

# NEWS REPORT

NATIONAL ACADEMY OF SCIENCES  
NATIONAL RESEARCH COUNCIL



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# NEWS REPORT

*National Academy of Sciences    National Research Council*

VOLUME IV

September-October 1954

NUMBER 5

## Summary of Academy–Research Council Activities, 1953–1954

S. D. CORNELL

*Executive Officer, National Academy of Sciences–National Research Council*

IT IS often urged that a summary of the activities of the Academy and its Research Council should appear from time to time in NEWS REPORT. Every issue carries articles and news items on a few established undertakings or new ventures, but an occasional summary can encompass a total view of the Academy–Research Council that the reader of the NEWS REPORT would have difficulty in forming from the individual pieces scattered through the various issues.

To summarize activities as wide-ranging as those of the Academy–Research Council, however, is a formidable task. In the present article no better solution has been found in the available space than to select a few highlights of particular significance or illustrative value for specific mention and to sketch the larger scene with statistics here and there. The result cannot be claimed to be an adequate account of extensive and diverse activities, but it may be useful if its shortcomings of omission and condensation are recognized.

The period covered is from July 1953 to June 1954.

### Academy Meetings

The Academy held its autumn meeting at the Massachusetts Institute of Technol-

ogy in November and its 91st Annual Meeting in Washington in April. Scientific sessions at the autumn meeting included some forty communicated papers and two symposia of invited papers, “The Muscle Machine and its Functions” and “Molecular and Solid State Physics.”

At the meeting in April, a similar number of communicated papers were presented together with three invited symposia, “The Structure and Function of Nucleic Acids,” “The Development and Significance of High-Energy Particle Accelerators for Nuclear Research,” and “Scientific Aspects of the International Geophysical Year.” Officers and new members were elected at the annual meeting, and issues of current significance to science and the application of science to the national welfare were discussed at length. Academy medals were awarded at an evening ceremony followed by a reception during which a series of scientific demonstrations and exhibits were on view. A number of distinguished scientists from abroad took part in the scientific and social activities of the meeting. Guests-of-honor at the annual dinner were the President of the Royal Swedish Academy of Sciences and the President of the American Academy of Arts and Sciences.

## Other Meetings, Symposia, and Conferences

Altogether some 400 meetings were held during the year. Most were meetings of the many committees that carry forward the bulk of the Academy-Research Council's work; about 40 were extended conferences and symposia on topics such as the following:

- Basic Chemistry and Physics in Radiobiology
- Nuclear Processes in Geologic Settings
- Radiation Sterilization of Foods
- Health, Medical, and Drug Factors in Highway Safety
- Group Representations and Operator Theory
- Artificial Hibernation
- High Temperature Elastomers
- Radiation Chemistry
- Structure and Cellular Dynamics of Red Blood Cells
- Training and Research in Applied Mathematics
- Atherosclerosis
- Coastal Geography

Annual scientific meetings of groups associated with the Academy-Research Council included the 33rd annual meeting of the Highway Research Board, the 22nd annual conference on electrical insulation, and annual meetings of the American Institute of Biological Sciences, the American Geological Institute, the American Geophysical Union, the Building Research Institute, and the Agricultural Research Institute.

### Lecture Series

Nine lectures on Tuesday afternoons from November to April made up the third year of the Academy-Research Council lecture series. Given by distinguished scientists from the United States and abroad and dealing with significant recent advances, they drew enthusiastic audiences from the scientific community of Washington and from among visitors who chanced to be in the vicinity.

### Advisory Services

The Academy-Research Council devotes much of its attention to the preparation of advice on scientific matters to meet the needs of many agencies of the Federal Government, as well as in response to requests from private organizations. This work is carried forward by a large number of the most competent scientists in the country, serving on various committees,

boards, and other groups, and supported by a permanent staff. Many groups are established on a continuing basis to consider matters within rather broad fields, while *ad hoc* groups are formed from time to time to deal with particular problems as they arise. Examples of the latter activity during the year include:

1) Deliberations of the special committee, appointed at the request of the Secretary of Commerce, which reported in November on the work of the National Bureau of Standards relating to the battery additive AD-X2.

2) Exploration with interested Government and private agencies of plans for expanded facilities to provide an adequate supply of germ-free animals for medical research purposes.

3) Recommendations to the U. S. Department of the Treasury with regard to new provisions of the Internal Revenue Code defining the taxability of fellowships and scholarships. These recommendations resulted from conferences with a variety of fellowship-granting agencies, public and private, representing interests in the natural sciences, social sciences, and humanities.

4) Planning and arranging of the three-day scientific program of the Oceanographic Convocation, in which a distinguished group of United States and foreign scientists participated, celebrating the opening of new research facilities by the U. S. Department of the Navy at the Woods Hole Oceanographic Institution.

5) Initiation of a review of the professional and technical programs, educational methods, and career patterns of the U. S. Army Medical Service, to provide a basis for advice as to their adequacy to meet the Army's medical requirements.

6) Completion of a study for the U. S. Coast Guard, initiated in 1951, of safety problems associated with the transportation of ammonium nitrate. This study arose from the Coast Guard's investigation of the Texas City disaster of 1947, which started from fires in ships being loaded with ammonium nitrate fertilizer.

7) Recommendations to the Federal Civil Defense Administration concerning the stockpiling of antibiotics.

8) Advice to the U. S. Department of State with regard to protection of the freedom of research at sea, a question to which the Academy was alerted during the winter in connection with proposals by the International Law Commission of the United Nations to define national sovereignty over the continental shelf.

9) Advice to the U. S. Department of Health, Education, and Welfare on the need and feasibility of establishing a national reference standard for hemoglobin determinations, and initiation of plans to develop and maintain such a standard.

10) Advice to many elements of the Department of Defense on a variety of scientific matters.

The large amount of work done by more permanent groups advising in broad areas of science and technology cannot be reported fully, but examples can be chosen to indicate the breadth and significance of this part of the Academy-Research Council's activity.

1) To provide advice to various agencies of the Government on engineering materials generally, the Materials Advisory Board was formed from the old Minerals and Metals Advisory Board. As its first task under its broadened charter it initiated for the U. S. Department of Defense an analysis to determine what rubber research the Government should be advised to carry on after the Government-owned synthetic rubber plants have been disposed of to private interests. During the year the Board submitted some twenty-five reports on metal problems to the General Services Administration and the Department of Defense.

2) At the request of the U. S. Department of Health, Education, and Welfare, the Food and Nutrition Board undertook studies of measures to control artificial sweetening agents, and of possible standardization of vitamin preparations.

3) Supported and encouraged by the efforts of the recently formed Agricultural Research Institute, through which industry, Government, and other research agencies collaborate in promoting agricultural research, the Agricultural Board was active

in studies of animal nutrition and health, feed composition, and seed preservation. It moved during the year to extend its work to many other problems as well, for example in animal breeding, water conservation, range and pasture management, and plant diseases and pests.

4) Substantial new private support added to continuing, though reduced, Government support enabled the Committee on Disaster Studies to concentrate and extend its efforts to further fundamental research on human behavior in disaster situations.

5) Recommendations were prepared for the U. S. Department of the Army by the Advisory Board on Quartermaster Research and Development regarding the planning and coordination of a research program on radiation sterilization of foods.

6) The Building Research Advisory Board completed its study for the U. S. Department of the Navy of problems in the construction of temporary buildings.

7) A major task of the Pacific Science Board was that of organizing United States participation in the Eighth Pacific Science Congress in Manila. Seven hundred delegates from thirty countries attended the Congress, which was notable for the great variety of its scientific program, including matters of importance to the Pacific area in the biological, physical, and social sciences.

8) A monograph on residual stresses in various kinds of structures, with particular emphasis on their possible contribution to brittle fracture of plates and members in welded steel ships, was completed by the Academy-Research Council's Committee on Residual Stresses for the U. S. Government's inter-agency Ship Structure Committee.

9) An extended study of procedures in the handling of maritime dry cargoes was undertaken for the U. S. Departments of Commerce and of Defense, aimed at the important military and commercial problem of reducing the very long time generally required in the assembly, shipping, and overseas delivery of dry cargoes.

10) Advice of the Academy-Research Council guided the placement of about \$2,000,000 by the American Cancer So-

ciety and about \$1,875,000 by the U. S. Department of Defense and the Veterans Administration in grants to support research in the medical sciences.

11) The Institute of Animal Resources of the American Institute of Biological Sciences completed compilation of a survey, now in press, of users and suppliers of laboratory animals.

12) The Committee on Undersea Warfare convened a conference on underwater swimming which brought operational and technical personnel of the U. S. Navy together with scientists from civilian laboratories to discuss problems in the further development of underwater swimming as a military operational technique and also for purposes of scientific exploration in shallow waters. Naval representatives from Canada and the United Kingdom joined in the conference.

#### **Research Activities and Services**

The research program of the Atomic Bomb Casualties Commission, which has been operated in Hiroshima and Nagasaki since 1946 by the Academy-Research Council for the Atomic Energy Commission, was reoriented in part. Collecting of genetics data is being terminated and the emphasis in the genetics work shifted during the year to the evaluation of the mass of data at hand. The several other medical programs of this major medical research activity will continue largely unchanged. The staff of the Atomic Bomb Casualties Commission now numbers more than 700, mostly Japanese but including some 40 American professional personnel.

The Academy-Research Council's U. S. National Committee for the International Geophysical Year, with the indispensable support of the National Science Foundation, threw itself into the formidable task of planning United States participation in this great international program of worldwide coordinated scientific observations, to be carried out in 1957-58. President Eisenhower gave his warm support to the proposed program, and the Congress appropriated two million dollars to the National Science Foundation for its initial financing. The U. S. National Committee worked

closely with a special committee of the International Council of Scientific Unions charged with coordinating the plans of the thirty or more nations that will take part in the program.

Nearly doubling the amount of coded information in its files during the year, the Chemical-Biological Coordination Center has now coded biological activity and chemical structure data on about 140,000 tests of more than 50,000 compounds.

Test runs in the WASHO (Western Association of State Highway Officials) road test were completed, and the first report was issued covering procedures and instrumentation. This elaborate test on a specially constructed section of flexible pavement in Idaho is guided by a steering committee of the Highway Research Board. It is designed to investigate the effects of heavy traffic on road bed and pavement and to develop facts for use by legislative bodies in establishing equitable tax regulations for heavy vehicles using the public highways. Findings of the test will be published during the coming year.

Work was begun on a directory of tables of physical and chemical constants and numerical data, as a basis for determining whether it is necessary and feasible to undertake full-scale revision and extension of the International Critical Tables, which were published 25 years ago.

A Biology Council was formed with support from several governmental agencies to maintain a continuing survey of broad trends and needs in the biological sciences. With 16 members chosen from the different branches of biology to be augmented by a system of correspondents, the Biology Council plans to meet from time to time to exchange views and prepare critical analyses of major problems in the furtherance of the science of biology in its five principal functional aspects: Molecular and cellular, genetic and systematic, developmental, regulatory, and environmental. A Committee on Educational Policies is associated with the Biology Council.

#### **Fellowships and Research Appointments**

Eighty fellowships, mostly postdoctoral, supported by various private organizations,

were awarded in the natural and medical sciences during the year under programs in which the Academy-Research Council either makes the final selections or recommends selections to the supporting agencies. In addition, the Academy-Research Council evaluated the more than 3,300 applicants in the very large fellowship program of the National Science Foundation; on the basis of these evaluations, awards totaling some 650 predoctoral and 60 postdoctoral fellowships were made by the Foundation.

Under the Fulbright program some 450 foreign scholars, in all fields, were brought to the United States during the year, while about 300 American scholars were studying or teaching abroad. The Academy-Research Council screened 525 applications from Americans in the natural sciences, and rendered assistance in locating suitable institutional connections in the United States for the foreign scientists.

One hundred and fifteen young foreign scientists were appointed under the new program administered by the Academy-Research Council for the Foreign Operations Administration. Funds have been made available to enable these scientists from a dozen different countries to spend one or two years participating in research programs in American educational institutions and other research centers. The final selections are recommended by the Academy-Research Council to the Foreign Operations Administration after nominations have been received from the principal academy, research council, or other responsible scientific body in each country concerned.

### International

Besides the several activities of an international nature previously recounted, the Academy-Research Council has a number of more general responsibilities related to international science. For example, as the adhering body in the United States to the International Council of Scientific Unions and its constituent unions, the Academy-Research Council appoints the various U. S. National Committees and delegations that participate for the United States in

the scientific and administrative affairs of these organizations. Among the international meetings attended during the year by United States scientists named by the Academy-Research Council were:

- International Union Against Cancer, Bombay
- Seventeenth General Assembly of International Union of Pure and Applied Chemistry, Uppsala
- Fourteenth International Congress of Zoology, Copenhagen
- Eleventh General Assembly of International Union of Biological Sciences, Nice
- Twelfth International Congress on Linnology, Cambridge, England
- Ninth International Congress on Genetics, Bellagio, Italy
- Sixth International Congress of Microbiology, Rome
- Fourth International Congress on the Quaternary Period, Rome and Pisa
- Eighth Pacific Science Congress, Manila
- Third International Commission of Optics, Madrid
- Third International Congress of Biometrics, Bellagio, Italy
- Eighth International Congress of Rheumatic Diseases, Geneva
- Fifth International Congress of Tropical Medicine and Malaria, Istanbul

### Publications

Nearly 400 scientific and technical publications of the Academy-Research Council are in print. Some 50 of them were published between mid-1953 and mid-1954.

The *Proceedings of the National Academy of Sciences* commenced its 40th year, having published 200 scientific papers in a total of some 1,300 pages during 1953. Other periodicals included *Mathematical Tables and Other Aids to Computation*, *Summary Tables of Biological Tests*, *American Institute of Biological Sciences Bulletin*, *Highway Research Abstracts*, *Geological Abstracts*, *Prevention of Deterioration Abstracts*, and *Transactions of the American Geophysical Union*. A new quarterly was launched during the year, *Artificial Limbs—A Review of Current Developments*, to be distributed without cost to those concerned with problems in the development of prosthetic devices.

Periodic news bulletins served particular interests in a number of areas, as for example, the *News Letter* of the American

Geological Institute, the *Building Research Advisory Board Notes*, and newsletters on disaster research and on highway safety research.

Books, surveys, and extended conference reports published during the year included:

- Structure and Properties of Solid Surfaces
- Statistical Analysis in Chemistry and the Chemical Industry
- Bacteriostatic Activity of 3500 Organic Compounds for Mycobacterium Tuberculosis Var. Hominis
- Oceanographic Instrumentation
- Radiation Biology, Parts 1 and 2
- Survey of Food and Nutrition Research in the United States
- University Patent Policies and Practices
- Directory of Hydrobiological Laboratories and Personnel in North America
- Residual Stresses in Metals and Metal Construction
- Nutrition under Climatic Stress

Parking as a Factor in Business  
Standard Values in Nutrition and Metabolism

### Financial Summary

Total expenditures for the operations of the Academy-Research Council during the year ended June 30, 1954, were about \$5.5 million of which somewhat more than 30 percent came from private grants and contracts and from endowment income, while the remainder came from Federal Government sources.

In addition, the expenditure by other agencies of more than \$2 million of private funds and more than \$6 million of Government funds in the support of science through fellowships, grants-in-aid of research, and by basic research contracts was directly guided by advice rendered by the Academy-Research Council.

## Preventing Extinction of Original Strains of Corn

J. ALLEN CLARK

*Executive Secretary, Committee on Preservation of Indigenous Strains of Maize of the Agricultural Board*

WHEN the Americas were discovered at the end of the 15th century, corn, or maize, indigenous to the Western Hemisphere, was widely grown by natives. Its presence in the tombs of the Incas and in caves of Peru and other countries is evidence of its antiquity. For generation after generation Indian tribes maintained their own strains. Now, under changing conditions, these old native strains of corn are rapidly disappearing in many areas. In Latin America they are being replaced by improved open-pollinated strains and to some extent by hybrids. New hybrid strains usually have a higher yield per acre, as well as other desirable characteristics. In the United States hybrid corns now occupy about 90 percent of the total corn acreage. In other countries new hybrids are being developed and distributed.

Native strains, the original source of improved varieties, may be the product of hundreds or thousands of years of evolution under domestication. They represent one of the irreplaceable agricultural resources of this hemisphere. Their extinction would deprive the areas where they are now indigenous of genetic material of value in future programs of improvement and also deprive the rest of the world of genes of great potential importance. The indigenous races of corn may include genes producing disease resistance, high yield, and having other desirable agronomic traits, as well as those responsible for high food and feed qualities and industrial properties. Therefore, to prevent extinction of desirable genes, a Committee on Preservation of Indigenous Strains of Maize was formed in the National Academy of Sciences-

National Research Council to sponsor a project that would collect and preserve for future use as many varieties of native and pioneer corn as possible. The work of this committee is summarized in this article.

### Collections of Original Strains

The collecting of indigenous Indian and pioneer open-pollinated strains of corn began in 1943 when The Rockefeller Foundation, in cooperation with the Mexican Ministry of Agriculture, began a program of practical corn improvement. Varieties collected from all parts of Mexico were scientifically compared for yield, disease resistance, and other characteristics of agricultural importance. As the collections grew and the extraordinary diversity of corn in Mexico was revealed, the need for a taxonomic classification of the bewildering multiplicity of varieties became apparent. Botanical, genetic, and cytological studies to supplement the agronomic investigations were begun. Special efforts were made to obtain from remote localities all the commonly grown varieties or strains, regardless of their apparent agronomic value. This collection became known as the "germ plasm seed bank."

In the United States, the Section of Plant Introduction of the United States Department of Agriculture had for many years collected corns from all parts of the world. In view of the rapid increase in the growing of hybrid corns in the United States and of the apparent value of the Mexican collection for producing new hybrids, the importance of keeping these collections viable and of preserving the pioneer open-pollinated corns of the United States was obvious. Federal funds were made available to the states of Kansas, Missouri, Nebraska, and North Dakota through Cooperative Regional Project NC-7 to bring together such pioneer varieties as existed in those states. This material is now largely held at the Regional Plant Introduction Station, Ames, Iowa.

The Committee for the Preservation of Indigenous Strains of Maize studied the problem in the Whole Western Hemisphere. It obtained financial support from the United States Department of State,

and the funds were administered through the Office of Foreign Agricultural Relations of the United States Department of Agriculture and later through the Institute of Inter-American Affairs. Under an agreement between the Technical Cooperation Administration and the National Academy of Sciences made in June 1951, the Committee has been sponsoring the collection and preservation of as many varieties of native and pioneer corn as possible.

The Committee is composed of leading corn breeders, geneticists, botanists, and agricultural administrators, as follows:

Ralph E. Cleland, Head of the Department of Botany and Dean of the Graduate School, Indiana University, *Chairman*

J. Allen Clark, Agricultural Board, Division of Biology and Agriculture, *Executive Secretary*

Edgar Anderson, Director of the Missouri Botanical Gardens

William L. Brown, Geneticist, Department of Plant Breeding, Pioneer Hi-Bred Corn Company

C. O. Erlanson, Head, Section of Plant Introduction, U. S. Department of Agriculture, Plant Industry Station, Beltsville, Md.

Claud Horn, Chief, Sugar and Tropical Products Analysis Branch, Foreign Agricultural Service, U. S. Department of Agriculture

Merle T. Jenkins, Principal Agronomist in charge of Corn Investigations, U. S. Department of Agriculture, Plant Industry Station, Beltsville, Md.

Paul C. Mangelsdorf, Director of the Botanical Museum, Harvard University

G. H. Stringfield, Senior Agronomist, Ohio Agricultural Experiment Station

Paul A. Weatherwax, Professor of Botany, Indiana University.

This Committee in cooperation with The Rockefeller Foundation, has established seed centers in Mexico and Colombia at the Foundation's agricultural experiment stations; it has cooperated with the University of São Paulo in establishing a seed center at Piracicaba in Brazil and with the United States Department of Agriculture in setting up a similar seed center in the United States at Ames, Iowa. These four

are known as active seed centers, where samples collected in their respective areas are stored under conditions favorable for viability, where germination tests are made from time to time and the strains rejuvenated when necessary by growing more corn from stored seed, and where plant breeders anywhere in the world can secure strains that might confer useful characteristics upon the corn they are trying to improve.

From the Mexican, Central American, and Caribbean area seed is obtainable through Dr. E. J. Wellhausen, The Rockefeller Foundation, Calle Londres 45, Mexico 6, D. F., Mexico.

From the Colombian-Andean area, through Dr. L. M. Roberts, The Rockefeller Foundation, Apartado aero 58-13, Bogota, Colombia.

From the Brazilian-eastern South American area, through Dr. F. G. Brieger, Departamento de Genetica, Escola Superior de Agricultura "Luiz Queiroz," Piracicaba, São Paulo, Brazil.

From the United States and Canada, through Mr. C. O. Erlanson, Section of Plant Introduction, United States Department of Agriculture, Plant Industry Station, Beltsville, Maryland.

The four active seed centers are actually located at Chapingo, Mexico; Mendellin, Colombia; Piracicaba, Brazil; and Ames, Iowa. In the United States there is another center for stand-by storage at Glenn Dale, Md., to which are sent samples of all collections made in Latin America. In other words, a part of each collection goes to the center in the area of origin, and a part goes to Glenn Dale as insurance against loss of strains in the active centers. In all centers moisture content of the seed to be stored is reduced to 8-10 percent, and the seed so dried is sealed in airtight bottles and stored in refrigerators at 25 to 30°F. Under these conditions it is thought that the seed will stay viable for 10 to 25 years.

The period of collection has come to an end, arbitrarily set at June 30, 1954. The following statistics, though not complete, will give some idea of the magnitude of the collecting task.

The largest number of collections, 4,185, went to the Mexican Center; from Mexico

(2,761), from 7 Central American countries (1,118), and from 6 Caribbean islands (306).

To the Colombian Center went 3,374 collections from Colombia, Venezuela, and four western South American countries, particularly Peru.

To the Brazilian Center went 826 collections from other eastern South American countries.

In the Committee's program only 281 collections went to the United States Center, 31 of these came from Canada. However, there are other collections in the United States. These include 833 "introductions" from 35 countries, seed that was collected and kept viable by the Section of Plant Introduction of the United States Department of Agriculture. There are also 163 samples collected earlier and studied by the Section of Cereal Crops and Diseases of the United States Department of Agriculture; of these 140 strains came from the Indians of the United States, 12 from Mexico, 3 from Guatemala, and 8 from South America. Local collections are in storage at several State Agricultural Experiment Stations. All collections mentioned above add up to a "world collection" of more than 10,000 strains.

The Academy-Research Council has had no formal agreements with the governments of Latin American countries for the conduct of the collecting program, but these governments have enthusiastically contributed money and technical personnel to the support of the work.

For the purpose of giving public credit to those in every country of the Western Hemisphere who have participated in the collection program, the author and editor wish that it were possible to name every one. We should like to name at least 16 people working under the Director of the Mexican Center; 26 working for the Colombian Center; 11 working for the Brazilian Center; and 7 connected with the United States Center. Without their work in field, laboratory, and office, no collections would have been made.

The technical field men were aided by local assistants, whose training, incident to the work, was one of the important by-

products of the program. Already a considerable number of young Latin Americans have learned something about the technique of plant exploration, propagation, record keeping, botanical description, and genetic analysis. Thus they have gained experience in research methods which makes them more competent and able to use the material collected for conducting breeding programs in their own countries.

### Use of Collected Seed

This material collected throughout the Americas will undoubtedly be of great value in the development of higher yielding, agronomically improved, and disease-resistant varieties of corn in other parts of the world where its introduction is recent. One reason for the rapid spread of corn growing is the increasing industrial importance of corn products, such as waxes, oils, glue, pastes, and various forms of starch.

The value of the world corn collection has already been demonstrated. Collections have been sent from the Centers to plant breeders in Kenya, Ethiopia, Poland, Indonesia, and about 35 other countries. A corn rust disease, *Puccinia polysora*, recently became extremely serious in West Africa, reducing yields as much as 50 percent. It was found that certain strains collected in the Caribbean area were either resistant or highly tolerant to this disease. Consequently, 125 strains of corn collected from the Caribbean were sent to the agronomists of West Africa. By proper crossing techniques they can now transfer to their strains the valuable resistant genes.

These extensive collections are expected to reveal other important pathologic, agronomic, and industrial characteristics, including many which are new or which have not been described or have not as yet been available. New sources of corn germ plasm have thus been made permanently available for plant breeders to develop varieties, not only giving high yields of grain, but also having higher contents of vitamins, minerals, proteins, and other substances.

The current expansion of industry in

Latin America is in part dependent on corn, the principal crop, and there the industrial use of different types of corn is rapidly increasing. A search for corns having a high amylose starch content of 70 percent or more has been started on broad types contained in the Academy-Research Council collections in the United States by the Northern Regional Research Laboratory at Peoria, Ill.

Another important use of the collection is that of providing materials for basic genetic research on corn. Already two eminent geneticists have canvassed a large part of the collections, searching for new characters or genes to be employed in such research. Additional knowledge concerning these collections should lead to the continued screening of this material for these and other uses.

### Future Plans

The Academy-Research Council corn collections, made possible by support from the Technical Cooperation Administration, and from The Rockefeller Foundation, the United States Department of Agriculture, the University of São Paulo, and cooperating Latin American governments are practically completed.

The second part of the program contemplates careful study of the Latin American collections of the different governments at the seed centers. The center directors and corn project leaders will select as assistants promising local personnel for the growing and utilization of the material. In order to promote coordination and integration of the program it is proposed to send once or twice a year to each center a member of the committee or other North American expert on corn. They will go over the work being done and assist in the study of these collections for their botanical, genetic, pathologic, and agronomic characteristics, classify key material and publish descriptions of the principal races, as well as lists of this world collection to promote its use by corn breeders and industrial research workers.

# SCIENCE NEWS

## AUTUMN MEETING NATIONAL ACADEMY OF SCIENCES

The autumn meeting of the National Academy of Sciences will be held at Columbia University, New York City, November 8-10. Five half-day sessions will be devoted to the presentation of scientific papers. The business meeting of the Academy for members only has been scheduled for Monday afternoon, November 8. The customary public lecture will be given on Monday evening.

George B. Pegram, Special Adviser to the President of Columbia University, is Chairman of the Committee on Arrangements. Other members of the Committee are Clarence H. Graham, Louis P. Hammett, I. I. Rabi, and David Rittenberg, all of Columbia University. Detlev W. Bronk, President of the Academy, and Alexander Wetmore, Home Secretary, are *ex officio* members of the Committee.

## DIVISION OF ANTHROPOLOGY AND PSYCHOLOGY

Glen Finch was appointed Executive Secretary of the Division of Anthropology and Psychology and assumed his duties on September 20. Dr. Finch received his Ph.D. degree in psychology from the University of Illinois in 1935 and was awarded a National Research Council fellowship the same year to work at the Phipps Psychiatric Clinic at Johns Hopkins University. From 1936 to 1942 he was associated with Yale University first as primate biologist and later as assistant professor of psychobiology. He then became an aviation psychologist with the U. S. Air Force, serving first at Wright Field. Since 1948 he has been scientific adviser in psychology for the Air Force headquarters in Washington, D. C. An experimental psychologist, Dr. Finch's special fields are aviation psychology, conditioning, and learning.

Dr. Finch succeeded William N. Fenton, who resigned the end of June to become Director of the New York State Museum at Albany.

## COMMITTEE ON EDUCATIONAL POLICIES

The new Committee on Educational Policies, whose formation was proposed by the Biology Council of the Division of Biology and Agriculture last January, has been established with the following members:

HOWARD M. PHILLIPS, Dean of the Graduate School, Emory University, *Chairman*

JOHN A. BEHNKE, Associate Administrative Secretary, American Association for the Advancement of Science

THOMAS S. HALL, Dean of the College of Liberal Arts, Washington University

JOHN A. HANNAH, President, Michigan State College

THEOPHILUS S. PAINTER, Professor of Zoology, University of Texas

E. LAURENCE PALMER, Director of Conservation Education, National Wildlife Federation

DONAL SHEEHAN, Professor of Anatomy, New York University College of Medicine

The work of assembling facts for the consideration of this committee is being done by Richard E. Paulson, University of Chicago, who will serve as staff assistant to the Committee.

## HANDBOOK OF BIOLOGICAL DATA

Another step has been taken toward the completion of a handbook of numerical values pertaining to biology. A so-called fascicle, "Standard Values in Nutrition and Metabolism," of the projected Handbook has been prepared under the supervision of the Committee on the Handbook of Biological Data, American Institute of Biological Sciences, National Research Council. The book, currently distributed as Wright Air Development Center Technical Report 52-301, is issued under the joint sponsorship of the U. S. Air Force, Army, Navy, and Atomic Energy Commission and is a volume of tables of standard quantitative and descriptive data on animal and plant forms. It is the product of the contributions of over 800 specialists in the fields of nutrition and metabolism in this country and abroad. Its 160 tables were subjected to extensive review by experts in the respective subjects. The 223 pages of tables and 16 pages of diagrams contain many thousands of items of authoritative data,

mostly quantitative, but with important non-numerical exceptions. This book is intended for use by students and by laboratory and clinical investigators working on biological problems, and will be available in a commercial edition from W. B. Saunders and Company, Philadelphia, in October (*see* New Publications, p. 92). The first fascicle, "Standard Values in Blood," issued two years ago, has already established itself as an indispensable and widely used tool.

#### COMMITTEE ON ARMY MEDICAL EDUCATION

Last fall the U. S. Surgeon General formally requested the Academy-Research Council to establish a Committee to survey the major educational, technical, and professional problems facing the Army Medical Service in the execution of its military mission. Specifically the Committee is invited to review and make recommendations to the Surgeon General on—

a) the professional and technical fields where civilian development must be supplemented to meet the requirements of national defense;

b) the adequacy of the professional and technical programs of the Army Medical Service to meet the professional and technical needs for defense; and

c) the effectiveness of the educational methods and career patterns being employed by the Army Medical Service in developing leadership and in meeting the professional requirements of defense.

This is a broad charter which presents the Academy-Research Council with a significant opportunity to contribute constructively to the formulation of basic policies affecting the medical services of the Army. The Committee has been appointed within the Division of Medical Sciences and under the chairmanship of Dean A. Clark, General Director, Massachusetts General Hospital, Boston. At the organizational meeting in June, the U. S. Surgeon General and other representatives of the Army elaborated on the need for and objectives of the inquiry. Thomas Bradley of the Division of Medical Sciences is acting as staff officer to the Committee.

#### THIRD ANNUAL MEETING AGRICULTURAL RESEARCH INSTITUTE

The program has been essentially completed for the third annual meeting of the Agricultural Research Institute (ARI) and the Agricultural Board to be held at the Academy-Research Council on October 4 and 5. Again representatives of industry, societies, and Federal or State agricultural research groups will speak and confer on the opportunity afforded by the ARI to develop closer understanding of their respective concepts and objectives in research on and utilization of agricultural resources.

Speakers on the program include L. A. Maynard, Cornell University; C. L. Oheim, Deere & Company; W. W. Fifield, Florida Agricultural Experiment Station; E. C. Stakman, University of Minnesota; and F. G. Harrar, Rockefeller Foundation. Homer Brinkley, Executive Vice President of the National Council of Farm Cooperatives, will address the ARI members at a dinner meeting. A panel discussion on "Industry-Government Relations in Agricultural Research" will be conducted by E. C. Elting, T. S. Hamilton, Victor Conquest, and W. C. Dutton.

The Chairman of the Program Committee is Roland Bethke, Vice President of Ralston Purina Company.

#### ANNUAL MEETING DIVISION OF MEDICAL SCIENCES

The annual meeting of the Division of Medical Sciences was held at the Academy-Research Council on May 22. There were present 14 representatives of cooperating societies, 16 liaison representatives of Government, 16 members of divisional committees, and 25 members of the Academy-Research Council staff. Not only was this a very gratifying attendance of the membership, but the lively discussion gave evidence of a real interest in the affairs of the Division and a clear desire to enlist the services of the Council in promoting the well-being of science at the national level. Indeed, recognizing that the problems before the meeting could not be adequately explored in a day, the members requested that a special meeting be called in the fall to continue the discussions.

This special meeting will be held on November 29 and will be devoted to the consideration of means for obtaining *a*) the closer association of the members with the work of the Division, *b*) the participation of cooperating societies as sponsors of the program of fellowships of the Academy-Research Council, and *c*) the better definition of the relation of Government to science and the place of the scientist in the social scene.

#### NATIONAL HEMOGLOBIN STANDARD

The determination of the hemoglobin concentration in blood is one of the commonest procedures in clinical laboratories. Paradoxically, it is one of those which is least adequately standardized. A variety of methods are in use, are poorly calibrated, and often poorly conducted. The result is that one cannot make confident comparisons of results reported from different laboratories.

At the request of the Hematology Study Section of the National Institutes of Health, the Subcommittee on Blood and Related Problems, Division of Medical Sciences, has set up an ad hoc panel to recommend national standards for the calibration and conduct of hemoglobin determinations. Tentative agreement has been reached on the adoption of a standard solution of cyanmethemoglobin as the approved standard. Plans are being laid, with the cooperation of the National Institutes of Health, National Bureau of Standards, Army Medical Service Graduate School, and Dr. David Drabkin of the University of Pennsylvania, for the preparation, analysis, certification, and distribution of this standard on a pilot scale.

Those investigators who have participated in preliminary trials of the cyanmethemoglobin standard and the recommended method of hemoglobinometry have been enthusiastic over its simplicity, dependability, and accuracy. It is hoped that sufficient quantities of the standard solution, together with a protocol of a recommended procedure for its use, can be made available late this year to allow a large-scale field trial to be carried out. Laboratories interested in cooperating in this

evaluation of the cyanmethemoglobin standard and its application in hemoglobinometry are invited to communicate with the Chairman of the Division of Medical Sciences.

#### SIXTH INTERNATIONAL CANCER CONGRESS

Under the auspices of the International Union Against Cancer the Sixth International Cancer Congress was held in São Paulo, Brazil, July 23-29 in connection with the Fourth Centennial of São Paulo. Of more than the 1,000 people registered for the Congress, 400 were from outside Brazil, and approximately 135 attended from the United States. The program was divided into 6 sections and included 2 lectures, 4 conferences, 10 panel discussions, 15 symposia on special subjects, 22 films, and 339 scientific papers. Representatives of 48 countries including the U.S.S.R. participated in the program. The official delegates of the United States were named by the USA National Committee for the International Union, a Committee appointed by the Academy-Research Council.

On July 21-22, just preceding the Congress, meetings of the Executive Committee and the Council of the International Union were held at which a completely revised constitution was adopted which greatly improves and simplifies the operation and organization of the Union. For the first time provision is made for the President of the Union to serve only one term and for the election of a President-elect. The headquarters of the Union will remain in Paris but will be moved from 6, Avenue Marceau, where it has been associated with the French League Against Cancer, to the Curie Foundation, 26 Rue d'Ulm, where office space will be furnished gratis.

The following officers were reelected for another term: Professor J. Maisin (Belgium), *President*; Dr. Harold Dorn (U.S.A.), *Secretary-General*; Dr. Pierre Denoix (France), *Assistant Secretary-General*; and Dr. Philip Peacock (Scotland), *Treasurer*. Professor V. R. Khanalkar (India) was elected President-elect. Plans were made to hold the next cancer congress in London in 1958.

## MILITARY SUBSISTENCE SYMPOSIA

In cooperation with the Quartermaster Food and Container Institute for the Armed Forces, the Advisory Board on Quartermaster Research and Development, Committee on Foods, is sponsoring a continuing series of symposia on various subjects related to military subsistence. The first, "Nutrition under Climatic Stress," and several held subsequently, were reported in previous issues of NEWS REPORT (see Vol. 3, Nos. 1 and 2, pp. 11 and 25). Proceedings of the symposia are being published and copies are being made available without charge to the scientific public by the Quartermaster Food and Container Institute, 1819 W. Pershing Road, Chicago, Ill.

*Nutrition Under Climatic Stress* and *Quality and Stability of Canned Meats* are in print and currently available. *Stability of Dehydrated Eggs*, *Food Acceptance Testing Methodology*, and *Color in Foods* are in press and will be available shortly. The proceedings of another symposium on military container problems entitled *Low Temperature Test Methods and Standards for Containers* will soon be ready for distribution. In process of editing are four more symposia which should be off the presses early in 1955.

The objective for each symposium has been to bring together the progress and status of research in each field in order to establish a baseline for the planning of further research and to assist in utilizing research findings so as to provide better rations for the Armed Forces.

### PANEL ON RUBBER

The Office of the Assistant Secretary of Defense, Research and Development, has requested the National Academy of Sciences to "conduct a study and prepare an advisory report containing recommendations concerning the future needs of the Department of Defense for a research and development program on rubber." More specifically, the Academy is asked to take into consideration the relationship between military needs and probable changes in the research programs of other Government agencies and industry corollary to the provisions of Public Law 205 which provides

for disposal of Government-owned rubber-producing facilities. The Department of Defense has asked also for an opinion "on the need for the facilities of the Government laboratory and pilot plant at Akron in connection with the future Department of Defense rubber program."

The Academy has assigned this responsibility to the Materials Advisory Board. An ad hoc panel, consisting of men from various areas of interest, has been formed under the chairmanship of Paul D. Foote of the Gulf Research and Development Company. The panel held its first meeting on August 17, at which two sub-panels were established for the purpose of giving discreet consideration to the two divisions of the broad assignment. Warren Stubblebine, Connecticut Hard Rubber Company, was appointed Chairman of the Sub-panel on Fundamental Pioneering Research, with the responsibility of preparing tentative recommendations covering research work now under the Office of Synthetic Rubber, and the formulation of Department of Defense policies with respect thereto. A second sub-panel under the chairmanship of R. F. Dunbrook, Firestone Tire and Rubber Company, is to formulate recommendations with respect to the Akron laboratory.

### HUMAN RESOURCES AND ADVANCED TRAINING

The Commission on Human Resources and Advanced Training held its final meeting on September 19 and 20. The Commission was established in 1949 by the Conference Board of Associated Research Councils of which the National Research Council of the Academy is a member. It has been working since 1950 on problems of specialized manpower in the United States. The Commission's major report, a book entitled *America's Resources of Specialized Talent*, was published by Harper and Brothers on September 22. Several more specialized monographs and reports will appear later in professional periodicals.

The closing of the Commission's office on September 30 terminated this project. The Director, Dael Wolfle, is now Administrative Secretary of the American Association for the Advancement of Science.

## DIVISION OF EARTH SCIENCES

William E. Benson has been appointed Executive Secretary of the Division of Earth Sciences for the fiscal year 1954-55 to succeed H. R. Gault who returned to Lehigh University. Mr. Benson is on leave from the U. S. Geological Survey.

Mr. Benson received his Ph.D. degree in geology from Yale University in 1952. He joined the U. S. Geological Survey in 1942 and since then has worked on Coastal Plain stratigraphy, bauxite ores in Arkansas and Mississippi, fluorspar deposits in Colorado, Tertiary stratigraphy, glacial geology, and economic geology in North Dakota, as well as on the geology of uranium ores in Utah. Since 1952, Mr. Benson has served first as Assistant Chief and then Acting Chief of the General Geology Branch of the U. S. Geological Survey in Denver, Colo.

## FEDERAL CONSTRUCTION COUNCIL

The Federal Construction Council (FCC), an activity of the Building Research Advisory Board (BRAB) under contract with the National Bureau of Standards, issued its first year-end report on June 30. Within this first year nine technical reports were completed, and seven tasks are under way or authorized. The FCC operating committee met eleven times and the BRAB advisory committee twice. There were twenty meetings of nine task groups and two of industry advisors. In all 60 persons participated on task groups and 21 on industry committees.

The FCC idea came from BRAB's study of conservation in building construction. A committee of Federal construction agency administrators felt that time and money could be saved through a voluntary exchange of ideas and information, and the FCC resulted as the mechanism for this purpose. FCC staff work is handled by one paid professional architect and one paid professional engineer under direct supervision of the Executive Director of BRAB. A permanent operating committee directs the work of the FCC, and an advisory committee, composed of eight men appointed by the National Academy of Sciences from BRAB, serves as advisor.

## INDUSTRIAL RESEARCH LABORATORIES TENTH EDITION

Preparation of a new edition of *Industrial Research Laboratories of the United States*, a directory published periodically by the Academy-Research Council, began in August.

The first edition of *Industrial Research Laboratories of the United States* appeared in 1920 as one of the first publications of the National Research Council (*see* Natl. Res. Council Bul. Vol. 1, Pt. 2, No. 2). It listed 300 laboratories. The ninth and latest edition, published in 1950, listed nearly 3,000 laboratories. Nearly 5,000 copies of the ninth edition have been sold, and the response to the questionnaire seeking information for the new directory is considerably higher than for most such surveys. About 80 percent of the 7,000 firms to whom questionnaires were addressed responded.

Mailing of questionnaires began in mid-September. It will be appreciated if readers of NEWS REPORT will submit the names and addresses of firms or laboratories, not listed in the ninth edition, to the compiler of the new edition, James F. Mauk, National Academy of Sciences-National Research Council, Washington 25, D. C.

## PLASTICS IN BUILDING CONFERENCE

The program for the Plastics in Building Conference is nearly complete, and invitations will soon be mailed by the Building Research Institute, which is conducting the two-day meeting scheduled for October 27 and 28 at the Academy-Research Council. Sponsors are the Building Research Advisory Board, the Manufacturing Chemists' Association, and the Society of the Plastics Industry, Inc. The fifteen speakers who have been scheduled are all leaders in the plastics, chemical, building and construction, educational, or editorial fields. The discussions have been grouped under four major topics: Introduction to Plastics in Building, Specific Applications of Plastics in Building, Standards and Codes, and Future Uses. Conference summaries will be given by a plastics industry leader and a building industry official.

INTERNATIONAL GEOPHYSICAL YEAR  
1957-58

The United States Congress recently appropriated \$2 million to launch plans for United States participation in the International Geophysical Year. These funds, assigned to the National Science Foundation, will be used primarily for the procurement of scientific instruments, equipment, facilities, and rockets requiring approximately two years' lead-time. The balance of the funds needed will be included in budget requests for fiscal year 1956. The United States National Committee for the International Geophysical Year, appointed by the Academy-Research Council, will direct the scientific program.

The Comité Spécial de l'Année Géophysique Internationale (CSAGI) will meet in Rome, October 1-4, for a thorough examination of the programs submitted by the various participating nations. Some twenty-two members of the United States National Committee and its Program Coordination Group will attend the Rome meeting (*see NEWS REPORT*, July-August 1954). The CSAGI meeting should result in a coordinated program to be carried out in 1957-58.

The United States National Committee will hold a meeting sometime this fall for a detailed examination of the program adopted at the CSAGI meeting. It will also further develop the United States program within the scope of the international effort.

CLAY MINERALS CONFERENCE

Clay Mineral Technology is the theme of the Third National Clay Minerals Conference to be held at Rice Institute, Houston, Tex., October 27-29. The Conference is sponsored by the Clay Minerals Committee of the National Research Council with members from the Divisions of Biology and Agriculture, Chemistry and Chemical Technology, and Earth Sciences. A field trip is planned for October 26, and a special part of the Conference program will be devoted to fundamental or applied papers.

Copies of the detailed program, including field-trip information, may be obtained from the Committee Chairman, Ralph E.

Grimm of the University of Illinois at Urbana; the Secretary, A. F. Frederickson of Washington University, St. Louis, Mo.; or from the Division of Earth Sciences, National Research Council.

The Proceedings of the Second National Clay Minerals Conference, held at Columbia, Mo., in October 1953, are now in process of publication and should be available by the end of October.

BUILDING RESEARCH INSTITUTE

On July 19 the Building Research Institute officially announced its officers and Board of Governors for the 1954-55 term. The officers are Fred M. Hauserman, President of the E. F. Hauserman Company, *President*; and Edmund Claxton, Director of Research for the Armstrong Cork Company, *Vice President*. The members of the Board of Governors are as follows:

C. F. CLAWSON, President, The Ferro Corporation  
ROBERT W. CUTLER, Skidmore, Owings and Merrill

THOMAS L. EAGAN, Morris & Eagan Company

F. STUART FITZPATRICK, Manager of the Construction & Civic Development Department, U. S. Chamber of Commerce

LEONARD G. HAEGER, Director, Construction Division and Research Institute, National Association of Home Builders

ARTHUR A. HOOD, Editor, American Lumberman, Inc.

H. N. HUNTZICKER, Director of Research, United States Gypsum Company

THOMAS D. JOLLY, Vice President, Aluminum Company of America

J. W. KREUTTNER, Vice President, Buensod-Stacey, Inc.

H. A. LEEDY, Director, Armour Research Foundation

GORDON P. MARSHALL, Past President, Painting and Decorating Contractors of America

J. R. MEEHAN, Vice President, Fischback, Moore & Morrissey, Inc.

WILLIAM MUIRHEAD, President, Wm. Muirhead Construction Company

HARRY C. PLUMMER, Director, Engineering and Technology, Structural Clay Products Institute

R. A. SMITH, P. J. Walker Company

CLARENCE A. THOMPSON, Chairman, Lumber Dealers' Research Council

*Ex officio:*

CLIFFORD F. RASSWEILER, Chairman, Division of Engineering and Industrial Research

WILLIAM W. RUBEX, Chairman, National Research Council

The Building Research Institute (BRI) has commenced publication of the Building Science Reporter, a bimonthly newsletter which replaces BRAB Notes, the newsletter of the Building Research Advisory Board (BRAB). The change was made following the spring meeting of the BRI when it was decided to expand BRI's activities and enlarge its membership. The newsletter details the activities of BRAB and BRI and their members, reports on building research progress, reviews publications of interest to members, and contains a brief feature article in each issue. It is mailed to more than 3,000 readers.

#### STAFF APPOINTMENTS

**Angelo E. Benaglia**, formerly of New York University College of Medicine, joined the Division of Medical Sciences as a Professional Associate, replacing **Arthur C. Fox**, who has completed his tour as U. S. Air Force representative on the staff of the Division and has been awarded a U. S. Public Health Service Fellowship to work in the field of cardiorespiratory physiology at New York University College of Medicine.

**Frank H. Connell**, until recently Acting Director of the Atomic Bomb Casualty Commission in Japan, has been appointed Professional Associate of the Division of Medical Sciences and Executive Officer of the Committee on Atomic Casualties. Dr. Connell replaces **Carl A. Harris**, who has resigned to become Director of Research at Pondville State Hospital in Massachusetts.

**Hiden T. Cox**, Deputy Executive Director of the American Institute of Biological Sciences (AIBS), has resigned to return to Virginia Polytechnic Institute as Professor of Botany. Dr. Cox will maintain his close association with AIBS by serving as its Convention Director for a year.

**Berton S. Hill**, formerly Curator, Division of Biology Sequence, University of Chicago, has been appointed Administrative Assistant in the Division of Biology and Agriculture. He will assume part of the work done by Hiden T. Cox for the American Institute of Biological Sciences

and will also assist O. N. Eaton in the Institute of Animal Resources.

**Paul E. Johnson**, formerly with the Agricultural Relations Division of the Tennessee Valley Authority, has been appointed Executive Secretary of the Food Protection Committee. Dr. Johnson has had extensive experience in the field of animal and human nutrition.

**Richard E. Paulson**, formerly Instructor in Zoology at the University of Chicago, has been appointed Staff Assistant to the Committee on Educational Policies. He will assume his duties on October 1.

**William S. Spector**, associated with the Committee on the Handbook of Biological Data for the past three years, has been appointed Managing Editor of the Handbook, replacing **Errett C. Albritton** who remains Fry Professor of Physiology at The George Washington University and will continue his connection with the Handbook as its Consulting Editor.

**Russell B. Stevens**, plant pathologist, has been appointed Executive Secretary of the Biology Council recently established by the Division of Biology and Agriculture. He will assume his new duties on October 15.

**Elmer M. Ward**, associated with the Highway Research Board since 1946, has been appointed Assistant Director of the Board. Prior to 1946, Mr. Ward worked for the U.S. Army Corps of Engineers, developing methods and equipment for rapid road construction in desert terrain.

**Charles D. West** of the Sloan-Kettering Institute has been called to active duty by the U. S. Navy and assigned to the Division of Medical Sciences as Professional Assistant and Liaison Officer for the Navy. Lt. West replaces **Edgar M. Neptune, Jr.**, who has been reassigned to duty with Naval Medical Research Unit No. 3 at Cairo, Egypt.

**George W. Wood**, visiting Associate Professor of Physics at Tulane University for the academic year 1953-54, has been appointed Technical Associate to the Committee on Undersea Warfare. Mr. Wood has previously participated in various symposia and study groups of the Committee.

# FELLOWSHIP PROGRAMS

## RESEARCH IN FELLOWSHIP SELECTION TECHNIQUES

The National Science Foundation has extended for a two-year period its grant in support of studies on selection techniques as related to the fellowship program for which the Academy-Research Council is responsible in the selection and nomination of candidates.

The research carried out during the past two years was under the direction of Calvin C. Taylor. However, Dr. Taylor, who was on leave of absence, has returned to the University of Utah to resume his position as Professor of Psychology. Lindsey R. Harmon, formerly with the Personnel Research Branch of the Department of the Army, has succeeded him. The research work is guided by a committee composed of the following members:

DEAN W. J. BROGDEN, University of Wisconsin,  
*Chairman*

DAVID C. McCLELLAND, Wesleyan University

JOHN W. TUKEY, Princeton University

JOHN M. STALNAKER, Association of American  
Medical Colleges

ROBERT L. THORNDIKE, Columbia University

The Committee met with Dr. Harmon, the new director, on July 28 to outline areas of fruitful study for the coming months.

## SCHOLARSHIP AND FELLOWSHIP TAXATION

Congress has recently passed legislation which represents a major revision of previous laws relating to internal revenue. This legislation, the Internal Revenue Code of 1954, was approved by the President on August 16. For the first time specific provisions relating to scholarships and fellowship grants are included. Because of the widely expressed interest in these provisions, the section relating to them is reprinted at the end of this article verbatim from the new law.

Section 117 (Scholarships and Fellowship Grants) as first proposed and passed by the House included a provision which caused considerable concern, since it would

have resulted in making a large majority of postdoctoral fellowships taxable. Discussions were held with United States Treasury officials, and a series of conferences was called at the Academy-Research Council including representatives of interested Federal agencies, the Foundations, the research councils, and representatives of other groups such as the American Cancer Society and the Association of Graduate Schools. These discussions resulted in suggested modifications in the proposed code which were again discussed with representatives of the Treasury Department and the staff of the Joint House and Senate Committee on Taxation. Suggestions discussed were later embodied in the new law.

It will be noted that Section 117(a)(1)(2) cover undergraduate and predoctoral fellowships and include specifically not only scholarship and fellowship grants but additional benefits for travel and other items. In the past the tax status of such benefits proved very troublesome. The specific mention of these items will reduce the difficulties of universities and colleges in tax matters for fellows. In Section (b)(1) the second sentence provides specifically for those cases in which institutions require teaching or research as degree requirements. In the past it has been difficult in some cases to establish the tax-free status of fellowships and at the same time require a limited amount of teaching as a degree requirement.

Postdoctoral fellowships are covered by the provisions of Section (b)(2) and it will be noted that two criteria are to be met. One of these is that the grantor shall be a tax-exempt organization or a Federal agency, and the other is that the fellowship grant, which may be excluded from gross income, is limited to \$300 per month for a total of 36 months, not necessarily consecutive. Because the individual may claim the normal exemptions deductible from that part of his gross income above \$300 per month, fellowship holders will in general be tax free if their stipends do not exceed

\$3,600 per year, plus the amount of their personal exemptions and other deductible items.

It may be noted, too, that these provisions may affect the individual's tax liability prior to and after his fellowship tenure. Most fellowships are entered upon in the middle of the calendar year and end in the middle of another calendar year. Because the fellow will report partial salaries for the remainder of these two years, he will probably fall in a lower tax bracket which will have the effect of lowering his tax liability.

#### Section 117 of Internal Revenue Code of 1954

(Public Law 591, Chapter 736)

(a) GENERAL RULE.—In the case of an individual, gross income does not include—

(1) any amount received—

(A) as a scholarship at an educational institution (as defined in section 151(e)(4)), or

(B) as a fellowship grant, including the value of contributed services and accommodations; and

(2) any amount received to cover expenses for—

(A) travel,

(B) research,

(C) clerical help, or

(D) equipment,

which are incident to such a scholarship or to a fellowship grant, but only to the extent that the amount is so expended by the recipient.

(b) LIMITATIONS.—

(1) *Individuals who are candidates for degrees.*

—In the case of an individual who is a candidate for a degree at an educational institution (as defined in section 151(e)(4)), subsection (a) shall not apply to that portion of any amount received which represents payment for teaching, research, or other services in the nature of part-time employment required as a condition to receiving the scholarship or the fellowship grant. If teaching, research, or other services are required of all candidates (whether or not recipients of scholarships or fellowship grants) for a particular degree as a condition to receiving such degree, such teaching, research, or other services shall not be regarded as part-time employment within the meaning of this paragraph.

(2) *Individuals who are not candidates for degrees.*—In the case of an individual who is not a candidate for a degree at an educational institution (as defined in section 151(e)(4)), subsection (a) shall apply only if the condition in subparagraph (A) is satisfied and then only within the limitations provided in subparagraph (B).

(A) *Conditions for exclusion.*—The grantor of the scholarship or fellowship grant is an organization described in section 501(c)(3)

which is exempt from tax under section 501(a), the United States, or an instrumentality or agency thereof, or a State, a Territory, or a possession of the United States, or any political subdivision thereof, or the District of Columbia.

(B) *Extent of exclusion.*—The amount of the scholarship or fellowship grant excluded under subsection (a)(1) in any taxable year shall be limited to an amount equal to \$300 times the number of months for which the recipient received amounts under the scholarship or fellowship grant during such taxable year, except that no exclusion shall be allowed under subsection (a) after the recipient has been entitled to exclude under this section for a period of 36 months (whether or not consecutive) amounts received as a scholarship or fellowship grant while not a candidate for a degree at an educational institution (as defined in section 151(e)(4)).

#### FELLOWSHIPS IN THE MEDICAL AND NATURAL SCIENCES

The National Academy of Sciences—National Research Council is accepting applications for fellowships that provide opportunities for advanced study and training in fundamental research in the medical and natural sciences for the 1955–56 academic year. These fellowships are intended for young men and women of unusual promise and ability, in the early stages of preparation for an investigative career, and not for those already professionally established.

Applications must be postmarked on or before December 10, 1954. Fellowships are awarded in the late winter or early spring. The full scope of these broad programs is described in a brochure that can be obtained from the Fellowship Office, National Academy of Sciences—National Research Council, Washington 25, D. C.

#### NATIONAL SCIENCE FOUNDATION FELLOWSHIPS

The Fellowship Office of the National Academy of Sciences—National Research Council is accepting applications for National Science Foundation Fellowships for the 1955–56 academic year. These fellowships, open only to citizens of the United States, will be awarded solely on the basis of ability in the mathematical, physical, medical, biological, and engineering sciences including physical anthropology,

psychology (excluding clinical psychology), physical geography, and interdisciplinary fields. No awards are made to individuals studying for the M.D. degree; however, applications will be accepted from individuals holding the M.D. degree who intend to obtain advanced training in one of the medical sciences directed toward a career in research.

Applications for the graduate fellowships, which include first year, intermediate, and terminal year fellowships, must be received in the Fellowship Office by January 3, 1955. Applications for postdoctoral fellowships must be received by December 20, 1954.

Detailed information and application forms may be obtained from the Fellowship Office of the National Academy of Sciences-National Research Council, Washington 25, D. C.

#### RADIOLOGICAL RESEARCH SCHOLARS

The Committee on Radiology of the Division of Medical Sciences, acting for the James Picker Foundation, is accepting applications for grants for scholars in radiological research. These awards are designed to bridge the gap between the completion of fellowship training and the period when the young scientist has thoroughly demonstrated his competence as an independent investigator.

Applications are accepted from institutions only, and the institution receives a grant of \$6,000 per year for the scholar as a contribution toward his support, or his research, or both. Initial grants are limited to one year but may be renewed. Applications for 1955-56 should be submitted by institutions in behalf of candidates before November 30, 1954.

## RECORD OF MEETINGS

July		July	
1	Gun Liner Panel, Sub-panel on Temperatures, Pressures, and Thermal Stresses, <i>Lafayette, Ind.</i>	30	Subcommittee on Toxicology Food Protection Committee
2	Subcommittee on Fruits and Vegetables, <i>Los Angeles, Calif.</i>	August	
7	Advisory Panel on Building Material Display Center	3	Department of Materials and Construction, Bituminous Division, <i>St. Louis, Mo.</i>
8	Committee on Development of Substitutes for Waterfowl Feathers and Down, <i>New York City</i>	5	Ad hoc Subcommittee on Packaging Operations, <i>Natick, Mass.</i>
	Climatic Research Committee	10	Building Research Advisory Board, Executive Committee
9	Maritime Cargo Transportation Conference, Steering Committee	17	Panel on Rubber Building Research Advisory Board, Task Group T-3
	Ad hoc Panel for the Establishment of a Hemoglobin Standard	18	Ad hoc Subcommittee on Packaging Operations, <i>Chicago, Ill.</i>
10	Committee on Nutrition Studies, <i>Elgin, Ill.</i>	19	Ship Structure Committee, Advisory Committee for Project SR-120 and 124
15	Ship Structure Subcommittee, Executive Group	24	Agricultural Research Institute, Projects and Proposals Committee, <i>St. Louis, Mo.</i>
16	Committee on Weapons Systems, Evaluation Group, <i>New York City</i>	25	Ad hoc Planning Committee for Conference on Physics Education, <i>Cambridge, Mass.</i>
20	Committee on Nuclear Science, Subcommittee on Instruments and Techniques, <i>New York City</i>		Committee on Fabrics for Body Armor, <i>New York City</i>
	Committee on Ship Steel	29	Committee on Undersea Warfare, <i>Cambridge, Mass.</i>
21	Ad hoc Conference on Dextran Fractions	31	Ad hoc Subcommittee on Packaging Operations, <i>New York City</i>
28	Advisory Committee on Fellowship Selection Techniques		
29	Subcommittee on Food Technology		

## NEW PUBLICATIONS

- America's Resources of Specialized Talent: A Current Appraisal and a Look Ahead.* Prepared by Dael Wolfe, Director, Commission on Human Resources and Advanced Training. Harper & Brothers, 1954. 332 p. \$4.00.
- Annotated Bibliography of Analytical Methods for Pesticides.* Section II. Academy-Council Publication No. 241. 1954. 178 p. \$2.00.
- Annotated Bibliography of Submarine Technical Literature, 1557 to 1953.* Academy-Council Publication No. 307. 1954. 261 p. \$1.50.
- Departments of Geological Science in Educational Institutions of the United States and Canada.* American Geological Institute Report No. 11. Academy-Council Publication No. 329. 1954. 153 p. \$1.50.
- Design of Flexible Pavements.* Highway Research Board Research Report 16-B. Academy-Council Publication 321. 1954. 78 p. \$1.05.
- Mass Spectroscopy,* by Mark G. Inghram and Richard J. Hayden. Nuclear Science Series Report No. 14. Academy-Council Publication No. 311. 1954. 51 p. \$2.00.
- Proceedings, Second Highway Safety Research Correlation Conference on Health, Medical and Drug Factors in Highway Safety, April 5 and 6, 1954.* Academy-Council Publication No. 328. 1954. 215 p. \$1.25.
- Quality and Stability of Canned Meats.* A symposium sponsored by the Quartermaster Food and Container Institute for the Armed Forces Quartermaster Research and Development Command. U. S. Army Quartermaster Corps. Palmer House, Chicago. March 31-April 1, 1953. 135 p. (Available from Quartermaster Food and Container Institute for the Armed Forces, Chicago.)
- Report of the Committee on the Measurement of Geologic Time, 1952-1953.* Academy-Council Publication No. 319. 1954. 187 p. \$1.50.
- Report of Committee on Roadside Development.* Academy-Council Publication No. 318. 1954. 80 p. \$1.35.
- Concluding Report of Special Task Committee on Stabilized Turf Shoulders.* Highway Research Board Special Report 19. Academy-Council Publication No. 320. 1954. 13 p. \$0.30.
- Standard Values in Nutrition and Metabolism. Being a Second Part of a Handbook of Biological Data.* Edited by Errett C. Albritton. WADC Technical Report 52-301. December 1953. (Commercial edition available from W. B. Saunders, October 1954. Approximate price \$6.50.)

### Notice of Academy Meetings

#### NATIONAL ACADEMY OF SCIENCES

Autumn Meeting, Columbia University, November 8-10, 1954  
Annual Meeting, Washington, D. C., April 25-27, 1955

#### NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., October 10, 1954

NATIONAL ACADEMY OF SCIENCES  
NATIONAL RESEARCH COUNCIL

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*The search for Truth is in one way hard and in another easy. For it is evident that no one can master it fully nor miss it wholly. But each adds a little to our knowledge of Nature, and from all the facts assembled there arises a certain grandeur.*

—ARISTOTLE