter's untimely death raised severe problems for the *Journal*. A. N. Richards has written: "It is safe to assert that during the years of Dr. Herter's editorship, 1905-10, the *Journal* was conducted at very considerable loss. How great it was, I have no means of knowing. I believe it to have been borne exclusively by Dr. Herter." To enable the *Journal* to continue, friends of Dr. Herter and relatives of Mrs. Herter assembled the Christian A. Herter Memorial Fund to the amount of \$40,000. Contributors included Dr. and Mrs. Edward K. Dunham and Dr. and Mrs. L. Emmett Holt. Dr. Holt, a physician actively interested in biological chemistry, was a member of the original board of the Institute as well as its first Secretary.

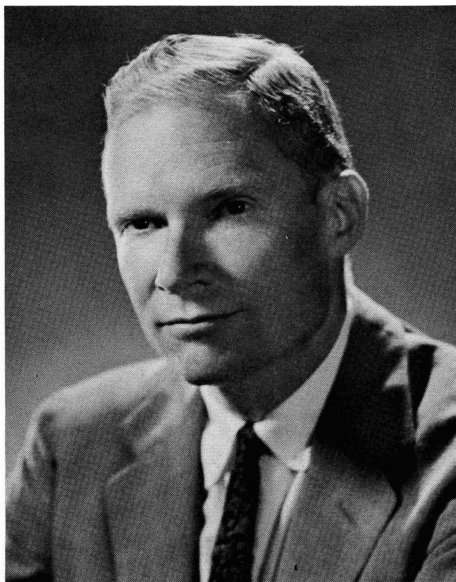
Simon Flexner, Director of the Insti-
(continued on page two)

(continued from page one)

tute, replaced Dr. Herter as President of the *Journal of Biological Chemistry, Inc.*, and H. D. Dakin of Herter's laboratory took charge of the editorial office. Dr. Richards became managing editor in 1910 and carried the responsibilities of this position until 1914, when he concluded that it interfered too much with his duties as Professor of Pharmacology in the University of Pennsylvania. The editorial and publication work was then taken over by The Rockefeller Institute. Dr. Van Slyke became managing editor and the publication office of the Institute handled the preparation of manuscripts for the printers. For eleven years, until 1925, the Institute acted as publisher of the *Journal* with editorial responsibility under the Directors of the *Journal*. The *Journal* was virtually self-supporting during the time that it was published by the Institute due to efforts made by Richards and Dakin to increase the circulation.

Editorial and management activity inevitably involves peripheral overhead costs that may not be reflected in the formal financial statements. As the volume of the *Journal* increased, the Institute found that more than a third of all of its publication effort was being devoted to the *Journal of Biographical Chemistry*. When Dr. Flexner indicated to Dakin in 1924 that the Institute would welcome relief from this burden, Dakin replied: "I am not going to waste much time telling you: (a) that I would rather have the J.B.C. continue at the R.I., (b) that we are mighty grateful for having received more than we demand and (c) that the R.I. has made the J.B.C. as good as the best in the world." In spite of Dakin's remonstrance the management was transferred in 1925 to the American Society of Biological Chemists, which had designated the *Journal* as its official organ some years before. Dr. Van Slyke asked to be relieved of the burden of managing editor as soon as possible. He was succeeded by Stanley Benedict at Cornell University Medical College, but Van Slyke continued his membership on the editorial board until 1950, when he retired.

Dr. Benedict served as managing editor of the *Journal* until his death in 1936. Van Slyke then resumed the task of managing



WILLIAM O. BAKER, newly-elected Trustee, is Vice President-Research at the Bell Telephone Laboratories. Dr. Baker is a physical chemist whose research on macromolecules has contributed to fundamental science as well as to important practical applications.

After receiving a bachelor of science degree from Washington College in 1935, Dr. Baker obtained the degree of doctor of

editor until he, Dakin, and Dr. H. T. Clarke were able to persuade the late Dr. R. J. Anderson to accept the position in 1937. Anderson continued as managing editor of the *Journal* for twenty-one years until his retirement in 1958.

An even longer record of devotion was that of Miss Mary Smalley who had been trained to handle details of publication under Miss Editha Campbell at The Rockefeller Institute. She first began to work on the *Journal* in 1915, and except for a brief interval continued until 1958.

LEADERSHIP FROM THE INSTITUTE

As the field of biological chemistry has grown, the Institute's membership in the Society and its contributions to the *Journal* have become a smaller proportion of the whole. But those at the Institute have continued to play prominent roles in the leadership of the Society. Four past Presidents of the Society were associated with the Institute: D. D. Van Slyke (1921-22); Glen E. Cullen (1937-38), who had been at the Institute from 1914 to 1921; A. B.

philosophy from Princeton in 1938. He joined the research staff at Bell Telephone Laboratories in 1939, becoming Vice President in 1955.

Dr. Baker is a member of the President's Board of Consultants on Foreign Intelligence Activities and a member of the National Science Board, as well as advisory groups of the National Academy of Sciences—National Research Council, the National Security Agency, and the Department of Defense. He is also a past member of the President's Science Advisory Committee and the National Science Information Council.

Among his numerous professional activities, Dr. Baker is a member and past councilor of the American Chemical Society, member of the American Physical Society, the Editorial Board of the *Journal of Polymer Science*, the Advisory Board of the *Chemical and Engineering News* and the Advisory Editorial Board of *Research Management*.

He is a Trustee of the Mellon Institute and serves on Visiting Committees for Chemistry of Harvard, Princeton and Rutgers Universities and the School of Engineering of New York University.

Hastings (1945-46), who had been at the Institute from 1921 to 1926; and Vincent du Vigneaud (1951), Trustee of the Institute since 1949. In addition to these, who held various other offices as well, Stanford Moore, Professor at the Institute, served as Treasurer of the Society from 1957 to 1959. Dr. Moore also served for ten years (1950-1960) as a member of the Editorial Board of the *Journal of Biological Chemistry*, and he represents the Society (1959-1962) on the U.S. National Committee for the International Union of Biochemistry.

Among officers of the Society today who are at the Institute, in addition to Professor Lipmann, President, William H. Stein is a member of the Council as well as Chairman of the Editorial Committee and member of the Finance Committee. Professor Rollin Hotchkiss is a member of the Nominating Committee. Many have served on the *Journal's* Editorial Board including, in addition to Professors Moore and Stein, Professor Edward Tatum and Trustee Vincent du Vigneaud.

INSTITUTE CHRISTMAS LECTURES GIVEN BY PROFESSOR WEISS

THE ROCKEFELLER INSTITUTE'S Christmas Lectures, inspired by those given at the Royal Institution of London almost without interruption for 135 years, have in turn led to plans for a national program of holiday lectures for secondary school students to be sponsored by the National Science Foundation.

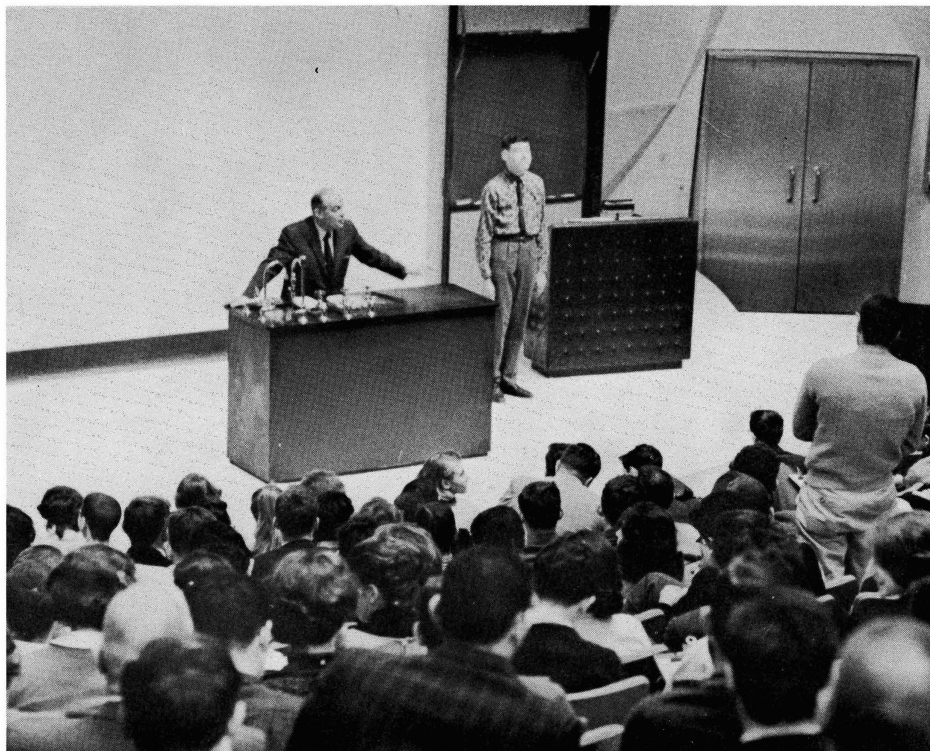
This Christmas nearly five hundred young scientists from the high schools of the New York Metropolitan area attended the second series of the Institute's Christmas Lectures, given by Professor Paul Weiss, who lectured on "Living Form." "You are the future of science," Professor Weiss told his young audience, observing that nearly a half-century separated him from them and that one of the obligations as well as satisfactions of scientists is to encourage their successors.

Lectures such as these may inspire young people to undertake the study of science. The scientific career of the illustrious Michael Faraday began when as a London bookseller's apprentice of fourteen or fifteen he had attended a course of evening lectures on Natural Philosophy. A few years later when he attended Sir Humphrey Davy's lectures at the Royal Institution, he resolved to become Davy's assistant.

A series of Friday Evening Discourses for the public was one of Faraday's first innovations after he became Director of the Laboratory of the Royal Institution in 1825. Next, he founded the "Christmas Course of Lectures Adapted to a Juvenile Auditory," and his own lecture on "The Chemical History of a Candle" was the second in the series. He repeated it many times, and today it remains a classic of scientific exposition.

Inspired by the Royal Institution's experience and the opportunity offered by Caspary Auditorium, Professor Alfred Mirsky and President Bronk undertook in 1958 to organize The Rockefeller Institute Christmas Lectures for high school students. With the support of the National Science Foundation, the first series was given last year by Professor René Dubos, whose topic was "The Microbial World." This Christmas, Professor Weiss under-

took to show the nature of living form from the level of atomic and molecular order to the structure and growth processes evident in higher organisms and even cities and societies. With many striking motion pictures and slides from his own laboratory and elsewhere, Professor Weiss showed that organized form is the resultant of the orderly interaction of elements of structure and function among each



ARPAD NAGY

One of the lively question periods that followed each of Professor Weiss's lectures

other and with the environment. This he illustrated with such varied examples as the regularity with which starlings place themselves on telephone wires, the self-ordering of a handful of matches floating at random on a vibrating surface of water, the adaptation of internal bone structure to imposed stress patterns, and the orientation and shape of cells growing in tissue culture.

From his discussion of growth and development Professor Weiss derived important social, aesthetic and moral conclusions. The lesson of nature is, he said, that order exists throughout the universe, but it exists within wide latitude of indi-

vidual expression so that, for example, though all humans are similar, no two are identical. He also pointed out how individual autonomy must necessarily become restrained if the individual members of a group are to gain the advantages of integrated existence within the higher collective order of the group.

Man, said Professor Weiss, by the use of his intellect, must discover for himself his uniqueness, his individuality, preserving freedom for individuality of expression within an over-all frame of collective order. At the same time he must learn to adopt his most effective role in the group

by an active choice based on understanding rather than by being passively forced by society unwillingly into his station.

The success of Professor Dubos' and Professor Weiss's lectures have led the National Science Foundation to consider establishing a national program to make similar lectures available in various large cities throughout the country during school holidays.

Meantime, work is in progress on The Rockefeller Institute's third series of Christmas Lectures. They will be given next year by Professors Lyman Craig, Stanford Moore, and William Stein, whose topic will be "On Separating Things."

The Trustees

ROBERT F. LOEB

ROBERT FREDERICK LOEB, newly-elected Vice President of the Board of Trustees and Bard Professor of Medicine Emeritus at Columbia University, has been a Trustee since 1954. His association with the Institute, however, began long before, for his illustrious father, Jacques Loeb, was called to the Institute by Simon Flexner to become a Member in 1910, when Robert was a boy of fifteen.

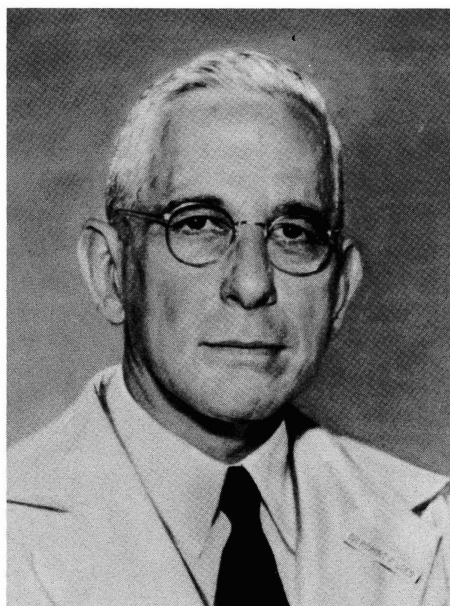
Robert Loeb went to the Harvard Medical School in 1916 after only two years at the University of Chicago. His father urged him to forego the two additional years at Chicago that were devoted to the cultural broadening of students, for it was his father's conviction that the acquisition of culture found its root in the home environment and was a continuing pursuit throughout life. His father's own breadth of interest in science and philosophy, he communicated to his family. Anne Leonard, Robert Loeb's mother, attended Wellesley and Smith colleges and later had the distinction of being one of the first women to obtain the degree of Doctor of Philosophy at Zürich, receiving it *summa cum laude* in comparative philology. She richly supplemented the broad appreciations her husband gave to their family.

Harvard proved difficult for Loeb at first, but in spite of uncertainties which once even led him to consider leaving medicine for geology, he graduated first in his class, *magna cum laude*. He then spent a year at the Massachusetts General Hospital as an interne in 1919 and subsequently went to Baltimore as Assistant Resident Physician and Assistant in Medicine at the Hopkins. There he enjoyed a year with Drs. Dana W. Atchley and Walter W. Palmer exploring the influence of pH on the conductivity of proteins.

Dr. Loeb left the Hopkins to become Assistant Resident Physician at Presbyterian Hospital in New York and Instructor in Medicine at Columbia University. With these associations he found satisfaction in teaching, research, and the care of patients that held him until he retired in 1959 as Director of Medical Serv-

ice at Presbyterian Hospital and Bard Professor of Medicine at Columbia University.

During the intervening years, Dr. Loeb's achievements won for him outstanding recognition in American medicine. The professional societies in this country and abroad that have honored him by election to membership are too numerous to list here. Noteworthy among them, however, are the National Academy of Sciences, the American Philosophical Society, the American Academy of Arts and Sciences, and the Association of American Physicians in this country as well as the Royal College of Physicians (London), the Association of Physicians of Great



Britain and Ireland, the British Medical Association, and the Royal Academy of Medicine of Belgium. He has served as president of the Harvey Society, the Association of American Physicians, and the American Society for Clinical Investigation.

His wise judgment and deep sense of responsibility as well as his achievements in science and administration have led Dr. Loeb to take a part in national affairs in science equalled by few. During World War II he served as Chairman of the National Academy of Science-National Research Council Subcommittee on Blood and Blood Substitutes and as Chairman of the Board for Coordination of Malarial Study. Immediately after the war he was asked to serve as chairman of a Medical Board of Review to outline the future role of biology and medicine in the newly-created U. S. Atomic Energy Commission.

When the National Science Foundation was established Dr. Loeb was a charter member of its National Science Board, a position he holds today. He was appointed to the National Academy of Sciences Committee on Loyalty appointed in 1955 at the request of President Eisenhower to consider the government's policy regarding security provisions for unclassified grants and contracts for basic research. He was an original member of the President's Science Advisory Committee, created in 1951, and he is currently a member of this group. Many private organizations have sought Dr. Loeb's wisdom. He was Trustee of The Rockefeller Foundation from 1947 until his retirement, and he is currently a Consultant. He is Trustee of the Atoms for Peace Awards. He also has been a member of the Visiting Committee of Massachusetts Institute of Technology and is a member of the Overseers Visiting Committee of the Harvard Medical School.

In 1935 he married Emily Guild Nichols, a graduate of Wellesley College and of The Johns Hopkins Medical School. After her medical internship at the Presbyterian Hospital in New York, she served as a full-time member of the Department of Medicine, where she was primarily concerned with research on experimental hypertension and experimental nephritis. Her perceptive participation in Dr. Loeb's research also has been of inestimable value to him. The Loeb's have two children, John Nichols and Elizabeth Guild.

No better appreciation of Dr. Robert Loeb could be written than that with which his devoted friend and colleague Dr. Dana W. Atchley closed his presentation of the Kober Medal of the Association of American Physicians for 1959: "The golden thread that runs through all of Bob Loeb's life and his many faceted activities is his wisdom. He has an original mind and extraordinary erudition, but those qualities alone could not account for his effective role in elevating the standards of research and education in the wide fields that have come under his influence. It is his wisdom that has made his choice of men so sound, his advice to other institutions so far seeing and his critique of research problems so keen. This wisdom combined with unself-seeking generosity has made him the inspiring and beloved leader, not only of his own staff, but of all who share his high ideals."

INSTITUTE MATHEMATICIAN DEVISES THREE-DIMENSIONAL CHESS GAME

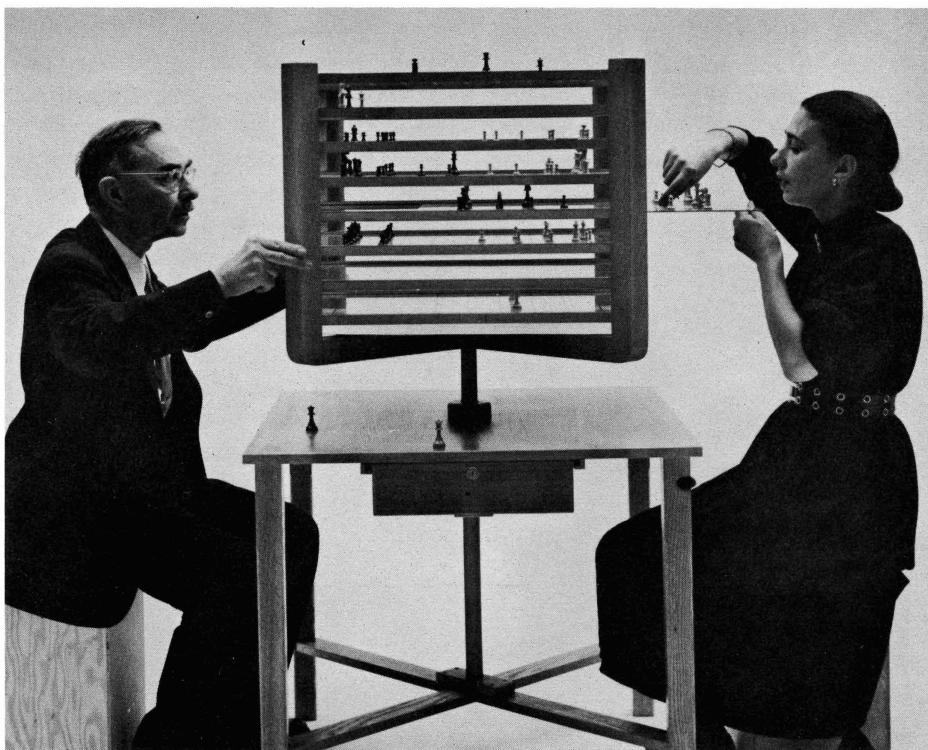
DR. ERVAND G. KOGBETLIANTZ, Affiliate of the Institute, is a superb teacher of mathematics as is well-known to most of the Institute's students and many others as well, but few know him as the inventor of the first practical game of three-dimensional chess. The idea of such a chess game was first proposed, as far as Dr. Kogbetliantz knows, in 1770, and in 1851 a game was played at the Chess Tournament of London. A well-known German obstetrician, Dr. Ferdinand Maack, conceived a three-dimensional chess game and played it in 1910 at the International Chess Congress in Hamburg.

All these versions had one serious drawback: it was impossible to complete a game. Maack, for example, organized a club to study his game, but after four years the club disbanded without ever checkmating the king, which could move in 26 directions in space. Maack's game was played with the standard 32 pieces in a cube of 8 places in each dimension. Using the tools of mathematical analysis at his disposal, Dr. Kogbetliantz saw that additional pieces were necessary, and he added some powerful new ones: a superqueen, two "favorites", two archbishops, four fools, and four hippogriffs (half horse and half griffin). These, together with ad-

ditional pawns, provide sixty-four pieces to a side, achieving what Kogbetliantz describes as "the same saturation of space with force as in ordinary chess." As a result the average game is decided after about seventy moves by each side as compared with perhaps forty in conventional chess. The new pieces make not only two-dimensional moves, but they are permitted essentially three dimensional moves as well, in directions parallel to four diago-

nals of the cubic field in which space chess is played. With the new set of chessmen, the complete determination of which involved the solution of a Diophantine equation, space chess became completely analogous to ordinary two-dimensional chess. Dr. Kogbetliantz says that space chess generalizes ordinary chess as solid geometry generalizes plane geometry.

Man's thinking is more two-dimensional than he realizes, says Dr. Kogbetliantz. He considers it likely that the space age will increase interest in three-dimensional chess, for it is a pleasant and effective means for developing an intuitive perception of three-dimensional relationships.

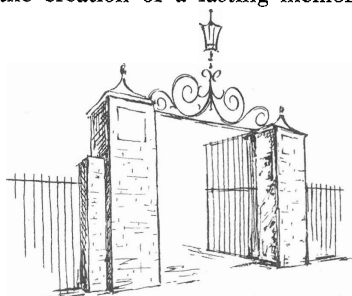


Dr. Kogbetliantz and his daughter playing a game of three-dimensional chess

YALE JOEL, COURTESY LIFE MAGAZINE

FUND ESTABLISHED FOR OSWALD T. AVERY MEMORIAL GATEWAY

Many of Dr. Avery's friends and admirers have expressed their desire to participate in the creation of a lasting memorial to



him. It is appropriate that this memorial be located at The Rockefeller Institute where he spent over thirty happy years, and where he made his outstanding contributions to science.

Accordingly, it is planned to erect the Oswald Theodore Avery Memorial Gateway at the northwest and principal entrance to the campus of the Institute. Mr. Wallace K. Harrison, the architect of the new Institute buildings, has been asked to prepare preliminary plans from which

the pen drawing at the left was rendered.

A Committee on the Avery Memorial Gateway Fund has been established to inform Dr. Avery's many friends of the opportunity that now exists to honor his memory in this manner.

Members of the Committee are: Alan M. Chesney, Rufus Cole, A. Raymond Dochez, Thomas Francis, Jr., A. Baird Hastings, Michael Heidelberger, Colin M. MacLeod, C. Phillip Miller, Hugh J. Morgan and William S. Tillett.

FACULTY APPOINTMENTS IN MATHEMATICS AND PHYSICS

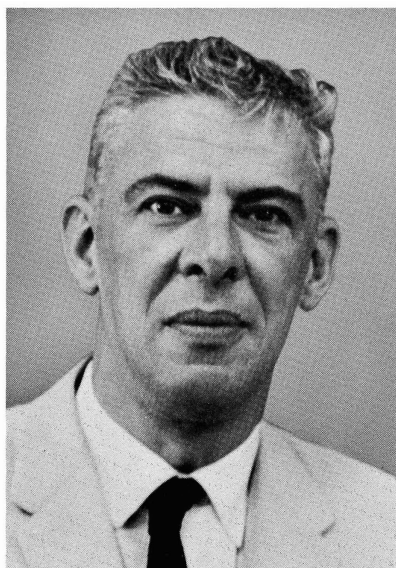
THREE DISTINGUISHED scientists have been appointed Professors in The Rockefeller Institute: George E. Uhlenbeck, formerly Henry Smith Carhart University Professor of Physics in the University of Michigan, Theodore H. Berlin, formerly Professor of Physics in The Johns Hopkins University, and Mark Kac, formerly Professor of Mathematics in Cornell University. Dr. Berlin was a student of Dr. Uhlenbeck at the University of Michigan where he obtained his Ph.D. in 1944; Drs. Kac and Berlin have collaborated in theoretical studies on ferromagnetism; and Drs. Uhlenbeck and Berlin have for several years been engaged in preliminary work on a treatise on statistical physics that they hope now may be brought to completion.



GEORGE UHLENBECK was born in Batavia in the Netherlands East Indies in 1900, but his university studies were carried out in Leiden. In 1925, as graduate students at the University of Leiden, he and Dr. S. A. Goudsmit (Institute Visiting Professor) first put forward the concept of electron spin in explanation of certain aspects of the behavior of emission spectra in magnetic fields. Their names have been linked in the annals of physics ever since, and their careers remarkably parallel. In 1927 both married, they received the Ph.D. degree from the University of Leiden and came to the

University of Michigan, first as instructors, later becoming full professors. Now both are members of the faculty of The Rockefeller Institute.

Dr. Uhlenbeck returned to the Netherlands in 1935 to serve as Professor of Theoretical Physics at the University of Utrecht until 1939. He was Visiting Professor of Theoretical Physics at Columbia University in 1939, returning to Michigan in the same year as Professor of Theoretical Physics. In 1947 he was appointed Henry Carhart University Professor of Physics there. He was naturalized in 1954. Dr. Uhlenbeck is a fellow of the Dutch Physical Society and in 1959 was President of the American Physical Society. He shared the Research Corporation Award with Dr. Goudsmit in 1953, and in 1955 he received the Oersted Medal of the American Association of Physics Teachers. Dr. Uhlenbeck is a member of the National Academy of Sciences and the American Philosophical Society as well as Corresponding Member of the Royal Netherlands Academy of Science.



THEODORE BERLIN, a native New Yorker, went to the University of Michigan for graduate study in 1939 after obtaining a bachelor's degree in chemical engineering from Cooper Union Institute of Technology. Berlin's Ph.D. thesis was on the quantization and electric interaction in diatomic molecules. During World War

II, while a graduate student, Dr. Berlin was engaged in work on the proximity fuse under Professor David Dennison. In 1946 Dr. Berlin joined the faculty of The Johns Hopkins University, becoming Assistant Professor in 1947. In 1948 he became Associate Professor of Physics at Northwestern University, returning in 1949 to the Hopkins to become full professor there in 1955. During the year 1952-1953 Dr. Berlin was a member of the Institute for Advanced Study in Princeton as a Guggenheim Fellow. He is a Fellow of the American Physical Society and a member of Sigma Xi and Phi Beta Kappa, and he has served as associate editor of the *Journal of Chemical Physics* and the *Physical Review*.



PROFESSOR MARK KAC was born in Poland in 1914. He received the Ph.D. degree from the John Casimir University in Lwow in 1937, after which he worked as an actuary at the Phoenix Company, a Polish insurance firm. Professor Kac came to the United States in 1938, and after a year at The Johns Hopkins University he joined the faculty of mathematics at Cornell University. He became a naturalized citizen in 1943, and from 1943 to 1945 served as a member of the Office of Scientific Research and Development. Dr. Kac was a member of the Institute for Advanced Study at Princeton in 1951-1952. He received the Parnas Foundation Fellowship in Poland in 1938-1939 and held a Guggenheim Fellowship in 1946-1947. He was awarded the Chauvenet Prize of the Mathematical Association of America in 1949 and was elected to the

American Academy of Arts and Sciences in 1959. Professor Kac has been a member of the Council of the American Mathematical Society, and from 1955 to 1958 he was Editor of the *Transactions of the American Mathematical Society*.

Institute Center for Scientific and Cultural Activities

The Institute's facilities for meetings and conferences are in constant use by groups of national and international importance in the furtherance of science. In October, November, and December, for example, guest seminars and lectures were given by more than a dozen visitors, and meetings were held at the Institute by the President's Science Advisory Committee, the National Science Board, the National Academy of Science's Space Science Board, and the Academy's Committee on the Pathologic Effects of Atomic Radiation. The Trustees of the Atoms for Peace Awards, Inc., held a meeting in the Abby; the Society for Promoting International Scientific Relations met in Caspary Auditorium to hear an evening lecture by Professor Ernst B. Chain, F.R.S., of Rome; the Architectural League of New York held a forum on the critical appraisal of today's architecture; and the Contemporary Music Society presented a concert of instrumentalists and a ballet. Other groups that have met at the Institute re-

cently include the Health Research Council of New York City, the National Committee on Maternal Health, The New York Regional Group of the Medical Library Association, and committees of the American Society of Biological Chemists, the American Chemical Society, and the National Institutes of Health.

The excellent projection facilities of Caspary Auditorium have been used to show several outstanding scientific motion pictures. Professor Paul Weiss presented motion pictures on protoplasmic motion and cell movement, and "The Hunters," an anthropological film of rare beauty produced in the Kalahari desert by the Peabody Museum of Archaeology and Ethnology at Harvard University, was shown by Visiting Professor Birdsell.

Arts and Crafts Exhibit Held in Welch Hall

Nearly 150 pieces of art and craft work by faculty, students, and employees of the Institute were exhibited in the Library of Welch Hall in October. Outstanding among the exhibits were an iron gothic grille designed by Professor Weiss and delicate and life-like blown glass animals by Associate Professor A. Cecil Taylor. Techniques exhibited included painting, drawing, sculpture and photography, as well as weaving, furniture construction, stained glass, and even a paper chromatogram.

President Bronk Guest of Brazilian Academy of Science

President Bronk was elected an honorary member of the Brazilian Academy of Science and was made an Honorary Doctor of the University of Brazil during the course of a ten day visit in November.

In an address at the dedication of the new building of the Brazilian Academy of Science, Dr. Bronk said that though the status of science there is now similar to that in the United States forty years ago, "the rapidity with which science develops today will carry Brazil forward at an unprecedented rate. Few countries are more natural friends than we because of our widespread respect for science and its applications, our great natural resources waiting to be developed by science and because our countries are being built by freedom-seeking immigrants from many countries." Dr. Bronk envisioned "a great era of warm friendship in the fostering of which science will play a major role."

Robert F. Loeb Elected Vice President of the Board

Dr. Robert F. Loeb was elected Vice President of the Board of Trustees at the Annual Meeting of the Board. He succeeds Dr. George Whipple, a Trustee since 1936 and Vice President since 1947. Dr. Whipple has been elected Trustee Emeritus.

FACULTY ACTIVITIES

Academic Honors

DETLEV W. BRONK
Sc.D., University of Toledo.
DR. *hon. causa*, University of Brazil.

Academic Appointments

GEORGE E. PALADE
Visiting Professor in Basic Medical Sciences, Stanford University.

PAUL A. WEISS
Distinguished Visiting Professor, New York University.

Lectures, Conferences and Symposia

ALEXANDER G. BEARN
Participant, Symposium on the Genetic Control of Biochemical Processes, St. Louis.

Participant, Symposium on Frontiers in Medicine and Surgery, New York Academy of Medicine.

Participant, Macy Foundation Conference on Genetics, Princeton.

CARL BERKLEY
Lecture, Esso Clinical Guild, New York City.

DETLEV W. BRONK
Dedication Address, Climatron of the Missouri Botanical Garden.

Dedication Address, Engineering-Science Building, University of Toledo.

Dedication Address, Brazilian Academy of Sciences.

Opening Address, Annual Meeting of Association of Military Surgeons.

DETLEV W. BRONK *continued*

Gideon Seymour Memorial Lecture, University of Minnesota.
Address, American Rocket Society Honors Night Dinner.
John F. Anderson Memorial Lecture, University of Virginia.
Chairman, National Academy of Sciences-National Research Council Symposium, Science and Food: Today and Tomorrow.
Robert Kennedy Duncan Memorial Lecture, Mellon Institute.

VERNON B. BROOKS

Lecture, Maryland State Psychiatric Institute, Baltimore.
Lecture, National Science Foundation Course for High School Biology Teachers, Sarah Lawrence College.

ARPAD I. CSAPO

Lecture, Seton Hall College of Medicine, Department of Postgraduate Medical Education, Newark.
Lecture, Department of Obstetrics, Mount Sinai Hospital, New York.

RENÉ J. DUBOS

Pegram Lecturer, Brookhaven National Laboratory.
Participant, Wainwright House Symposium, Rye, New York.
George Sarton Memorial Lecture, AAAS Meeting, New York City.

DOMINIC D. DZIEWIATKOWSKI

Participant, Conference on Matrix Formation and Calcification in the Skeletal System, National Academy of Sciences-National Research Council, Washington, D.C.

GABRIEL C. GODMAN

Participant, Conference on Matrix Formation and Calcification in the Skeletal System, National Academy of Sciences-National Research Council, Washington, D.C.

ERVAND G. KOGBETLIANTZ

Participant and Rapporteur, Conference on Program of Systematic Gravitation Research, Army Research Office, Washington, D.C.

FRITZ A. LIPMANN

Speaker, Japanese Biochemical Society Meeting, Tokyo.
Speaker, Japanese Biochemical Society Section, Kyoto.
DuPont Lecturer, Department of Biochemistry, University of Pennsylvania.

KARL MARAMOROSCH

Chairman, Symposium on Biological Transmission of Disease Agents, Annual Meeting of Entomological Society of America, Atlantic City.
Lecture, Scarsdale Chapter, Society of the Sigma Xi.

GEORGE E. PALADE

Participant, Ross Conference on Pediatric Research, University of Colorado Medical School.
Participant, New York Heart Association Symposium on The Myocardium.

S. WILLIAM PELLETIER

Lecture, Laboratory of Chemistry, National Institute of Arthritis and Metabolic Diseases, Bethesda.

KEITH R. PORTER

Lecture Series at the Institute of Morphology, Moscow.
Lecture, Institute of Cytology, Leningrad.
Lecture, Institute of Virology, Bratislava.

HOWARD RASMUSSEN

Lecture, University of Colorado Medical School, Denver.
Lecture, Veterans Administration Hospital, Denver.
Lecture, New York Academy of Medicine.

HOWARD A. SCHNEIDER

Session Chairman, Conference on Genetic Perspectives in Disease Resistance and Susceptibility, New York Academy of Sciences.
Visiting Lecturer, Bryn Mawr College.
Lecture, Animal Care Panel, New York City.

PHILIP SIEKEVITZ

Participant, Symposium on Unsolved Problems of Biology, AAAS Meeting, New York City.

LOUIS E. SILTZBACH

Panelist and Participant, Symposium on Steroid Therapy in Lung Diseases, American College of Chest Physicians, Washington, D.C.

NORMAN R. STOLL

25th Annual Charles Franklin Craig Lecture, American Society of Tropical Medicine and Hygiene, Los Angeles.

NORMAN SUTIN

Participant, Symposium on Chemical Effects of Nuclear Transformations, Prague.

IGOR TAMM

Participant, Symposium on Immunochemical Approaches to Problems in Microbiology, the Institute of Microbiology of Rutgers, The State University, New Brunswick.
Lecture, 1960-1961 Medical Sciences Lecture Series on The Nature of Viruses, School of Medicine, University of North Carolina, Chapel Hill.

EDWARD L. TATUM

Lecture, American Academy of Pediatrics, Chicago.

A. CECIL TAYLOR

Chairman, Session on Life Under Extreme Conditions — The Cell, AAAS Meeting, New York City.
Participant, WPIX Television program on Tissue Culture at request of the Regents Educational Television Project of the New York State Department of Education.

WILLIAM TRAGER

Lecture, 50th Anniversary Celebration, Helminthological Society of Washington.

PAUL A. WEISS

Session Chairman, Conference on Matrix Formation and Calcification in the Skeletal System, National Academy of Sciences-National Research Council, Washington, D.C.
Lecture, New York State Society for Medical Research.
Introductory Lecture, Series for the Public on Science and Society, Western Reserve University.
Lecture, Series for the Public on Promise of the Life Sciences, U. S. Department of Agriculture Graduate School, Washington, D.C.
Lecture Series on The Life Sciences, New York University.
Introductory Lecture, Conference on the Relation of Physical and Biological Sciences, University of Miami.
Participant, International Congress of Cell Biology, Paris.
Participant, International Symposium on Cell Surface and Cell Movement, Noordwijk, Holland.
Speaker, International Institute of Embryology, Pallanza, Italy.

V. K. ZWORYKIN
Address, American Philosophical Society, Philadelphia.

Society Elections

ALEXANDER G. BEARN
Honorary Member, Sociedad Medica de Santiago, Chile.
Honorary Member, Sociedad de Biologia de Santiago, Chile.

DETLEV W. BRONK
Foreign Member, Brazilian Academy of Sciences.
Member, Council of Honour, Society for Visiting Scientists,
London.

GABRIEL C. GODMAN
Member, International Society for Cell Biology.

FRITZ A. LIPMANN
Honorary Member, Japanese Biochemical Society.

KARL MARAMOROSCH
Recording Secretary, The New York Academy of Sciences.

KEITH R. PORTER
President-elect, The Electron Microscope Society of America.

HOWARD A. SCHNEIDER
Fellow, The New York Academy of Sciences.

Other Appointments and Distinctions

ARMIN C. BRAUN
Member of the Visiting Committee, Brookhaven National
Laboratory.

DETLEV W. BRONK
Member, Honorary Editorial Advisory Board, LIFE Journal.

RENÉ J. DUBOS
Modern Medicine Award for Distinguished Achievement.

KARL MARAMOROSCH
Member, Committee on Archives, American Phytopathological
Society.

ALEXANDER MAURO
Member, Board of Editors, *Review of Scientific Instruments*.

JOHN H. NORTHPROP
Director, National Youth Science Foundation.

WILLIAM TRAGER
Member, Training Grants Committee, National Institute of
Allergy and Infectious Disease, United States Public
Health Service.

V. K. ZWORYKIN
Citation, New York Chapter of Broadcast Pioneers.

New Appointments to the Faculty

MIHOKO ABE, Guest Investigator with Professor Hotchkiss;
Rockefeller Foundation Fellow. Associate in the Depart-
ment of Biochemistry, National Institute of Health, Tokyo.

MICHAEL FISCHBERG, Visiting Professor. John Wilfred
Jenkinson Memorial Lecturer; Director of Embryological
Laboratories, Department of Zoology and Comparative
Anatomy, University of Oxford.

ENOCH GORDIS, Guest Investigator, Fellow and Assistant
Physician with Professor Dole. Formerly Chief Resident,
Medicine, Mount Sinai Hospital, New York City.

ALLEN HOLT, Research Associate with Professor Stanford
Moore and Professor William Stein. Formerly Research
Assistant, University of Illinois.

GLYN JONES, Sophie Fricke Royal Society Research Fellow
in The Rockefeller Institute. On leave from the Rowett
Research Institute, Bucksburn, Aberdeen, Scotland.

EPHRAIM KATCHALSKI, Visiting Professor. Professor of
Biophysics, The Weizmann Institute of Science, Israel.

MELVIN LEVITT, Research Associate with Associate Profes-
sor Brooks. Formerly Postdoctoral Research Fellow, Insti-
tute for Neurological Sciences, School of Medicine, Uni-
versity of Pennsylvania.

ROBERT L. MCAULEY, Guest Investigator with Professor
Ahrens to collaborate with Dr. Kurt Oette. Research Fellow
in Pathology and Biochemistry, Massachusetts Memorial
Hospital, Boston.

JAMES H. MATHEWSON, Guest Investigator with Associate
Professor Granick. Postdoctoral Fellow of the United
States Public Health Service. Formerly Research Associate
of The Johns Hopkins University.

ANGEL OSCAR POGO, Guest Investigator with Professor
Mirsky and Associate Professor Allfrey. Guggenheim Fel-
low. On leave as Assistant Professor of Cell Biology from
the Instituto de Biologia Celular, Cordova, Argentina.

BEATRIZ GARCIA TUNON DE POGO, Guest Investigator with
Professor Mirsky and Associate Professor Allfrey. Fellow
of the Argentine National Research Council. On leave as
Assistant Professor of Cell Biology from the Instituto de
Biologia Celular, Cordova, Argentina.

JOHN J. REYNOLDS, Research Associate with Assistant Pro-
fessor Pelletier. Formerly graduate student at Bristol Uni-
versity, England, where he received the degree of Doctor
of Philosophy.

ATUHIRO SIBATANI, Research Associate with Professor Mir-
sky. On leave as Professor of Biology, from the Cytochem-
istry Laboratory, Yamaguti Medical School, Ube, Japan.

ROGER THIES, Guest Investigator with Associate Professor
Brooks. Postdoctoral Fellow of the National Institutes of
Health. Formerly Graduate Fellow, The Rockefeller Insti-
tute, who has completed the requirements for the degree
of Doctor of Philosophy to be awarded in June 1961.

SIR ALEXANDER TODD, Visiting Professor. Professor of
Organic Chemistry, University Chemical Laboratory, Uni-
versity of Cambridge.

GUMPEI URATA, Research Associate with Associate Profes-
sor Granick. Formerly Guest Investigator with Associate
Professor Granick.

ROBERT P. VAN TUBERGEN, Guest Investigator with Pro-
fessor Palade. NATO Postdoctoral Fellow of the National
Science Foundation. Formerly Visiting Fellow at the ARC
Virus Laboratory, Cambridge, England.

RALPH C. WILLIAMS, JR., Guest Investigator and Assistant
Physician with Professor Kunkel. Formerly Chief Resi-
dent, Massachusetts General Hospital, Boston.

Departures from the Faculty

ALBERT A. BENEDICT, Guest Investigator with Associate Professor Chase, left the Institute at the end of December to return to the Department of Bacteriology at the University of Kansas, where he has been on leave as Associate Professor.

LUDWIG BERGMANN, Research Associate with Assistant Professor Maramorosch, left the Institute November 30 to join the Pflanzen Physiologisches Institut, Göttingen, Germany.

OLGA O. BLUMENFELD, Guest Investigator with Associate Professor Perlmann, left the Institute December 31 to work in the Department of Biochemistry, Albert Einstein College of Medicine.

RICHARD DAVIS, Guest Investigator with Associate Professor Dan Moore, left November 1 to become a Research Associate in the Department of Pharmacology at the University of Pennsylvania School of Medicine.

H. HUGH FUDENBERG, Research Associate with Professor Kunkel, resigned October 31 to accept an appointment in the Department of Medicine, University of California Medical Center, San Francisco.

JOHN S. GILLESPIE, Sophie Fricke Royal Society Research Fellow in The Rockefeller Institute, left November 1 to return to the Institute of Physiology, The University, Glasgow.

FRITZ MILLER, Guest Investigator with Associate Professor Dan Moore, left the Institute November 10 to become Associate Professor of Pathology and Head of Laboratory of Electron Microscopy, Department of Pathology, University of Munich.

THOMAS H. ROZIYN, Guest Investigator with Professor Hotchkiss, will return to the Laboratorium voor Physiologische Chemie, University of Utrecht in January 1961.

Guest Speakers

GEORGE A. JERVIS, Letchworth Village, New York State Department of Mental Hygiene, Thiells, New York, October 5, 1960.

ARNE TISELIUS, Professor of Biochemistry, Uppsala University, Sweden, October 10, 1960.

D. RAO SANADI, Gerontology Branch, National Heart Institute, October 18, 1960.

D. H. BARTON, Imperial College, London, October 24, 1960.

WERNER SCHÄFER, Max-Planck-Institut für Virusforschung, Tübingen, October 26, 1960.

C. A. B. SMITH, The Galton Laboratory, London, October 26, 1960.

KIMBALL C. ATWOOD, Professor of Bacteriology, University of Illinois, November 10, 1960.

ARTHUR KARMEN, National Heart Institute, November 10, 1960.

GEORGE GORDON, Laboratory of Physiology, University of Oxford, November 17, 1960.

H. E. HUXLEY, Department of Biophysics, University College London, December 1, 5, 7, 8, 1960.

CHRISTOPHER H. ANDREWES, National Institute for Medical Research, London, December 7, 1960.

SHELDON J. SEGAL, Population Council, December 8, 1960.

G. LEDYARD STEBBINS, Professor of Genetics, University of California at Davis, December 8, 1960.

A. K. SOLOMON, Associate Professor of Biophysics, Harvard Medical School, December 13, 1960.

FRED E. HAHN, Department of Molecular Biology, Walter Reed Army Institute of Research, December 15, 1960.

RACHMAEL LEVINE, Michael Reese Hospital, Chicago, December 20, 1960.

Visiting Professors in Residence

SAMUEL A. GOUDSMIT, Chairman, Department of Physics, Brookhaven National Laboratory, October 3-7, 1960.

RAYMOND M. FUOSS, Sterling Professor of Chemistry, Yale University, October 10-14, 1960.

THEODORE H. BERLIN, Professor of Physics, The Johns Hopkins University, October 17-21, 1960.

DAVID R. GODDARD, Gustave C. Kuemmerle Professor of Botany, University of Pennsylvania, October 31-November 4, 1960.

TH. DOBZHANSKY, Da Costa Professor of Zoology, Columbia University, December 19-23, 1960.

New Grants and Contracts

From the American Cancer Society:

For a study by Dr. Lynch of spontaneous and transplanted leukemia and of the effect of mice of DNA from leukemic tissues \$9,102

To Dr. Rous for an investigation of methods for determining the relations of viruses to human tumors \$17,008

From the Damon Runyon Memorial Fund for Cancer Research to Dr. Gottschall for a study of white blood cell proteases in leukemia and other neoplastic diseases \$6,600

From the National Science Foundation:

To Dr. Braun for his study of the chemical nature and mode of action of a specific inducer of the male sex organ in ferns \$60,100

To Dr. Granick for his studies of the growth and differentiation of chloroplasts in vitro \$34,400

To the Institute for construction of graduate research laboratories \$32,250

To Dr. Koshland for a study of enzyme structure and function \$12,500

From the United States Public Health Service:

To Dr. Mirsky for continuation of his research on the physiological activities of nucleoproteins \$19,844

To Dr. Pelletier for his work on the chemistry of the aconitum and delphinium alkaloids \$3,402

To Dr. Schneider for his studies in experimental encephalomyelitis, and for his work on the isolation of natural resistance vitamin \$43,870

To Dr. Tatum for his work on the cytology and morphology of *Neurospora* \$8,334