

The  
Rockefeller Foundation  
Annual Report, 1959

THE ROCKEFELLER  
FOUNDATION

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<sup>1</sup> Retired August 31, 1959.

To the  
Trustees of The Rockefeller Foundation

Gentlemen:

I have the honor to transmit herewith a general review of the work of The Rockefeller Foundation for the year 1959, together with detailed reports of the Treasurer of the Foundation and of the Directors for Medical and Natural Sciences, Agricultural Sciences, Social Sciences, and Humanities for the period January 1, 1959 to December 31, 1959.

Respectfully yours,

Dean Rusk  
*President*

The  
President's Review  
1959

\*

## Financial Summary for 1959

The Rockefeller Foundation appropriated a total of \$34,189,340 during 1959. This amount was distributed among the several programs as follows:

Agricultural Sciences . . . . .	\$ 6,769,070
Humanities . . . . .	4,052,211
Medical and Natural Sciences . . . . .	12,300,071
Social Sciences . . . . .	4,049,350
General Grants . . . . .	3,459,933
Supporting Services . . . . .	3,558,705

The reader is invited to consult the Annual Report for detailed information on each program. The total appropriations included funds for the award of Rockefeller Foundation Fellowships. During 1959 291 Fellows from 39 countries began advanced study outside their own countries; 339 additional Fellows pursued their work during 1959 through earlier awards. Rockefeller Foundation Fellows studied at 169 institutions in 26 countries during 1959.

The income of the Foundation for the year was \$23,044,032. On December 31, 1959, the market value of its uncommitted principal fund was \$518,219,214.

## The India International Centre

Of the nations which have achieved their independence since World War II, India is the largest both in area and population. Its capital, New Delhi, has become one of the great crossroads of international contact, with as heavy a traffic of foreign visitors as any other city in Asia. This results in part from the role of India in international affairs and in part from the rapid growth of the Delhi metropolis as the seat of government and of many new institutions of national influence. Cultural leaders and other important visitors flow through Delhi in such numbers that it has become practically impossible for existing agencies to provide for them and to take care of the countless details necessary for fruitful visits. Thus has emerged a special need: to help foreign scholars, scientists, writers, and men of affairs make the most of their time in India to draw upon Indian life and culture and to enable the value of the exchange to reach more widely and deeply into Indian thought.

The concept of the India International Centre is a response to this challenge. Growing from discussions among Indian leaders in educational and intellectual endeavors, the center was established in March, 1959. Its general purpose is to provide a forum where cultural and intellectual exchange can be intensive enough to be fruitful and take place in a congenial setting where foreign and Indian leaders of thought may live together. In addition to living quarters, plans for the center include a variety of services: advice and assistance for both foreign and Indian cultural leaders; the sponsorship of visits by Indian leaders to other countries and of comparable foreigners to India; the encouragement of lectures, discussions, and symposia on significant problems; the promotion of intellectual cooperation among Indian universities; and the inauguration of a small publishing

program. In all these undertakings the center will work in cooperation with existing institutions in the national capital.

The responsibility for the center rests with a Board of Trustees headed by Dr. C. D. Deshmukh, who is also the center's acting director. Dr. Deshmukh is currently chairman of the University Grants Commission and was formerly Union Finance Minister. Among the six other members are Pandit H. N. Kunzru, Member of Parliament and president of the Indian Council of World Affairs; Madame Indira Gandhi, president of the Indian National Congress and daughter of Prime Minister Nehru; and Dr. K. S. Krishnan, director of the National Physical Laboratory. Dr. Deshmukh will be actively concerned with the development of the center while a full-time director is being selected. He is advised by an executive committee of six selected as outstanding representatives of the major spheres of Indian life related to the center's objectives.

Thirty-five of the 38 universities in India have already endorsed with enthusiasm the purposes and plans of the center and have joined it as institutional members pledged to give recurrent financial support. In addition to serving as a place where scholars and scientists from Indian universities can meet and live with foreign cultural leaders, the center will fulfill a long-recognized need in Indian academic life by providing for more frequent contacts and exchanges among the widely scattered Indian universities.

The Government of India has allotted the center a five and one-half acre site in a readily accessible location in New Delhi. Existing buildings will be remodeled and new ones erected. Particular attention is being paid to their architectural design; the Indian firm of Stein, Chatterji, and Polk, Inc., has been retained to execute the design. The buildings will contain residential accommodations for 50 visiting scholars, a modest library, and facilities for conferences,

lectures, and similar activities. Construction will probably be completed during 1961.

The Foundation has made two grants totaling \$834,135 to the center. Of this amount, \$710,200 is allocated for building and related expenses; the total estimated cost of establishing the center is approximately \$954,000. For the operating expenses of the center over a five-year period, the sum of \$123,935 has been allocated. An additional sum of about \$273,000, estimated as needed during that period to cover the operating costs, has been or will be raised from member institutions and from other Indian sources.

The Foundation previously made grants totaling approximately \$817,000 for the establishment and general support of the International House of Japan, in Tokyo. The success of this center in stimulating intellectual contacts between Japan and many other countries naturally inspired hopes that an organization of comparable purpose and effectiveness could develop in South Asia. The new India International Centre appears to fulfill this hope. As its program develops, the center is likely to have many useful consequences for foreign cultural leaders visiting India and for Indian institutions concerned with ideas and developments in other parts of the world.

## Art Conservation

One of the notable characteristics of American culture in this century is the increased desire of the public to enjoy the great visual expressions of man's imagination. That so many can at least partially satisfy this desire in the vicinity of their homes illustrates how large a portion of the world's artistic output has been accumulated in this country during the past century. The development of the great American art collections, however, has been accompanied by scant



awareness of the extent to which the objects themselves are fragile and subject to decay, and by what would appear to be insufficient concern on the part of most collectors and custodians for their immense responsibility to past and future generations of mankind. As American art collections have grown, skill in exhibition and care in cataloguing have kept pace, but facilities, personnel, and budgets for the physical care of art objects have fallen far behind. At the same time, the desire to make these collections available to a wider audience by means of loans and traveling exhibits has increased the hazards that endanger them.

With museums and collectors in the United States spending well over twenty million dollars annually on works of art and with the total value of American collections in billions of dollars, The Rockefeller Foundation consulted a number of informed conservators, museum directors, and art historians as to how our national responsibility for the health and safety of this vast record of past civilizations could best be met. These conversations made it evident that the dimensions and complexities of the problem of art conservation in the United States demanded an examination on a national scale. The Brooklyn Museum met this need by conducting in 1958 a three-day conference on the subject to which it invited a representative group of museum directors, curators, lawyers, insurance adjusters, conservators, and the few scientists who have concerned themselves with the physical properties and care of art objects. The wide variety of facts and points of view that emerged from the cumulative experience of this diverse group focused attention on three aspects of art conservation in the United States.

Few if any museums in the United States have adequate provision in their budgets for conservation of the objects in their custody. Even if the funds and trained personnel were available, most of the museums still do not

have the laboratory facilities that permit the type of examination necessary for assumption of full responsibility for the care of art. The curators of the major art collections have been trained for the past 60 years largely as art historians at schools where they have been taught little about materials and techniques relating to the care of museum objects. This situation, when combined with the even more limited knowledge of the buying public, places the primary responsibility for the physical care of art objects in the hands of dealers and private specialists. While many of these are expert and have made important contributions, such an arrangement runs the risk of obscuring the record of what actually has been done to an art object or, in some instances, of sacrificing the original work of art or its long-term survival to the immediate needs of sale or exhibition.

Present facilities for training museum personnel in the problems and techniques of conservation are inadequate to the magnitude of the task, being limited, as they are, to apprentice programs in approximately ten of the larger museums. The Brooklyn Museum conferees felt that an effective training program ought to provide future conservators not only with a thorough knowledge of techniques and a background in the scientific problems of conservation, but also with a solid grounding in art history, art appreciation, and museology. The program, it was felt, should be available to future museum curators so that they might acquire a working knowledge of the physical structure of works of art and an understanding of both the possibilities and limitations of conservation.

Twentieth-century developments in science and technology provide a basis for entirely new methods of arresting decay and of protecting the artistic heritage of present and past civilizations against environmental and climatic conditions. Only a few laboratories throughout the world, however, are engaged in applying and coordinating already

established scientific knowledge for use in this field. The attention of these laboratories, moreover, has been directed almost exclusively to the preservation of painting, with scant attention being given objects made of metal, stone, wood, ceramics, or fabrics. Responsible institutions everywhere are concerned with preserving objects *in situ* such as fresco and mural paintings or modern and ancient stone and wood carvings that are exposed to the ravages of widely differing climatic conditions. While the shortage of facilities for research and training in art conservation is world wide, the problem is more acute in the United States than in many European countries where cultural matters are traditionally the concern of a government ministry and where a centralized national museum serves as a focal point for research and the dissemination of its results.

On the basis of observations such as these, the Brooklyn Museum conference made a series of detailed recommendations as to the steps which cultural institutions operating within the structure of our society should take to meet their obligations for adequate care of the immense art heritage in their custody while continuing to expand their programs designed to make this art an ever more intimate part of the life of the individual American. Central to these recommendations was the need for a nationally recognized institutional center that would define standards of conservation; serve as a clearinghouse for authoritative information; conduct and stimulate research on conservation problems; and provide sound training for conservators at the professional level. It was felt that this could best be achieved at a university with ready access to major museum facilities.

The Art Conservation Center of the Institute of Fine Arts of New York University, located within a few blocks of the Metropolitan Museum, is designed to serve the needs for research and training defined at the Brooklyn Museum conference. Plans for it were made after a series of meetings

between its director, Craig H. Smyth, and Frederick B. Adams, Jr., director of the Pierpont Morgan Library, Sheldon Keck, conservator at the Brooklyn Museum, Murray Pease, conservator at the Metropolitan Museum of Art, and George Stout, director of the Isabella Stewart Gardner Museum in Boston. To help New York University meet this national responsibility The Rockefeller Foundation provided \$500,000 toward the initial expenses of setting up a laboratory in the institute's new quarters and—on a gradually declining basis over a ten-year period—for such operating costs of the center as salaries for its director, research scientists, and laboratory technicians; fees for visiting consultants; and graduate fellowships.

The help of The Rockefeller Foundation will give New York University an opportunity to demonstrate the extent of its contribution toward the adequate care of this country's art holdings. As this demonstration proceeds, New York University will need to obtain funds from museums, art collectors, and other individuals and institutions with comparable interests or responsibilities to meet that part of its budget not provided for by the Foundation's grant, and, ultimately, to raise an endowment fund sufficient to make the Art Conservation Center a permanent and integral part of the nation's cultural life.

## All-India Institute of Medical Sciences

The Government of India in October, 1943, appointed a "Health Survey and Development Committee" to make a survey of the existing facilities in India, to give "a true and faithful picture of the conditions as they exist in this country at present" in regard to all questions pertaining to public health and medical care, and to recommend lines of

improvement and development for the future. That this committee was wisely and ably constituted is evident from the historic document which records its findings and recommendations. Commonly known as the Bhole committee report, it is remarkable for its comprehensive character, its factual reporting, and its straightforward presentation of fundamentally sound proposals for meeting health needs irrespective of possible political implications.

It is of further interest to note that though the membership of the committee was predominantly Indian, it could quite properly be called an international health committee. A number of British physicians were members, as was Dr. John B. Grant, a Rockefeller Foundation officer on assignment in India during this period.

As the committee examined the problem of developing a comprehensive health service for India, it became obvious that a considerable expansion of existing facilities for the training of doctors and other health workers would be necessary to provide the personnel required for the proposed program. In commenting on this requirement, the report states:

"These institutions will naturally have to concentrate on the production, in as large numbers as possible, of the different types of health workers required for the health services we have proposed. Side by side with these developments, however, we consider it of the first importance that at least a few institutions, which will concentrate on quality, should also be established at suitable centers in different parts of the country. We realize that considerations of cost and the need to staff these institutions with the most highly qualified persons available will, in all probability, make it extremely difficult to start with more than one such training center. But no time should be lost in developing one such center, for which we would suggest the designation 'All-India Medical Institute.'"

The purposes of this institute were succinctly summarized in the legislative act which officially established the institute and which was passed by the Indian Parliament in 1956. Section 13 states:

The Objects of the Institute Shall Be:

- (a) to develop patterns of teaching in undergraduate and postgraduate medical education in all its branches so as to demonstrate a high standard of medical education to all medical colleges and other allied institutions in India;
- (b) to bring together in one place educational facilities of the highest order for the training of personnel in all important branches of health activity; and
- (c) to attain self-sufficiency in postgraduate medical education.

The Bhore committee was deeply aware of the importance of preserving freedom of action for the institute and evidenced this feeling thus:

"Although it may appear somewhat novel in this country, we suggest that the technical work of the institute should be developed and directed not by an outside body, however eminent its members may be, which will impose its ideas on the director and professors of the institute, but by the latter themselves acting as a medical faculty."

The 1956 legislative act provided for this freedom.

The committee, in proposing the establishment of the All-India Institute of Medical Sciences, derived much of its inspiration from the example of the Johns Hopkins Medical School and Hospital.

The official committee report was published in 1946. Ten years had elapsed when, in September, 1956, the All-India Institute of Medical Sciences opened its doors and admitted the first class of 41 men and nine women medical students. The writers of the report would no doubt have considered this too long a lapse in time. Viewed today, and

in the perspective of a developing, newly independent nation with a vast array of goals to accomplish for its people, this delay is understandable and may even prove to be fortunate. The interim time has made it possible to give careful thought to the selection and preparation of principal staff as well as to mobilize the substantial resources which are needed to launch the institution in condition to meet its heavy responsibilities.

It would be of interest to trace the entire history of the institute's early development, but only a few of the more important features can be touched upon here.

The Rajkumari Amrit Kaur, Minister of Health to the Government of India for the first ten years following independence, stands out as the major champion of the All-India Institute of Medical Sciences. As Minister she saw the enabling act, so comprehensive in character that it might be considered equivalent to a university charter, through the 1956 session of Parliament. The decision to establish the institute had been made much earlier by the government and a staff recruitment and building program had been initiated. The Rajkumari also sought help for the institute from sources outside India. In 1950, some years before the passage of the 1956 legislative act, the Government of New Zealand had generously made available the sum of £1,000,000 as a contribution toward the building program.

Initially it was proposed to build the institute adjacent to the Irwin Hospital near the center of New Delhi. A thoughtful review of the purposes of the institute and a consideration of the facilities necessary for their accomplishment resulted in a decision to seek a site where more space would be available. An area to the south of New Delhi, comprising some 150 acres of open land, was chosen and made available by the Government of India. This site is admirably suited to the purposes of the institute. It borders on Ring Road, which eventually will encircle New and Old

Delhi. Nearby are extensive housing projects for government employees. Immediately to the south and east are villages typical of rural India.

The construction program began with the provision of living quarters for students and staff and a building for the school of nursing which will ultimately become a part of the medical center. Although this was a decision of convenience, since funds were available and plans for these structures could most easily be completed, it is perhaps significant that the first provision was one which made it possible for students and staff to live and work together closely. Neither group had to concern itself with where it was to live in an already overcrowded and under-housed city, but could immediately move ahead with its accepted tasks. At present, the immediate housing needs have been met, though in the future some additional staff housing may become necessary.

The first unit of the medical center proper, the pre-clinical building, was completed to the point where it could be occupied in the latter part of 1958. This is a multi-story, well-designed unit with excellent classrooms and student and research laboratory space.

The second part of the medical center, the clinical teaching unit, is now being constructed. It will provide office, laboratory, and teaching facilities for the clinical program. This building should be completed within the current year. Preliminary steps are now being taken which should shortly lead to the construction of the outpatient facility, which it is hoped will be ready for use in approximately one year.

The most urgent next step is a teaching hospital in which the abilities of staff and students may have full scope and which can support the development of the clinical program in both education and research. Plans for the teaching hospital have been completed on the basis of the recommendations of the institute's own staff as well as with the advice of such consultants as Dr. John McGibony, former



professor of hospital administration at the University of Pittsburgh School of Public Health, and Dr. Lucien A. Gregg, The Rockefeller Foundation's senior medical representative in India.

Hospital and outpatient facilities required for the teaching program have been temporarily located in the building intended for the school of nursing and on the first two floors of the nurses' hostel. Reasonably satisfactory accommodations for a little over 200 patients, together with the usual ancillary services, have been provided. It is anticipated that these can be expanded somewhat further in the next few months.

The stated objectives of developing patterns of teaching which will demonstrate a high standard of medical education and of training teachers for the different medical colleges in India have been readily accepted. Significant progress has been made in the three and one-half years since the first students were admitted. The fourth class of 50 students was admitted in August, 1959. There are now 215 undergraduate students studying at the college. The first group will complete the basic course of study at the end of 1960. At that time they will begin a one-year internship, a requirement which must be satisfactorily completed before they receive the medical degree.

The faculty is continually striving to develop a curriculum, appropriate to the vast medical needs of India, based on rigorous scientific training. Emphasis is being placed on an integrated biochemical and physiological approach to the teaching of medicine in a way and to a degree that has not yet been achieved in any other Indian medical college.

India, with 23 medical colleges in 1947, now has 53 in various stages of development. The size of the average medical college class has also increased; it is now approximately twice that of 1947. Whereas in 1947 some 1,100

students were admitted to training each year, the number is now at least four times this figure. The task of training teachers is enormous, and cannot be achieved by one institution alone. However, it is hoped that the standards being set by the institute, and their eventual introduction into other medical faculties by personnel trained at the institute, will have significant results. Some graduate training has been in progress since the institute was opened. The current year's program, however, represents the first significant step forward in this area. As of September 1, 1959, there were 53 postgraduate students enrolled. Forty of these are preparing themselves for teaching and research roles in the various basic medical sciences. They were selected from more than 60 applicants. This past year there were 94 applicants for postgraduate studies in the clinical fields. Because of the limited clinical facilities, only 13 could be accepted.

Without question, the principal asset of the All-India Institute of Medical Sciences is the talent and devotion of its splendid faculty. There are still many vacancies in the staff, but these are being filled as newly trained people become available or especially qualified candidates can be released from positions elsewhere. As of December, 1959, 17 out of 31 full professorships, four out of seven associate professorships, and 20 out of 39 assistant professorships had been filled. Established positions for tutors, demonstrators, and other junior positions can be more readily filled. Appointments are being made as needs develop and as facilities become available.

The Foundation has been able to play a minor, though important, role in the development of the institute. In the past, fellowships have been awarded to three of the staff. Since 1957 six travel grants have enabled members of the faculty and administrators to visit medical centers in the United States, Europe, and Japan. A total of \$300,000 has been appropriated for the purchase and shipment of

teaching and research equipment. Of this amount, \$100,000 was appropriated in 1958 and \$200,000 in 1959. More recently, the Board of Trustees designated funds which may be used to meet the foreign exchange requirements for the construction of the hospital clinic complex and some \$500,000 was released for this purpose early in 1960.

The establishment of a modern medical center represents a tremendous investment for India. It is estimated that the Government of India will have invested more than the equivalent of \$9,000,000 in the development of this project before the end of the second Five Year Plan in March, 1961. It is expected that the requirements for the further development of the institute will receive a prominent place in the third Five Year Plan.

## The Races of Maize of Latin America

When in 1943 The Rockefeller Foundation in cooperation with the Mexican Ministry of Agriculture began a program of practical maize improvement, it became evident almost at once that a survey of the native maize varieties was needed to serve as an inventory of the material available to the plant breeder. A systematic program of collection, originally wholly utilitarian in purpose, was begun. Varieties were assembled from all parts of Mexico and, in controlled experiments, were compared for productiveness, disease resistance, and other characteristics of agricultural importance.

As the collections grew and the extraordinary diversity of maize in Mexico began to be revealed, the need of a taxonomic classification which would make some semblance of order out of the bewildering multiplicity of varieties became apparent. Botanical, genetic, and cytological studies to supplement the agronomic investigations were begun, and to

make the collections as nearly complete as possible, special efforts were made to obtain little-known varieties of doubtful agronomic importance from remote localities.

Gradually it became possible to discern relationships among varieties and to group these into more or less well-defined natural races. And, since relationships are implicit in any natural system of classification, a definite attempt was made to determine the origins and relationships of the recognized races. What had begun as a strictly utilitarian venture of limited scope developed into a study of the evolution, in one geographical region, of America's most important cultivated plant. One result was that the corn breeders of Mexico have acquired a far more useful inventory than they had originally sought of the breeding material available in their country, and have been able to approach new breeding problems with some degree of confidence in their choice of stocks.

The results of these extensive studies were published in 1951 by the Mexican Ministry of Agriculture as a technical monograph entitled *Razas de Maíz en México* and an English edition of the monograph was subsequently published by the Bussey Institution of Harvard University. When the Colombian Agricultural Program was initiated in 1949 a similar project of collection and classification was immediately begun.

Corn geneticists in other countries of Latin America became interested in these activities and in the fall of 1950 Dr. F. G. Brieger, of the Luiz de Queiroz College of Agriculture in Piracicaba, Brazil, approached Dr. Ralph E. Cleland, then chairman of the Division of Biology and Agriculture of the National Research Council, with the suggestion that the council undertake to raise funds to collect and preserve the maize of this hemisphere. In early 1951 the National Research Council established a Committee on the Preservation of Indigenous Strains of Maize under the

chairmanship of Dr. Cleland. At its first meeting the committee reached the following conclusions:

Throughout Latin America and in parts of the United States, there are countless strains of maize which are in danger of dying out because of the inroads of corn introduced from the outside. Reliable reports indicate that, if nothing is done to preserve these strains, some of which represent the product of thousands of years of domestication, a very large proportion of them will be extinct within from one to three decades. This would be a major disaster, for the following reasons:

a) It would result in the loss of the germ plasm necessary for the improvement of Latin American corns through the development of hybrid varieties suited to particular areas. Raising the standard of living in Latin America will be difficult unless such improvement can be effected.

b) Many of the genes present in this material are important to our own [U.S.] corn-breeding program. We are already reaching the point of diminishing returns in our corn-breeding work in the United States and are beginning to turn to Mexico and Central America for new germ plasm. We will eventually need to turn to South America also, as genes are discovered there capable of improving our own stocks in various ways when introduced into them.

c) Disappearance of these strains would deprive the geneticist of much material of value in the further analysis of the genetic system in maize. This material will be exceedingly useful to the geneticist if it can be preserved.

d) Loss of this material would deprive the ethnologist and anthropologist of a valuable source of information in regard to the relationships of the various human cultures to be found in Latin America. A comparative study of the native strains of maize furnished many valuable clues to these relationships.

In June, 1951, the committee negotiated a contract with TCA (Technical Cooperation Administration of the Department of State) for a three-year program of collecting and preserving the indigenous strains of maize of the coun-

tries of Latin America. A grant of \$85,000 to support the program was received from TCA. Three centers were established: in Mexico, Colombia, and Brazil, the first two in cooperation with Rockefeller Foundation programs in these countries. The Mexican center became responsible for collecting the maize of all of the countries of Central America; the Colombian center assumed similar responsibility for the countries of western South America: Colombia, Venezuela, Ecuador, Peru, Bolivia, and Chile.

By the end of the period of contract, June, 1954, some 12,000 different collections had been made and were in cold storage in the three centers. Small duplicate samples were transmitted to the Division of Foreign Plant Introduction of the United States Department of Agriculture for storage in the United States.

In 1955 a new contract was negotiated for the classification and description of these collections and the publication of the results. At this writing the following publications have been issued: *Races of Maize in Cuba*; *Races of Maize in Colombia*; *Races of Maize in Central America*; and *Races of Maize in Brazil and other Eastern South American Countries*.

Similar publications on races of maize in Venezuela, Ecuador, Peru, and Chile are nearing completion and will be published in the near future. The majority of these publications have as their authors members of the staff of The Rockefeller Foundation and local technical personnel associated with the Foundation's programs.

When this project has been completed, descriptions will have been published of virtually all of the races of maize in Latin America and seeds of all races will be in cold storage in the three centers in Latin America with duplicate samples in storage in the United States. These "germ plasm banks" are serving as models for similar banks involving other crop plants.

Seed of these maize races is available not only to the corn breeders of Latin America but to those in all other parts of the world and the collections have been drawn upon extensively. Corn breeders in Africa have found resistance to a devastating disease in some of the collections from Latin America. Some of the most promising corn in the Philippines has come from the Colombian collection. The collections have been widely used by maize geneticists in the United States in connection with their analyses of genetic systems of the maize plant.

The classification of the living races of maize has now made it possible to identify many of the varieties in the pre-historic collection of maize from archaeological sites. It has been found, for example, that the earliest maize from sites in northwestern Mexico, Arizona, New Mexico, and Colorado all belongs to the Mexican race "Chapalote." The result is that the pre-Columbian cultural relationships between Mexico and the American Southwest, long suspected by anthropologists, are now well established.

The Foundation's modest agricultural program begun in Mexico in 1943 is paying dividends of various unexpected sorts, on virtually a world-wide basis.

## The International Rice Research Institute

The Rockefeller Foundation began its agricultural operating program in 1943 in response to a request from the Government of Mexico for assistance in increasing food production in that country. The intimate collaboration between Mexican officials and scientists on the one hand, and the resident staff scientists of The Rockefeller Foundation on the other, resulted in progress which led to invitations from other governments to establish similar operating units in their countries. Comparable programs were set up in

Colombia in 1950, in Chile in 1955, and in India in 1956. Individually, these operating units have dealt with the most fundamental considerations involved in increasing the basic food supplies for the host country; from them collectively has developed a pattern of international cooperation which has extended beyond the borders of these several nations.

Concentrating on the food plants of chief importance in the four countries, the Foundation's agricultural operations have thus far dealt with the improvement of corn, wheat, potatoes, beans, vegetables, and forage crops, with special emphasis on the first three. However, the officers of the Foundation have continuously been aware of the role of rice in the diet of more than half the world's population and of the need for improving both the quality and quantity of this important food crop. Consequently, the Foundation arranged to have its specialists visit the important rice-producing areas of the world to acquire information and experience which might lead to future action.

In the course of this exploration opportunities were found to encourage research on rice in several ways. Two rice research centers in the United States were aided in improving and expanding the service and training they offer to foreign students and visitors. Grants totaling \$171,000 went to Louisiana State University for this purpose and one of \$30,000 to the Texas Agricultural and Mechanical College. Important studies on the cytogenetics of rice at Louisiana State University were supported with a grant of \$45,000 and a most promising investigation of the origin of cultivated rice at the National Institute of Genetics, Misima, Japan, was assisted by a grant of \$125,000. The rice research center at Cuttack, India, received \$125,000 for work on the improvement of the rice plant and of the methods of its production. The Agricultural Research Institute at Taipei, Taiwan, was allotted \$45,000 for its research work on rice. Numerous smaller grants aided research and



the training of rice specialists in Brazil, Colombia, Indonesia, the Philippines, and the countries already mentioned.

A beginning was also made in gaining direct experience with the problems of rice production through adding a rice specialist to the regular staff of the Foundation's Colombian Agricultural Program. A severe outbreak of a devastating rice disease—"hoja blanca"—in the Caribbean region had focused attention on the vulnerability of the crop in this part of the world. The Colombian project, set up in 1958, is centered on gaining control of this disease.

In discussing the problems of rice production with agricultural leaders throughout the world, and especially in Asia, Foundation officers found that rice improvement is a question of real concern everywhere rice is grown, and that there was mutual agreement about the desirability of an international effort directed toward increasing the supplies of this vital food. In the course of these discussions it became apparent that the Ford Foundation was similarly preoccupied with this urgent problem. The two foundations decided to join forces to establish an effort of outstanding quality in contrast to supporting a larger number of limited projects, though support to other institutions doing rice research is not thereby ruled out.

Careful and prolonged study led to the conclusion that the establishment of an international research institution would perhaps represent the best method for meeting the urgent need for rice improvement. The institute should be dedicated to the study of the rice plant and of its improvement, protection, production, and utilization. It should be international in scope from the outset and located in an appropriate area in Asia. The institute should serve as a research center with a staff of senior scientists, as a training center at which younger scientists could receive instruction and gain experience in research methods under the direction of the staff members, and as a documentation center for the

collection and dissemination of research results to interested workers in all the rice-producing countries of the world.

After a survey of possible locations, the Philippine Islands were selected as representing an excellent combination of advantageous factors. The Government of the Philippines extended a cordial invitation to the proposed institute, and formal negotiations were begun in 1959. The government has given every possible encouragement to the project, and has generously furnished land for the institute buildings and for an experimental farm at a site adjacent to the College of Agriculture of the University of the Philippines at Los Baños. Close and cordial relations have been established with the appropriate representatives of the government and with the administration and staff of the university and the College of Agriculture. Preliminary planning is well advanced and ground will be broken for the first buildings in the spring of 1960.

The institute will be governed by a Board of Trustees made up of representatives of the Government of the Philippines, the Ford Foundation, The Rockefeller Foundation, the University of the Philippines, and leading figures in the field of agriculture from a number of the countries of Asia.

The Ford Foundation has made an appropriation of \$6.9 million for the capital costs of construction, furnishings, and equipment. The Rockefeller Foundation has undertaken the responsibility for the operation and maintenance of the institute, including the direction of its planning and construction, the recruitment of staff, and the direction of the research projects. An appropriation of \$160,000 made in 1959 will cover the costs of operation in 1960. The Rockefeller Foundation has appointed one of its officers as director of the institute; he has been in the Philippines since the fall of 1959, and will be joined during 1960 by an assistant director. Staff is being recruited as rapidly as possible and it is hoped that the institute will be in partial operation by

the fall of 1960 and in full operation by the end of 1961.

In joining in this venture in better food production, the Ford and Rockefeller Foundations and their colleagues in Asia hope they are embarking on a program which over the years may become of increasingly vital significance to the citizens of those countries whose basic food crop is rice. As improved materials and methods, and increasing numbers of trained scientists specializing on rice begin to flow from the institute, higher quality rice will become increasingly available at costs within the reach of average consumers.

## The Foundation's Operating Programs

### AGRICULTURE

#### *Introduction*

The year 1959 saw two major advances in The Rockefeller Foundation's direct operations in agriculture: the chartering of the International Rice Research Institute, and the inauguration of the Inter-American Food Crop Improvement Program. Both are described in more detail elsewhere in this report—the first on page 21 and the second on page 28, below.

The two developments represent a new stage in an evolutionary process which began when The Rockefeller Foundation's first agricultural operating unit was established in Mexico in 1943. The immediate mission of the small staff sent to Mexico was to apply modern experimental methods to the study of Mexican agricultural problems in order to increase the production of the country's major food crops. To achieve a longer-range objective, the Foundation's staff members also put a great deal of emphasis on the training of young Mexican agricultural scientists, to qualify them to participate in and eventually to assume complete responsi-

bility for the work the Foundation had begun and to build up a strong group of highly competent professionals dedicated to the achievement of a better way of life for Mexico's rural population.

The evolution from this small beginning took two directions. The demonstrated success of the pattern of cooperative agricultural improvement developed in Mexico led other governments to invite the Foundation to establish similar units in their countries. New units were established in Colombia in 1950, in Chile in 1955, and in India in 1956. In each country where this method of cooperation is being applied, it is showing demonstrable results in improving the national agricultural economy and in building up agriculture as a profession.

In addition to joint ventures with individual countries, an international type of cooperation has also developed in which particular food crops are the foci of emphasis. Improved crop varieties created in one location often prove highly advantageous in other places with comparable day-length, altitude, temperatures, and rainfall. The work in Mexico soon resulted in the production of improved varieties of corn, wheat, beans, potatoes, and other food staples. Spreading to other countries through informal personal exchange, many of these new varieties proved superior to local types, were adopted by local agronomists and growers, and thus stimulated a desire for more improved materials and for the knowledge of how to create them. This kind of demand accounts for the eventual appearance of both the International Rice Research Institute and the Inter-American Food Crop Improvement Program.

In the meantime the four operating units have continued to progress, widening their coverage of the food crop spectrum and deepening their investigations of plant breeding, protection, and management. The solution of one problem, however, only unmask others. As research results

accumulate, the extension system by which they are transmitted to farmers must be expanded and improved. As harvests increase, storage and distribution must be made more efficient. Improvements in the individual farmer's operations must be accompanied by better understanding of the economics of production and of the agricultural economy as a whole.

In the Latin American countries where operating units are located, as the production of the major foods derived from plants has increased, the lack of adequate animal proteins in the national diets has become more glaringly evident. It has thus been a natural evolution for these units to turn their attention more and more to the main sources of animal proteins: poultry and eggs, milk and dairy products, and beef and other meat animals.

The approach to the problem of animal production began at the point where this field overlaps that of plant production: forage and pasture grasses and range management. Virtually no scientific work had previously been done on these subjects in any of the countries, and progress has been encouragingly rapid. The fortunate discovery of a foreign grass which is excellently adapted to the tropical region in the State of Veracruz, Mexico, for instance, solved at one stroke a serious feeding problem for dairy cattle during the dry season characteristic of the region.

As will be evident in the reports on the Latin American units which follow, the problems of animal production are being attacked at a very basic level, in the areas of animal breeding, management, and disease and pest control. In this respect the initial studies on food animals are duplicating the emphasis on research which featured the early stages of the plant improvement work. Research and experimentation are the taproots of agricultural improvement.

For the support of its operating program in agriculture for 1960, the Foundation in 1959 appropriated the sum of

\$2,490,535. In addition an appropriation of \$75,000 was made for publications and visual aids in the Mexican national agricultural extension services and another of \$400,000 for the construction and equipment of new experiment stations in Chile, bringing the total to \$2,965,535. The amount appropriated for 1959 was \$2,185,380.

### *Inter-American Food Crop Improvement Program*

The Inter-American Food Crop Improvement Program, authorized by the Trustees in December, 1958, became active in 1959 with the initiation of a number of preliminary projects on the improvement of maize. In 1960 the maize program will be joined by a similar hemisphere-wide wheat improvement project.

The work with maize extends the pattern of the Central American Corn Improvement Project, a pilot operation which was spectacularly successful in laying the base for increased corn production in the six cooperating republics. Begun in 1954, the project was carried on by the corn improvement sections of the ministries of agriculture of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. Their efforts were coordinated by a representative of the Mexican and Colombian Agricultural Programs of The Rockefeller Foundation.

As a result of the coordinated effort, the number of trained corn-improvement specialists in the six countries rose from five part-time to 23 full-time workers. Seventeen of these received their advanced training on Foundation scholarships. Corn varieties and hybrids adapted to local conditions were selected and released and seed production facilities established in each country. The cooperation is still active under local leadership.

The inter-American maize program has initiated an exploration of the Caribbean area to obtain new germ plasm

which can be used in corn breeding in the Americas and elsewhere. This region has not before been fully explored. Arrangements have been made for the exchange of breeding lines among research workers at numerous cooperating centers in Latin America and for several uniform tests of lines and hybrids. Encouragement is being given to the development of centers for fundamental research to increase knowledge of varietal improvement, soil fertility, cultural practices, and the control of plant diseases and insect pests.

This search starts with the substantial information already accumulated by the corn sections of the Foundation's operating units. Perhaps the most important long-range project under way is the further analysis of the corn germ plasm collected during the past years in the Foundation's programs, together with the perfection of techniques in corn breeding to utilize the new genes for yield and other characters essential in the improvement of corn throughout the world.

Previous analyses of maize germ plasm in Latin America have been published for Mexico, Cuba, Central America, Colombia, Brazil, and Eastern South America. A fuller account of this project is given on page 17.

As in the previous project, training will be given a prominent place in the new inter-American maize and wheat programs. Several scholarships have already been awarded which will take the recipients for training to one of the Foundation's operating units, to the Graduate School of the National School of Agriculture of Mexico, or to the United States.

### *Mexican Agricultural Program*

The first Rockefeller Foundation operation in agriculture, that in Mexico, started in 1943 as the Office of Special Studies, a research and training unit in the Mexican Ministry

of Agriculture jointly supported and staffed by the Ministry and the Foundation. The office has headquarters in Mexico City and five experiment stations in representative regions of the Republic. A resident staff of 15 professional members directs the technical and training activities of the office.

From the first the Office of Special Studies has accepted young Mexican graduates of agricultural colleges for practical training experience in scientific agriculture under the supervision of Foundation staff members. Over 500 young men and women have now had such experience for periods varying from a few months to several years. Of those who have been awarded Foundation scholarships and fellowships for advanced study in the United States, 85 have now received the Master of Science degree and 15 the Ph.D. degree. Almost without exception they have returned to work in professional agriculture in their own country, and a number of them are on the staff of the office.

The program is "self-liquidating" in the sense that as Mexican scientists qualify, the responsibility and direction of the work is being turned over to them. In 1958 two important posts in the office were assigned to nationals, and in 1960 four of the crop improvement sections are scheduled to be transferred to Mexican leadership.

The year 1959 saw a notable advance in Mexican agricultural education in the establishment of the Graduate School of the National School of Agriculture at Chapingo, the first institution offering graduate training in agriculture in Mexico and the second in Latin America. A number of the faculty of the new Graduate School are former trainees of the Office of Special Studies who have also held Foundation scholarships and fellowships. Ten trainees from the office are in the school working toward master's degrees. The opening of a graduate training center in Mexico means that a much larger number of Mexican agronomists can now have the advantage of advanced study. The school's im-



portance is not limited to Mexico, for agronomists from other Latin American countries can go there for graduate work without the added burden of learning a new language or of adapting to a greatly different educational and social scene. The Rockefeller Foundation has made a number of grants to the National School of Agriculture in past years and in 1959 appropriated \$100,000 for the Graduate School.

The impact on the Mexican economy of the research and experimentation pursued steadily for 17 years by the Office of Special Studies continues to increase. In 1959 the corn harvest was the largest in history, exceeding even the record one in 1958. Mexican corn production is now more than ample to meet all demands for corn as human food. Increasing amounts can be used for feeding animals, thus making it possible to add more, badly needed animal proteins to the Mexican diet.

The wheat harvest was again at the high level reached several years ago and provided not only for current consumption but also for a carry-over.

Important factors in the wheat and corn production records are the improved varieties and hybrids produced through research in the Office of Special Studies. Without well-adapted and disease-resistant varieties, the increased arable area, especially that under irrigation, could not have had so immediate an effect in increasing the national agricultural product.

The work of the office is organized in 11 sections, of which the oldest are those for the varietal improvement of corn and wheat. Corn hybrids and selected varieties have been produced to fit the climatic and other requirements of all the major agricultural regions of the country and progress is now being made toward creating special types for the smaller subregions and toward emphasizing greater resistance to pests and diseases in addition to high yield as objectives of the breeding work.

Some 95 per cent of the Mexican commercial wheat crop is seeded to improved high-yielding, rust-resistant varieties developed by the Office of Special Studies. Pioneering research in the creation of multilineal or composite wheat varieties offering resistance to a wide spectrum of physiological races of stem rust has advanced to the point where milling and baking tests have demonstrated their quality and release of the composite variety on a commercial scale is in near prospect. Breeding work with dwarf wheats having greater yielding ability under irrigated and heavily fertilized cultivation has similarly advanced to the point of practical use.

Research on the pathogen of the late blight disease of potatoes has resulted in significant new knowledge of this ancient disease and has also made possible the breeding of varieties with such high resistance to late blight that potatoes can now be grown in family gardens and small plantings without the expense of fungicide spraying. The potato, once a luxury food in Mexico, is now being added to the general diet.

Parallel advances in the other sections have marked the year's work. Drought-tolerant sorghums adapted to Mexican conditions are now ready as a substitute for corn where rainfall is inadequate for dependable corn production. Sorghums are in growing demand as feed for poultry and other animals and about 250,000 acres were planted to them in 1959. Feed-type barleys have been developed which are adapted for machine harvesting. Work in rice, relatively recent in the program, has already resulted in the selection of high-yielding lines resistant to "hoja blanca," as a protection against the probable spread of this virus disease from the Caribbean area to Mexico.

Beans, a traditional staple of the Mexican diet, are being studied both for the creation of higher yielding varieties and for greater disease and insect resistance. As a

direct result of office investigations, about 7,500 acres have been planted to soybeans for commercial production. Although this is actually a very small amount, it initiates a new phase of agronomic development in Mexico looking toward national self-sufficiency in vegetable oils and improved livestock feed.

Horticultural crops are studied as a basis for a more diversified agriculture and a more varied diet for Mexico. Office staff members gave technical assistance in the production of over 800 pounds of inspected tomato seed, the first time seed of assured quality has ever been produced in Mexico. Two new named varieties of sweet potatoes and a new asparagus were multiplied and distributed during the year. In the north the possibilities for the production of watermelon and canteloupe have been investigated. Demonstration family gardens were planted at three experiment stations and studies of cultural practices adaptable for small plantings were continued as an aid to the home garden campaign of the extension division of the Ministry.

Enough studies of soil fertility and management have been made through the years to assure the extension service of dependable recommendations for farmers on crop fertilization, and emphasis is now being put on defining more precisely the fertilizer needs for specific conditions. The fertilization value of legumes grown between rows of corn is one of the studies in progress. In regions where rainfall is less than about 30 inches annually, drought often prevents the corn from responding to chemical fertilizers. Legumes grown with the corn and turned under after harvest can add the nitrogen which most old soils in Mexico badly need, but the corn yield is somewhat reduced. The point at which future gains in yield justify a sacrifice in present yield through associated legume-corn planting will be determined by continued experimentation.

Entomological studies have produced recommendations

for controlling most of the more important crop pests and surveillance procedures are well established. Presently an important study is in progress on the control of insects in stored grain and several interesting studies on biological control are being conducted in cooperation with the Bureau of Plant Protection of the Ministry of Agriculture.

Research in the poultry section is concentrated on the nutrition, pathology, and management of chickens to support the rapidly expanding poultry industry of Mexico. Numerous studies of locally available feeds have produced information of value to growers. The services of the nutrition laboratory, opened during 1959, and of the laboratory for the diagnosis of poultry diseases are in great demand by both private and commercial growers.

A seed laboratory opened recently at Chapingo offers the first facility in Mexico for the determination of the quality, purity, and germination rates of seed. The calls for its services from governmental, private, and commercial agencies already exceed the laboratory's capacity.

Studies in agricultural economics are uncovering hitherto unsuspected relationships between the economics of production and actual practices in a number of important regions of Mexico.

Work on forage grasses and legumes was begun several years ago to lay the base for an expanded animal industry. The work is necessarily regionalized to produce recommendations for the sharply different ecological zones and varying types of animal industries in Mexico. Alfalfa is by far the most important forage crop for the dairy industry and is especially important in the heavily populated Central Plateau, where it is usually grown under irrigation. Work with this plant has resulted in the selection of a number of well-adapted, long-lived, and productive varieties, and in 1958 and 1959 several tons of certified seed of two new varieties were produced, the first time this has been

done in Mexico. Management studies have also been of value in increasing the tonnage per acre and a breeding program is in progress for the creation of even better varieties.

Four new forage and silage grasses have been introduced for the Gulf Coast tropical zone and have proved highly popular among dairymen and cattle growers. Winter or dry-season feeding from silage has been encouraged through studies of ensilage methods and grasses.

In northern Mexico, where rainfall is often as low as eight inches a year, agriculture is based on range cattle and to a lesser extent on special crops grown under irrigation. A 2,500-acre experimental range station to serve this area was provided by the Chihuahua Livestock Association and is operated by the Office of Special Studies in conjunction with the new School of Animal Husbandry of the University of Chihuahua. Studies conducted here are applicable to about two-thirds of the northern range lands. Among the investigations now in progress are grazing trials to determine the value of supplemental feeding, and a study of the best control of "alfombrilla," a wild plant toxic to cattle which has caused alarming losses to ranchers in Chihuahua.

The agricultural information section works in close cooperation with the extension service of the Ministry of Agriculture. Results have already proved valuable in gaining acceptance among farmers of the new varieties and improved practices developed through the research of the Office of Special Studies. The work centers on the production of bulletins and movies for the use of extension agents, the publication of regional bulletins by which the experiment stations may give more precise information to the farmers of their region, and the expansion of the publications program of the Ministry.

Field days have become an important means by which interest in agricultural advances is aroused among farmers. Each experiment station holds "open house" at least once

a year, and with the cooperation of the extension service, attendance has grown steadily. At several of the field days held in 1959, more than a thousand farmers and others connected with agriculture attended.

The Foundation continued its support of extension by a new grant of \$75,000 for the publications and visual aids section of the Ministry of Agriculture. Young men trained in the Office of Special Studies have already produced enough motion pictures to show the value of this educational technique. The new grant makes possible an expansion of this and similar work. The Foundation also supports a special project in the State of Mexico in which women agents work with the wives and children of farm families. Their programs, set up in rural schools, homes, and informal groups have won much commendation as showing how the principles of agricultural improvement can be taken into the home.

### *Colombian Agricultural Program*

Now ten years old, the Colombian Agricultural Program began as the Office of Special Investigations of the Ministry of Agriculture and has since been absorbed into the Department of Agricultural Research (DIA), which coordinates all the research activities of the Ministry and directs the operation of the federal experiment stations. The main office is in Bogotá; the central experiment station, Tibaitatá, is near that city. Fourteen Rockefeller Foundation staff members are resident in Colombia and assigned to DIA.

The cooperative work began with plant improvement programs in corn and wheat. Sections added since 1950 are beans, 1951; entomology, potatoes, soil science, plant pathology, and barley, 1952; farm administration, 1954; animal husbandry and forage crops, 1955; dairy husbandry,

biometry, and oats, 1957; and rice and animal pathology, 1958.

Advanced training is an integral part of the research program. Nine agronomists have received master's degrees and three have been awarded Ph.D. degrees while on Rockefeller Foundation fellowships and scholarships. Thirteen are at present studying in the United States. The program also received three trainees from other Latin American countries during the year.

The lack of professionally trained personnel, an acute problem in all Latin American countries, is especially serious in Colombia where a rapidly developing agricultural economy creates an unprecedented demand for competent and experienced agronomists. In the long run the more challenging career opportunities and better salaries thus produced will attract more men and women into professional agriculture, but in the meantime the shortage of manpower limits the amount of research work that can be done.

The Ministry purchased three new experimental farms in 1959 to round out an experiment station network which now represents all the major climatic zones of Colombia and furnishes sufficient land for both plant and animal experimentation. Through the use of standard steel units fabricated locally, buildings for the new farms are being constructed both rapidly and inexpensively.

A major step toward making hybrid corn seed much less costly for farmers was taken in 1959 through the release of a male-sterile corn hybrid which does not require detasselling. A substantial portion of the production cost of hybrid seed is the manual detasselling operation. The innovation will be especially important in the Cauca Valley, potentially Colombia's most productive agricultural region.

Approximately 1,500 tons of a new potato variety, Monserrate, will be released to farmers for planting next season; this variety offers a number of advantages, including

better resistance to the late blight disease. New varieties of corn, beans, and potatoes were also released during the year and additional varieties of wheat, barley, and oats will be ready soon. Seed increase and distribution are handled by the seed multiplication program of the *Caja Agraria*, the national agricultural credit bank.

Diseases and insect pests continue to be the most serious problems confronting the program's plant breeders. "Hoja blanca," a virus disease of rice, is quite serious in Colombia and resistant breeding material is being sought in the world rice collection. "Enanismo," a dwarfing disease of small grains, is another disturbing problem toward whose solution some progress is being made. Corn lines with resistance to a wider range of pests are being sought, since stalk and ear rots, the fall armyworm, and the stalk borer all limit yield individually or in combinations.

Plans for a modern animal disease diagnostic laboratory are complete and construction has started on the campus of the National University in Bogotá. DIA staff will cooperate with the laboratory in diagnostic work and the veterinary faculty will use it both for research and as a teaching aid. The Foundation has also contributed to the construction costs of the laboratory.

In the veterinary science section a survey of animal diseases and parasites is under way as a guide to needed research effort. The animal industry section cooperated with the forage crop section during the year in evaluating different grass-legume mixtures and methods for silage.

The performance of the dairy herd at Tibaitatá, even with inadequate facilities, has helped to raise the sights of the dairymen of the Bogotá savannah, since the average production at the experiment station has been well above that of local herds. An experiment on early weaning of calves has served to stimulate considerable interest among the dairymen and may have an important effect upon the



future management and profits of dairies in Colombia. Animals from the beef cattle herds are already in demand for breeding stocks; it is impossible to meet these demands and still retain enough animals for experimental and breeding purposes. It will be necessary to import breeding stocks, especially of sheep, hogs, and chickens, since purebred stock is not available in the country.

Perhaps the most important problem now facing DIA is the extension of accumulated information to the Colombian farmer. The information gathered in the research stations, if transmitted promptly to both large and small farmers, could have important results on over-all national crop and animal production.

### *Chilean Agricultural Program*

The Chilean Agricultural Program, established in 1955, is supported and staffed cooperatively with the Ministry of Agriculture of Chile through a research unit called the Office of Special Studies. Headquarters of the office are in Santiago, and four Foundation staff members are assigned to it.

In recent months the Ministry has purchased excellent sites for the establishment of two new experiment stations, one near Santiago and the other near Temuco. The Rockefeller Foundation in 1959 appropriated \$400,000 for equipment and supplies for the new stations, and for certain of the construction costs. The completion of these stations will provide the physical facilities for expanded and deepened research activities.

The work of the Office of Special Studies is at present concentrated on two objectives: the improvement of the small cereal grains, principally wheat; and the improvement of forage grasses and legumes for the better nutrition of Chile's livestock.

During 1959 a new variety of spring wheat, Rolofén, was released. Especially adapted for the semi-arid coastal

plain, its extreme earliness will permit a crop under minimal moisture conditions. Certified seed of the improved variety, Orofén, released last year, was grown on 1,200 acres, and some 27,000 bushels of seed are ready for distribution to farmers for planting in the next season. A milling and baking laboratory has been set up in temporary quarters in Santiago and is already conducting tests to ascertain the quality of the experimental varieties.

In the forage program the emphasis is still on the testing of large numbers of grasses and legumes and on studies in pasture establishment and management. Preliminary data indicate that several of the legumes and grasses being tested are superior to the present recommended varieties.

The Chilean Agricultural Program maintains close contacts with the faculty and students of the country's four agricultural colleges. Students are invited to observe the research work at the experiment stations and classes visit them regularly. Introduction and observation gardens have also been planted within easy access of each school.

During the year five young Chilean agronomists studied in the United States on Rockefeller Foundation scholarships and fellowships.

### *Indian Agricultural Program*

Though in general the pattern of operation of the Indian Agricultural Program is similar to that of the programs in Latin America, it differs in the important respect that from its establishment in 1956 it has included agricultural education as well as crop improvement.

The six Rockefeller Foundation staff members assigned to the Indian program serve as consultants to the Post Graduate School of the Indian Agricultural Research Institute, New Delhi. The Post Graduate School admitted its first class in the fall of 1958, when 100 students entered as

candidates for the Master of Science degree and 50 as candidates for the doctoral degree. A similar number were admitted in the fall of 1959, making the total enrollment about 300. Degrees are offered in the fields of agronomy, agricultural engineering, botany, entomology, horticulture, mycology and plant pathology, and soil science and agricultural chemistry. Two new divisions—agricultural economics and extension education—are soon to be added.

The pattern of instruction followed in the institute represents a marked departure from that commonly found in Indian universities; it has a great deal more class instruction, greater flexibility in syllabus to permit adjustment to individual needs, and a greater breadth of training in the supporting scientific disciplines. Other innovative features are, for the students, the close correlation between practical experience in experimental methods and instruction in theory, and for the faculty, responsibility for both research and teaching. In this linkage between theory and practice, with both aimed at the improvement of Indian agricultural production, the institute reflects the type of agricultural education customary in land-grant colleges in the United States.

The Rockefeller Foundation has contributed to the cost of the construction of a number of the institute buildings and especially to the expansion and improvement of the library, already one of the largest in India. The Foundation has also furnished the services of a number of prominent teachers and researchers who went from the United States to India for varying periods to serve as visiting faculty members of the institute.

In the two crop improvement projects the general plan includes the cooperation of a number of federal and state agencies, with Foundation staff members as coordinating consultants. The work is closely integrated with the teaching program of the Post Graduate School and a number of divisions of the school conduct experimentation aimed directly

at the solution of problems encountered in the crop improvement activities.

The first crop improvement program launched was that for maize. The four main experiment stations and the nine substations which take part are well distributed to represent most of India's important agricultural regions. An inservice training program for maize breeders and technicians begun in 1958 has contributed to the coordination and improvement of the work of all the stations.

Experience during the 1958 season focused attention on a number of very serious diseases and pests of maize and on certain soil management and fertilization practices which must be dealt with before the maximum return can be realized from the improved varieties and hybrids now being produced in the breeding sections. Problems such as these require a team approach by scientists from several disciplines and the attack upon them is being organized in this way.

Maximum maize yields of approximately 118 bushels per acre were realized at three different experiment stations. A well-adapted flint-dent hybrid with good yielding ability and acceptable grain quality is soon to be ready for large-scale seed production.

Nine experiment stations cooperate in the sorghum-millet improvement project. During the 1958-1959 growing season, uniform yield trials were planted at all nine stations and the results furnished to the cooperators. A beginning was made in the collection of a complete range of presently available sorghum and millet germ plasm for breeding and testing, and on the creation of hybrid sorghums through the use of cytoplasmic male sterility. The selections are to be grown and tested at a number of stations and will be included in future uniform yield trials. Insect pests which seem at present to be the most serious limitation on yield are being studied, as are the more important diseases.

Thirty-eight younger Indian agricultural scientists studied in the United States on Rockefeller Foundation scholarships or fellowships during 1959.

#### ARTHROPOD-BORNE VIRUSES

The virus research program of The Rockefeller Foundation is concerned with the study of the arthropod-borne virus infections of men and domestic animals throughout the world. During 1959 the Foundation appropriated \$1,194,640 in support of its virus research, most of which was for the 1960 budget of the operating units. The amount appropriated in 1958 was \$1,058,400.

For the conduct of this research, the Foundation maintains central laboratories in New York, and five field laboratories. Two of these are in South America: one is at Port-of-Spain, Trinidad, operated in collaboration with the Health Department of the Government of Trinidad and Tobago and the Colonial Research and Development Scheme; the other is at Belém, Brazil, and is operated in conjunction with the Special Service of Public Health of the Ministry of Health.

In the Union of South Africa, a unit is maintained at Johannesburg in cooperation with the South African Institute for Medical Research, the Council for Scientific and Industrial Research, and the Poliomyelitis Research Foundation of South Africa. A station at Poona, India, is operated by the Indian Medical Research Council with Foundation assistance. The fifth unit is in Berkeley, California, cooperative with the State Department of Health.

The present Rockefeller Foundation virus program can be considered as a direct extension of the yellow fever program of the former International Health Division. During the investigation of the epidemiology of jungle yellow fever

in Africa and South America, a number of new viral agents were isolated from man or from wild-caught mosquitoes. Limited serum antibody studies at that time indicated that some of these newly discovered agents were capable of infecting man and might be of medical importance.

Studies in several laboratories showed that among the known or suspected arthropod-borne viruses, there were closely related agents as shown by marked immunological overlap. Thus, the West Nile virus isolated from man in the West Nile district of Uganda during yellow fever investigations was shown to be closely related to the St. Louis virus of the United States and to the Japanese B encephalitis virus of Japan. The Ilhéus virus, discovered during yellow fever investigations in Brazil, was likewise shown to be related to the St. Louis virus. The louping ill virus, an agent known to cause encephalitis in sheep in Scotland, was found to be closely related to the virus of Russian spring-summer encephalitis. The latter is the cause of encephalitis of man in eastern Siberia. The viruses of yellow fever and dengue were shown to be allied. These and other similar observations indicated that the arthropod-borne viruses in all probability could be separated into groups or families of closely related agents and that a program planned to cover all of these agents throughout the world would "be an intelligible field of study."

At the time of the commencement of the present virus program of The Rockefeller Foundation, 27 agents known or suspected of being arthropod-borne had been described. Now, approximately 110 probably distinct agents are under investigation. When the present program was initiated, only 12 distinct arthropod-borne viruses were known to infect man although the results of serum antibody surveys indicated that in all probability there were more capable of producing human infections. At present, more than 50 distinct agents have been isolated from man, most of these

from the blood of patients suffering from febrile illnesses.

These figures give an indication of the magnitude of the problem and indicate the necessity for the development of rapid means of identification. Great advances have been made along these lines. The original supposition that the arthropod-borne viruses would in all likelihood prove to fall into closely related immunological groups has been clearly shown. At present, four major and several minor groups are recognized. The four major groups account for approximately 60 distinct agents. A further 20 are placed in the minor groups. The remainder are at present considered as distinct entities, since they have not been shown to be immunologically related either among themselves or to any member of the grouped viruses.

The identification of a newly isolated virus can, as a rule, be rapidly determined if it belongs to one of the established groups. Though the total number of known arthropod-borne viruses is large, in any one geographic region the number is limited. As a consequence, the field workers, by the use of standardized techniques and a limited number of diagnostic immune sera, can as a rule identify their isolates very rapidly.

The methods employed for the identification are the hemagglutination inhibition (HI), the complement fixation (CF), and the neutralization tests. One of the greatest aids in the study of the classification has been the development of the hemagglutination test. It has been found that from the blood or selected tissues of animals infected with many of the viruses, preparations can be made which have the power of agglutinating avian red blood cells. This agglutination is readily inhibited by sera containing antibodies to the agent used in making the hemagglutinating preparation. At present, hemagglutinating antigens to more than 60 distinct arthropod-borne viruses are available.

The use of the hemagglutination inhibition test is of

proven value in the classification of the agents which comprise three of the major groups as well as some of the ungrouped agents. By the hemagglutination inhibition method, not only can a virus be placed within a group, but its exact identification can often be made. Immunization of animals with a virus belonging to group A, B, or C leads to the development of HI antibodies not only to the virus used but also to a greater or lesser extent to other agents of the same group. It is this marked immunological overlap, as shown in the HI test, which renders this test so valuable in placing an agent into either group A, B, or C.

The complement fixation test is the second serological test of great value in the identification of newly isolated viruses. Since in many instances the complement-fixing antibodies show a broad group overlap, this test can be substituted for the HI test in placing an agent within a group. In general, however, the CF test is more specific and is thus particularly useful in making definitive specific diagnosis; it is also of great value in the identification of viruses for which no hemagglutinating antigen can be prepared. For still more specific identification, other methods, such as the neutralization test, have to be used.

The great majority of arthropod-borne viruses are transmitted in nature by the bite of an infected mosquito. Very good evidence is available that 84 of the approximately 110 distinct viruses are transmitted by these insects. The second most common group of arthropods incriminated as vectors are the ticks. The two sandfly fever viruses are transmitted by small biting flies belonging to the genus *Phlebotomus*. The vectors of African horse-sickness and blue tongue of sheep are species of *Culicoides* flies. The vectors of four viruses are unknown. There is some epidemiological evidence that a mite is incriminated in the transmission of Argentinian hemorrhagic fever. This disease has been extensively studied by several Argentinian scientists. Immu-



nological studies have, to date, not shown any relationship of the virus of Argentinian hemorrhagic fever to any of the known arthropod-borne viruses.

With one exception, the vectors of a group all belong to one type of arthropod. Thus, all the members comprising group A, group C, and the Bunyamwera group are transmitted by mosquitoes. The exception is the large group B. Of the 28 members comprising this group, 18 are transmitted by mosquitoes and 7 by ticks. These seven comprise a closely related immunological group which has been named the tick-borne viral encephalitis complex.

The mode of transmission of three recently discovered agents is at present unknown. These have been placed in the B group of arthropod-borne viruses purely on immunological grounds. The first of these has been isolated on several occasions from the salivary glands of insectivorous bats in Texas and California. In experiments, it has not been possible to infect several species of mosquitoes with this agent.

The Modoc virus was isolated from the mammary glands of a lactating wild mouse in California. Like the virus isolated from bats, the Modoc virus cannot be transmitted experimentally by mosquitoes. The finding of the Modoc virus in the mammary glands of a lactating mouse suggests the possibility of the transmission of this virus from an infected mother to the suckling infants and that in nature chains of infection not utilizing bloodsucking arthropods are possible. Here, it might be pointed out that Russian and Central European scientists have shown conclusively that man can become infected by drinking the milk of goats infected with the virus of bi-undulant milk fever. This virus is a member of the tick-borne viral encephalitis complex, all the members of which are normally transmitted by the bite of an infected tick.

Powassan virus is the third member of group B for which no vector is at present known. This agent was isolated

by McLean and Donahue from the brain of a fatal case of encephalitis occurring in a child in a rural area of Canada. Experimentally, it has not been possible to infect mosquitoes with this virus. Immunologically, the Powassan virus is distinctly related to the virus of Russian spring-summer encephalitis which is known to be transmitted by ticks. Thus, it seems likely that ticks will also be found as vectors of the Powassan virus.

It is becoming increasingly evident that infection of man with an arthropod-borne virus is usually accidental. Each virus is maintained in nature by virus cycles involving vertebrate and arthropod hosts. It is therefore hardly surprising that the greatest variety of distinct arthropod-borne viruses occurs in the more tropical regions of the world. This becomes clear when the numbers of different agents isolated in tropical South America and the more temperate North American continent are compared. Forty distinct viruses have been described from South America whereas only 12 are known from North America. The tropics are distinguished by the great abundance and variety of both vertebrate and invertebrate life. Furthermore, since no marked seasonal variation in temperature occurs in the tropics, there is abundant insect life throughout the year.

The great problem in the temperate zones is to explain how the arthropod-borne viruses are maintained during the colder months when active insect vectors are scarce or absent. This is no problem with the tick-borne viruses, as ticks have a very long life and infected ticks can carry the infection over from one season to the next. For the mosquito-borne agents, two hypotheses have been advanced. In the first, it is assumed that an infected hibernating adult mosquito is the link between seasons.

In the second hypothesis, infected birds are assumed to carry the virus over from one season to the next. It is known that birds play a role in virus cycles with several arthropod-

borne agents. This has been shown with Japanese B, St. Louis, West Nile, western equine encephalitis (WEE), and other viruses. Furthermore, it has been shown that birds will harbor the WEE virus in their internal organs for many months. Following inoculation of a susceptible bird, virus is present in the circulating blood for several days. During this phase of blood stream infection, mosquitoes can be infected by bite. To date, mosquitoes have only been infected during this stage of acute infection. Following this brief period of viremia, the virus may on occasions still be present for many months in the internal organs. The possibility has been suggested that a relapse—possibly associated with the marked physiological changes that occur prior to migration—may occur.

The theory has also been propounded that migrating birds introduce the infection every year, and that such agents as WEE, eastern equine encephalitis (EEE), and St. Louis viruses are introduced annually into North America by migrating birds from South America. All three of these agents have been found in Central and South America. Recently, the virus of eastern equine encephalitis has been isolated for the first time in Trinidad. It is noteworthy that the original strain isolated from mosquitoes was obtained in May when bird migration was northward, but that two subsequent isolations of this virus occurred at a time when bird migrations had reversed and were headed southward.

Some workers, however, are convinced that neither infected hibernating mosquitoes nor birds can adequately explain the known epidemiological findings. These workers are consequently investigating other possible mechanisms by which the virus is maintained from one season to the next. In South Africa, scientists are actively investigating the possibility that, as mosquitoes all have an aquatic phase, infection may occur during this phase. The possibility is being considered that there may be virus cycles in the water and

that the larval forms of the mosquitoes may thus acquire the infection. It has been known for many years that mosquito larvae can be readily infected by feeding, and that the adults, both male and female, which emerge from such infected larvae are themselves infected. Female mosquitoes which have been infected in this manner can transmit the infection by bite. Thus there is the possibility that a female may acquire her infection during the aquatic larval phase and later initiate virus cycles in birds or other vertebrates.

In California, another hypothesis is under investigation. The possible role of small rodents as hosts of the virus is being studied. Experimentally, it has been found that infection of a lactating mouse with some of the arthropod-borne viruses leads to the infection of the mammary glands and that the suckling young can acquire infection from the infected milk. The finding of the Modoc virus in the lactating mammary gland of a wild mouse adds some support to this transmission theory. Other workers are investigating the possibility that infected hibernating bats, snakes, or hedgehogs may provide the link between the seasons. Experimental infection of these animals has shown that viruses may be harbored for many months during the hibernation period and that high concentrations of virus may be present in the blood for long periods of time.

Migrating birds could possibly play a role either as infected carriers or as transporters of infected vectors. The only possible vectors that come under consideration are ticks. Recent studies have shown that the young forms of several species of ticks parasitize birds, and there is thus a possibility that an infected tick could be transported over long distances by migrating birds. This hypothesis was advanced to explain the apparent sudden appearance of Kyasanur Forest disease in India. The agent causing this disease was early shown to be closely related to the tick-borne Russian spring-summer encephalitis virus prevalent in Siberia. Kyasanur Forest virus

was also shown to be tick borne. It is known that some birds migrate to India from Siberia. However, recent investigation has shown that the virus of Kyasanur Forest disease (KFD) can be clearly distinguished from all the other members of the tick-borne viral encephalitis complex.

The recently developed methods of studying arthropod-borne viruses by antibody absorption or by agar-gel diffusion are exquisite tools for antigenic analysis. These methods are of great importance in determining whether two agents are identical or whether there exist minor differences. By the use of these methods, an extensive study has revealed that the tick-borne viral complex, the members of which were thought by many to be identical, can in fact be clearly separated into at least six separate entities. The prevalence of each has a distinct geographic distribution. Thus, the virus of KFD has so far only been found in India. Another agent, TP 21, discovered by Dr. Gordon Smith, has been found only in Malaya. Louping ill virus of Scotland, the first of these agents to be discovered, can be clearly distinguished from the virus of Central European encephalitis, which in turn is distinct from the virus of Russian spring-summer encephalitis prevalent in both the European and Siberian portions of the Soviet Union.

The apparent geographic localization of the different members of this closely related complex of viruses is a clear indication that the epidemiological problems are distinct for each and that there is no wide dissemination of the virus between the regions. The finding that KFD virus can be clearly distinguished from all the other members occurring in the northern regions of the vast Eurasian continent is very good evidence that this agent was not introduced by migrating birds.

Many European birds as well as birds from the Asiatic portion of the Soviet Union migrate to Africa. That such birds may at times transport European ticks to Africa is

highly probable. Should migrating birds be the vectors of tick-borne viruses, it would be reasonable to expect that Africa would be the continent where viruses belonging to the tick-borne viral encephalitis complex would occur. However, to date, no agent has been isolated in Africa which on immunological grounds is closely related to this group.

It must be admitted, however, that the search for tick-borne viruses in Africa has been very limited. As shown above, the methods of antigen analysis by means of antibody absorption or agar-gel diffusion have provided useful tools for delimiting the geographical distribution of the various arthropod-borne viruses. Further studies should provide more evidence for or against the bird migration hypothesis. In interpreting these experiments, it is important to realize that the arthropod-borne viruses are immunologically very stable. Strains of yellow fever virus isolated more than 20 years ago are identical to strains isolated in recent years. The marked and rapid changes in antigenic structure observed in the influenza group of viruses have not been observed with any of the arthropod-borne agents studied to date. All these studies clearly cast considerable doubt on the hypothesis that migrating birds are of importance in the dissemination of arthropod-borne viruses over long distances.

The extent and distribution of infections of man with the various arthropod-borne viruses can be determined by antibody survey studies. By this means, it can often be determined which viruses are prevalent and are of medical importance as a cause of human illness. The validity of the interpretation depends on whether or not antibodies persist in the circulating blood for a long time following infection. While this is not known for the great majority of arthropod-borne viruses, evidence is beginning to accumulate that antibodies persist for a long time—possibly even for life. The results of such antibody surveys consequently indicate the

number of individuals who have undergone infections during their lifetime. By a careful selection of blood specimens from different age groups, it can often be determined whether or not infection with a given virus is endemic or whether an epidemic occurred at some time in the past.

This is clearly illustrated by the results obtained in a study of residents of Athens, Greece. This study was undertaken to determine, if possible, the cause of a severe epidemic of dengue which was prevalent in Greece in 1927-1928. Immunological studies showed that more than 60 per cent of individuals alive at the time of the epidemic had antibodies which by hemagglutination and neutralization tests were demonstrated to be, in fact, dengue type 1 antibodies. All the sera obtained from individuals born after 1928 were normal. These studies thus not only provided evidence as to the cause of the epidemic, but also showed that the antibodies persist for at least 30 years following infection. The results also indicate that no infections with a group B virus have occurred since the epidemic of 1928.

In extensive serum antibody surveys in the Caribbean region, very valuable information has been obtained. In Trinidad, a great variety of infections occurs. In fact, Trinidad can be looked upon as an extension of the South American continent. However, the variety of distinct agents producing human infections in the other Caribbean islands so far studied is very limited. In Barbados, dengue appears to be the only virus prevalent. In Jamaica, dengue as well as St. Louis virus infections appear to be common. These studies indicate that dengue virus is by far the most prevalent agent in the Caribbean islands. Infections with the St. Louis virus have a somewhat scattered distribution. Infections with yellow fever and Ilhéus are confined to the island of Trinidad. This wide distribution of dengue is undoubtedly due to the wide distribution of the mosquito *Aedes aegypti*, the normal vector of this virus throughout the

Caribbean region. The present program of the Pan American Sanitary Bureau for the complete eradication of *Aedes aegypti* throughout the Americas will inevitably lead to a great diminution, if not eradication, of dengue infections.

One of the surprising findings of these immunity surveys is the wide distribution and high rate of infection with some of the recently discovered viruses. Several years ago, scientists of the Carlos Finlay Institute in Colombia isolated from the blood of apparently normal individuals six strains of virus. These strains were all shown to be identical to each other but not to any of the known arthropod-borne viruses. This agent has been named Guaroa virus after the name of the village on the Colombian Llanos where the isolations were made. Serum antibody studies in Guaroa indicated that infections with this virus are very prevalent. In an extensive antibody survey of the sera obtained from the Mundurucu Indians living along the Cururu River, a tributary of the Amazon, a very high incidence of antibodies to the Guaroa virus was discovered. These findings suggest that infections with the Guaroa virus are very widespread over continental South America.

Very extensive serum antibody surveys have been done by the scientists in South Africa. Here, too, it has been found that infections of both man and his domestic animals by viruses only recently discovered are very widespread. Wesselsbron virus, first isolated from sheep during an extensive and severe epidemic in the Union of South Africa, has been shown to have a very wide distribution. Antibody surveys indicate that infection of man as well as domestic animals extends from tropical Africa southward into the more temperate zones of South Africa. Comprehensive studies in Mozambique—a Portuguese colony in southeast Africa—indicate that there may be a corridor connecting the tropical regions of Africa with the warmer, low-lying districts of southern Africa.



## Organizational Information

### MEETINGS

The annual meeting of the corporation and a regular stated meeting of the Board of Trustees were held on April 1; a stated meeting of the Board of Trustees was held on December 1 and 2. Six regular meetings of the Executive Committee of the Trustees were held to take actions within the general policies approved by the Board.

### TRUSTEES

At their annual meeting on April 6, 1960, the members of the corporation elected four new members and trustees. Mr. Orvil E. Dryfoos, President of the New York Times Company, succeeded Mr. John J. McCloy, who in December, 1958, resigned to accept the Chairmanship of the Board of Trustees of the Ford Foundation.

Dr. Lowell T. Coggeshall, former Dean of the Division of Biological Sciences and now Vice-President of the University of Chicago, was elected to succeed Mr. Lewis W. Douglas, former Ambassador to Great Britain, who retired on June 30, 1960.

Dr. Robert F. Loeb, Bard Professor of Medicine at Columbia University, also retired on this date; elected to succeed him was Mr. C. Douglas Dillon, Under Secretary of State.

Dr. Clark Kerr, President of the University of California, was elected to succeed Mr. Henry Allen Moe, Secretary-General and Trustee of the John Simon Guggenheim Memorial Foundation, who also retired on June 30.

The appointment of Mr. Eli Whitney Debevoise as Counsel to the Foundation, which was authorized in 1958, became effective on January 22, 1959. Mr. Debevoise, a

partner in the firm of Debevoise, Plimpton, and McLean, will serve jointly with Mr. Chauncey Belknap.

#### OFFICERS AND STAFF

At its stated meeting of April 1, 1959, the Board of Trustees elected Dr. J. George Harrar a Vice-President of the Foundation. Dr. Harrar joined the Foundation's staff in 1942 as local director of the agricultural operating program in Mexico. In 1952 he came to New York as Deputy Director for the Foundation's agricultural interests and in 1955 became Director for Agriculture.

In 1959 the Executive Committee of the Trustees elected Dr. Charles W. Cole, then President of Amherst College, a Vice-President of The Rockefeller Foundation. Dr. Cole, a distinguished economic historian, will give special attention to the Foundation's programs in the social sciences and humanities. Dr. Cole will assume his position at the Foundation in the summer of 1960.

Dr. Warren Weaver, since 1932 a principal officer of the Foundation, retired on July 31, 1959, as Vice-President for the Natural and Medical Sciences. Coming to the Foundation as Director of the Division of Natural Sciences, in which the Foundation's program in agriculture was initiated, Dr. Weaver has been largely responsible for the development, over the past 27 years, of the Foundation's program in the biological and physical sciences, and for the beginning of its work in agriculture.

An administrative change approved by the Board of Trustees at the April meeting united two interrelated fields of interest, Biological and Medical Research, and Medical Education and Public Health, into one program, the Medical and Natural Sciences, which now includes the interests of the Foundation in both research and teaching in medicine, biology, and public health. Dr. Robert S. Morison, previ-

ously Director for Biological and Medical Research, was elected Director of the newly designated program. The Associate and Assistant Directors of the two former programs are now assigned to the Medical and Natural Sciences.

Dr. John C. Bugher, since 1955 Director for Medical Education and Public Health, was appointed Consultant on Nuclear Energy Affairs. As a principal officer, Dr. Bugher will advise all program areas on subjects relating to nuclear energy affairs.

At its stated meeting of April 6, 1960, the Board of Trustees elected Dr. Albert H. Moseman Director for the newly designated program, Agricultural Sciences. Dr. Moseman was formerly Associate Director for Agriculture and in 1959 Deputy Director for the program.

At the same meeting, Dr. Kenneth W. Thompson, who joined the Foundation's staff in 1953 and has been Associate Director for Social Sciences since 1957, was elected Director for Social Sciences.

During 1959 several new appointments were made in the different programs. Dr. Henry W. Kumm joined the staff of the Medical and Natural Sciences as an Associate Director. In the Agricultural Sciences, Dr. Edwin J. Wellhausen, previously local director of the Mexican Agricultural Program, was named an Associate Director with new duties in Mexico City; Dr. Lewis M. Roberts, former local director of the Colombian Agricultural Program, was made an Assistant Director. Dr. Robert P. Burden, formerly Assistant Director for Agricultural Sciences, was appointed a Consultant. Mr. Boyd R. Compton was appointed an Assistant Director for Humanities. Mr. Richard H. Nolte, Assistant Director for Humanities, resigned on September 30.

Dr. Ruth B. Freeman and Dr. Robert H. Lennox became temporary members of the field staff in the Medical and Natural Sciences during 1959. Dr. Robert E. Shope was reassigned from the New York Virus Laboratories to those

in Belém, Brazil; and Dr. Kenneth C. Smithburn transferred to the New York Laboratories from the virus center in Johannesburg, prior to his retirement on September 30 after 22 years of service to the Foundation. Dr. Hubert E. Webb remained in India during the year as a Temporary Staff Member.

Several new appointments and reassignments occurred during 1959 in the agricultural programs located in Chile, Colombia, India, and Mexico. The new appointments included Dr. Daniel D. Hagen, Associate Animal Pathologist in Mexico; Dr. Arthur D. Leach, Jr., Associate in charge of Experiment Station Operations in Chile; and in India Dr. Leland R. House, Associate Geneticist, and Mr. Jack D. Traywick, Associate in charge of Experiment Station Operations. Dean Robert W. Hodgson and Dr. Will M. Myers were appointed Temporary Staff Members in India, where both will assist in the development of the Post Graduate School at the Indian Agricultural Research Institute. Dr. Paul O. Ritcher, Temporary Staff Member in India, completed his assignment during the year.

Formerly Assistant Director of the Mexican Agricultural Program, Dr. Ralph W. Richardson, Jr., was appointed Director of that program in 1959; and Dr. Douglas Barnes, previously an Entomologist with the staff, was appointed its Assistant Director. Dr. Ulysses J. Grant transferred from his post as Assistant Director of the Indian Agricultural Program to Colombia, where he is serving as Acting Director of the program. Dr. Robert Romig, formerly Assistant Geneticist in Colombia, was appointed Associate Geneticist with the Chilean Agricultural Program. Dr. Guy B. Baird, previously Assistant Director in Colombia, became Assistant Director of the Indian Operating Program; and Dr. Dorothy Parker, formerly Bibliographer and Librarian for the Mexican program, was reassigned to a similar position with the staff in India.

In the Medical and Natural Sciences, Dr. Lucien A. Gregg, Associate Director, and Dr. LeRoy R. Allen were stationed in New Delhi, India, during 1959. Dr. Robert B. Watson, Associate Director, and Dr. Ernani Braga remained on assignment to Rio de Janeiro, Brazil.

Four staff members, all associated with the Medical and Natural Sciences, were on loan to other organizations during the year: Dr. Marshall C. Balfour, Associate Director, to the Population Council, New York; Dr. John B. Grant, formerly Associate Director and now a member of the field staff on a postretirement basis, to the University of Puerto Rico; Dr. J. Austin Kerr, also a member of the field staff, to the Pan American Sanitary Bureau, Washington; and Dr. Osler L. Peterson, Assistant Director, to Harvard University. Dr. Robert F. Chandler, Jr., Associate Director for Agricultural Sciences, was assigned during 1959 to the newly established International Rice Research Institute in the Philippines. Mr. John Marshall, Associate Director for Humanities, was assigned as Director of the Foundation's Villa Serbelloni, Bellagio, Italy, in September, 1959.

Three members of the Medical and Natural Sciences were among those retiring during the year. Dr. Smithburn was mentioned previously. Dr. John H. Janney, who had been with the Foundation since 1921, retired on June 30; and on August 31 Dr. Paul F. Russell, who was appointed to the Foundation's staff in 1923, retired. Mr. Roger F. Evans, Assistant Director for Social Sciences, retired on August 31 after 18 years of Foundation association.

Dr. James E. Halpin resigned as Assistant Agronomist of the Chilean Agricultural Program as of June 12. Dr. Montague Yudelman resigned as Assistant Director for Social Sciences on July 31 to undertake a study, as a Rockefeller Foundation Fellow, of the role of agriculture in economic development in Central Africa.



# Summary of Appropriations Account

## FUNDS AVAILABLE

Balance from 1958	\$ 6,507,341
Income for 1959	23,044,032
Amount transferred from Principal Fund as of December 31, 1959	6,000,000
Unused balances of appropriations allowed to lapse and refunds on prior year grants	1,768,372
	\$37,319,745

## FUNDS APPROPRIATED

Appropriations <sup>1</sup>	
Medical and Natural Sciences	\$12,300,071
Agricultural Sciences	6,769,070
Social Sciences	4,049,350
Humanities	4,052,211
General	3,459,933
Administration	3,558,705
	\$34,189,340
Balance available for appropriation in 1960	3,130,405
	\$37,319,745

## Principal Fund

Book value, December 31, 1958	\$135,594,715
Additions during the year	929,697
	\$136,524,412
Less amount transferred to Income Account	6,000,000
	\$130,524,412
Book value, December 31, 1959 (Market value, \$518,219,214)	

<sup>1</sup>These totals include appropriations for grant-in-aid, fellowship, and scholarship funds to be allocated in 1960, and \$1,500,000 appropriated conditionally for later allocation and release, but do not include \$138,700 appropriated in prior years





## Illustrations





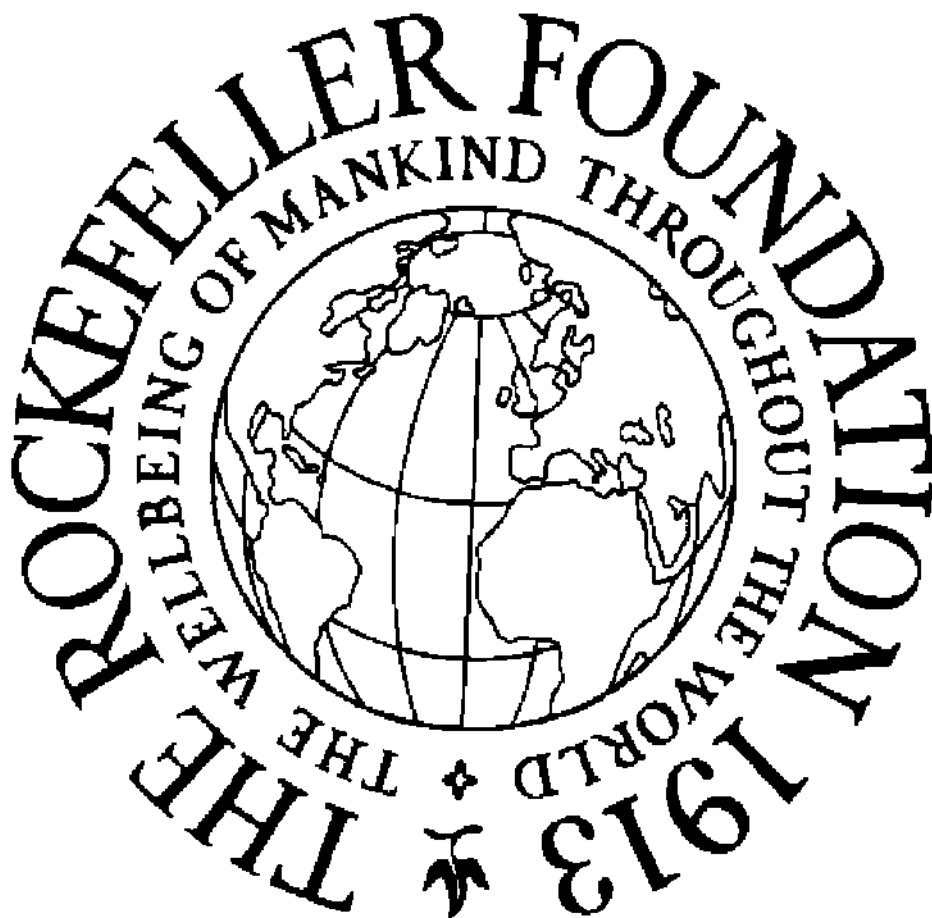
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Through the generosity of the Principessa della Torre e Tasso, The Rockefeller Foundation received by bequest in 1959 the Villa Serbelloni at Bellagio on Lake Como in Italy. It was the Principessa's hope that the Villa could play a useful and significant role in strengthening international understanding through scientific, scholarly, and artistic exchange. The bequest included a gift of two million dollars.

The Villa estate consists of fifty acres on the tip of the Bellagio peninsula. With Lake Como on three sides and the southern flank of the Alps in the background, the Villa is a place of stunning beauty, ideally suited for quiet contemplation by small groups or individuals. The Foundation is in informal consultation with leaders in a number of countries about the most significant uses of the Villa and will experiment with a variety of activities before coming to final conclusions about how the Villa might best serve the purposes which motivated the generosity of the Principessa.

At the Virus Research Centre, in Poona, India, primary attention continues to be given to Kyasanur Forest disease. This disease, which was discovered in Shimoga District of Mysore State in 1957, affects both man and monkeys and is caused by a virus of the Russian spring-summer or tick-borne complex.

A slowly emerging concept is that the disease may exist in India in a series of scattered pockets, chiefly as an infection of various wild animals and birds, and that man becomes involved only when his occupation exposes him to tick bite and the ticks of the area feed on a diversity of reservoir hosts as well as on man. During 1959, a two-year survey was completed of the small mammals of the epizootic area; the tick fauna of these animals, as well as their immune status, was studied. Shown below are some of the traps used in this work.



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The existence in India of viruses of the Russian tick-borne complex was first suspected in 1952, when neutralizing antibodies to Russian spring-summer encephalitis were demonstrated in human sera collected at Kutiyana in the Saurashtra peninsula. Recent resurveys have confirmed these earlier findings. *Above*, a blood specimen being taken from a Saurashtra villager.

Surveys are also being conducted in the temperate climate forests on the south face of the Himalayas to determine if some member of the Russian tick-borne complex is present there. North of the Himalayas, viruses of this complex are known to be widespread. Although a first survey in Kashmir revealed no evidence of antibodies to any of these viruses, in a forest at 7,500 feet, *Ixodes persulcatus*, the tick species incriminated as a vector of Russian spring-summer encephalitis in the USSR, was found for the first time in India.

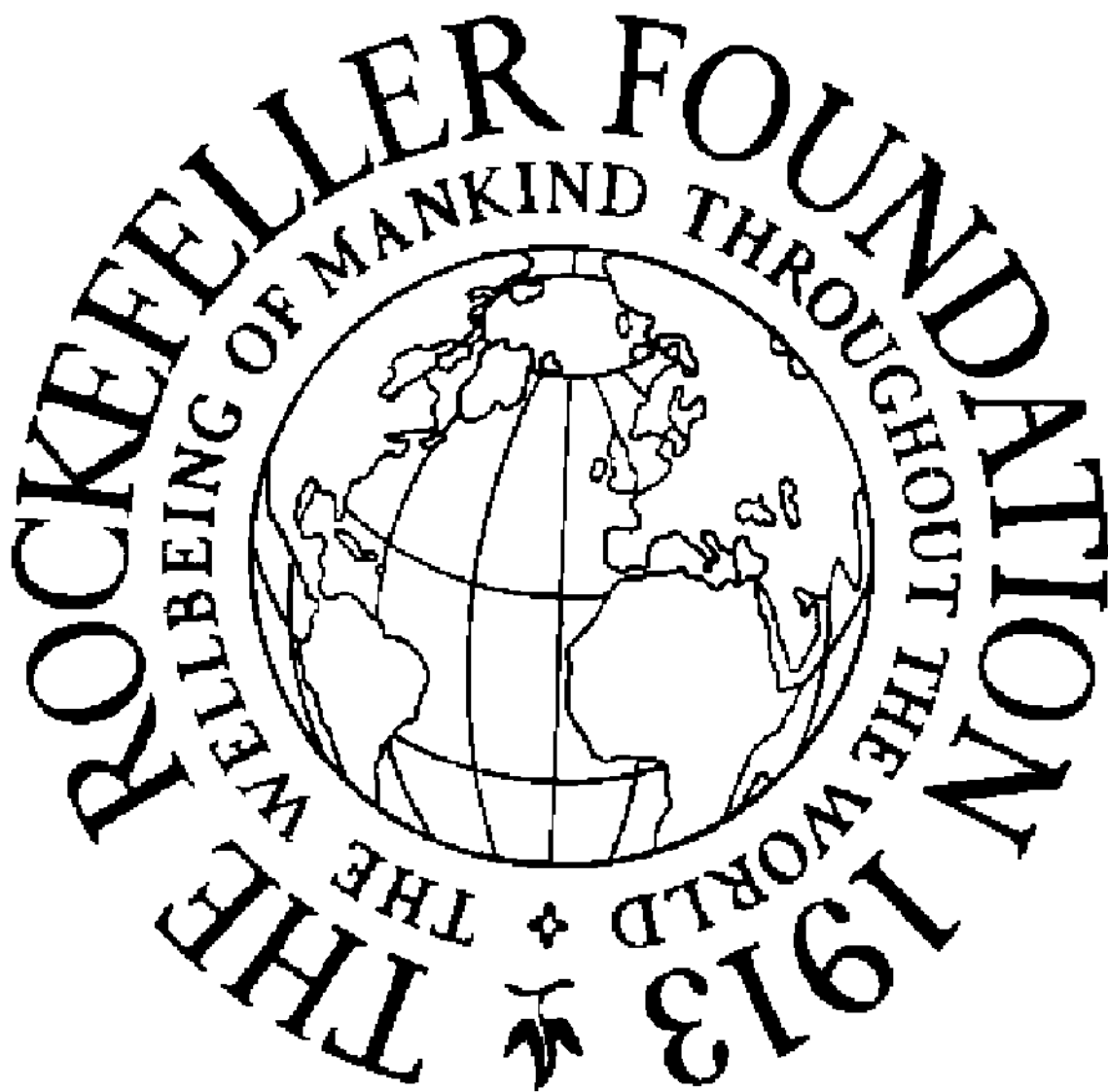


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On the Madras coastal plain a number of viruses have been isolated from mosquitoes, including those of Japanese B encephalitis and West Nile fever. Studies of the bionomics and behavior of mosquitoes of the *Culex vishnui/tritaeniorhynchus* complex, from which virus is most frequently isolated, are being conducted by the center's field laboratory at Christian Medical College, Vellore. This picture was taken during a night-time study in which man-biting mosquitoes were collected simultaneously inside dwellings and in the immediate vicinity out-of-doors. These investigations have shown a significantly higher attack rate in the open.



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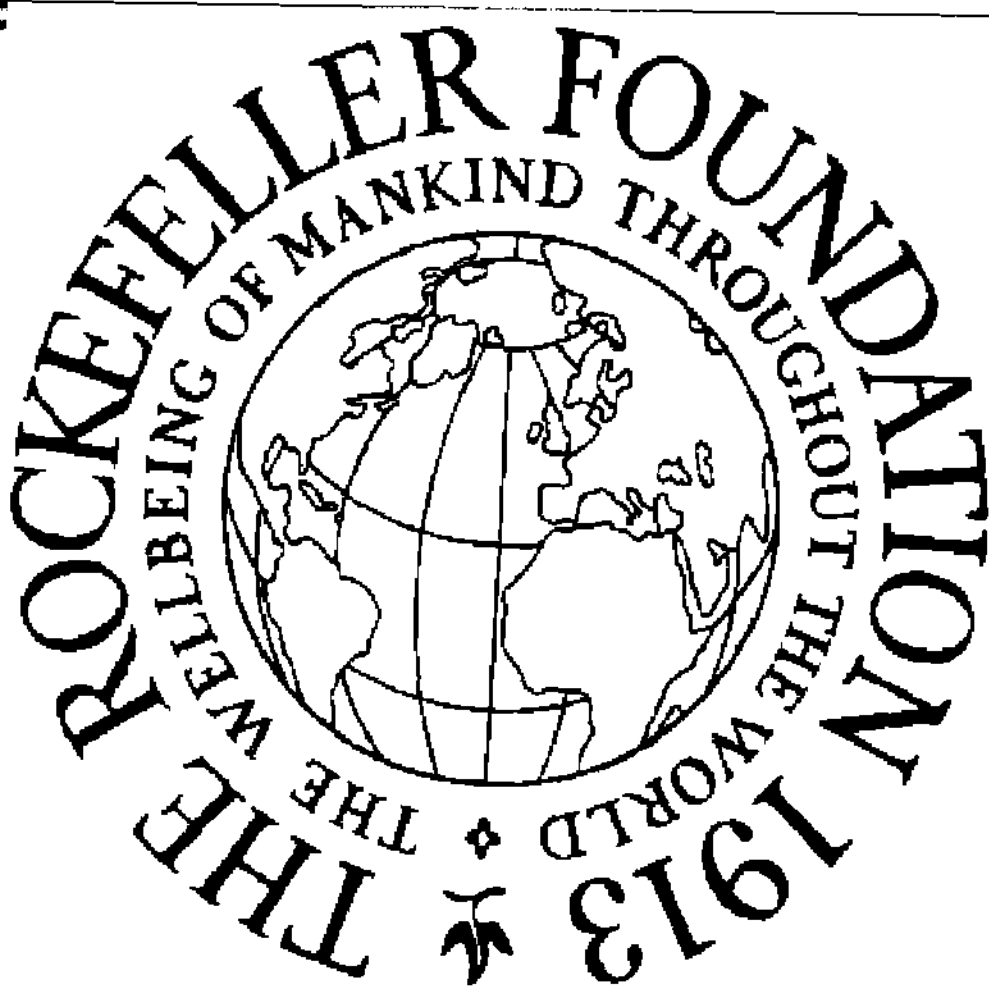
The millets, small grains of very secondary importance in most countries, are the principal food staple of 35 per cent of the population of India. In cooperation with the Indian Council of Agricultural Research, The Rockefeller Foundation's Indian Agricultural Program has an extensive project for the improvement of the millets and the closely related sorghums. This and the corn improvement scheme are the two crop programs now being given attention. Another aspect of the work is the close association of the Foundation with the Post Graduate School of the Indian Agricultural Research Institute, in New Delhi, to train the future leaders of Indian agriculture. In this picture, Indian workmen are winnowing millet by the age-old windblown method.



An ancient farming practice in Mexico and other Latin American countries is to plant beans between the rows of corn. Scientists of The Rockefeller Foundation's Mexican Agricultural Program are now studying this old custom as a possible solution to the problem of adding nitrogen to the soil in regions where rainfall is less than 30 inches a year. Under such dry conditions corn often cannot assimilate chemical fertilizers because of lack of moisture. Associated plantings of beans or other legumes reduce the corn yield but there may be a point where present loss is offset by future gains in yield from the increased soil fertility. The picture shows a corn-bean associated planting in an experimental plot at the Cutaxtla experiment station, Veracruz, Mexico.



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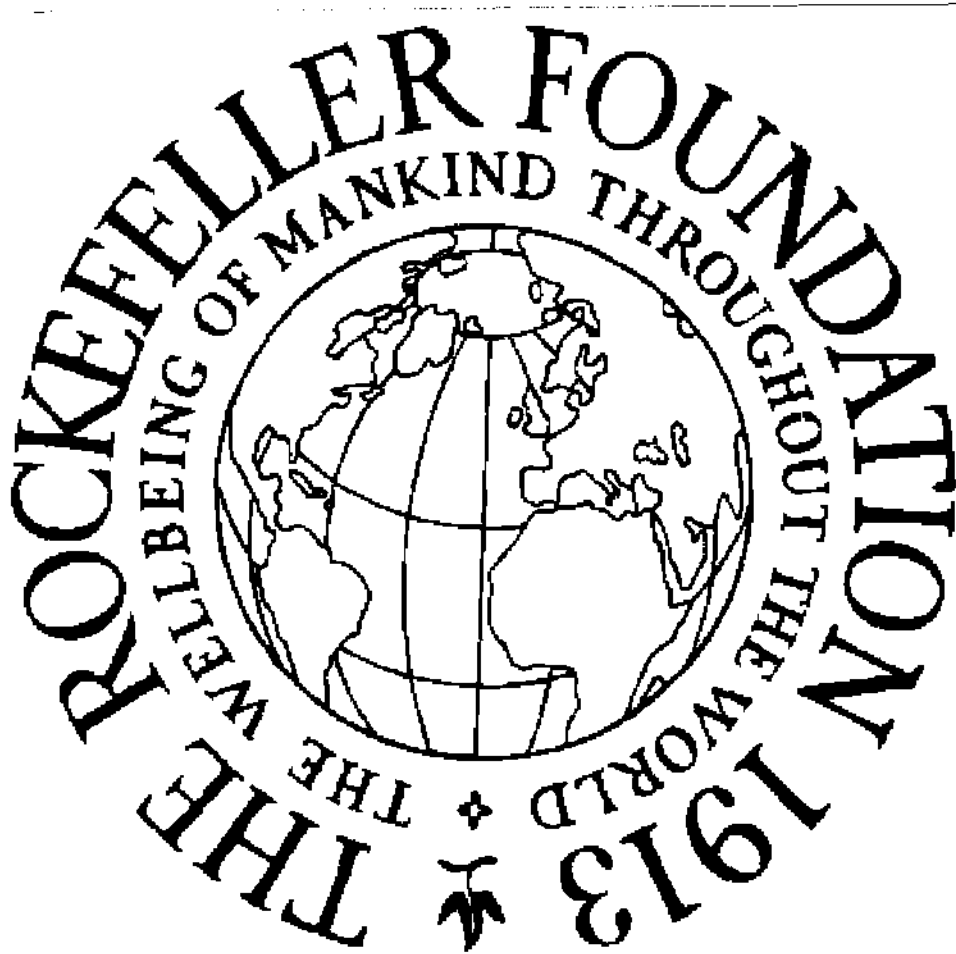
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The operating program of The Rockefeller Foundation in Colombia as in other countries is collaborative with the Ministry of Agriculture. Begun in 1950 with improvement projects for two crops, corn and wheat, it has since been extended to cover not only all the basic food plants but also the elements of animal science fundamental to a sound animal industry. The picture shows an experiment for the control of leathoppers of beans at the Tibaitatá experiment station near Bogotá. Training accompanies research in all Foundation agricultural operations. The bean improvement project was turned over in 1958 to the responsibility of Colombian scientists who gained their advanced training with Foundation assistance.

A serious deficiency in the Chilean diet is the lack of sufficient animal protein. From its founding in 1955 the Chilean Agricultural Program of The Rockefeller Foundation has included research on pasture and forage grasses and legumes to increase the carrying capacity of Chilean rangelands. In this research the study of alfalfa has central importance. This student is learning to make crosses between different varieties of alfalfa, to create hybrids with better adaptation and yield to supplement the introduced varieties which have already been proved superior to local strains.



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A Center for Advanced Study, designed to bring to bear on public problems the knowledge of scholars and the experience of leaders in government and public affairs, is being established in Washington, D.C., by the Brookings Institution. In pursuit of this purpose, Brookings is expanding its programs of research, conferences, and educational work on economic, governmental, and international issues and is undertaking the construction of buildings to house these activities and provide facilities for other research and educational organizations with related interests. *Above*, an artist's conception of the center's main building, which is already under construction.

At the Geneva Graduate Institute of International Studies, in Switzerland, advanced students from the newer nations of Africa and Asia are receiving specialized training in the social sciences which will enable them to contribute effectively to institutional development in their own countries. Under a special program offering ten scholarships a year, qualified students are selected and their programs planned by a staff member with direct experience in Asia and Africa.

*Comet, Zurich*



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During the past five years, the Committee on International Relations of the University of Notre Dame has centered its attention on the problems of liberal democratic governments in formulating and executing foreign policy. Now, the committee plans to consolidate its research program and emphasize the study of contemporary diplomacy and its relationship to underlying political and intellectual movements. In this picture, the chairman of the committee, Professor Stephen Kertesz (*center*), uses a map of the Soviet Union to make a point to two graduate students.



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The giant 210-foot radio telescope now under construction at Parkes in New South Wales, Australia, will be capable of receiving signals from the most distant reaches of our universe, far beyond the reach of the largest optical telescope. Under the direction of the Radiophysics Laboratory of the Commonwealth Scientific and Industrial Research Organization, this instrument, the most powerful of its kind in the southern hemisphere, will be used for basic research in radio astronomy. It will also act as a link with the planetary and lunar probes which are now being sent into outer space, and in the future may even serve as a communication channel with men in outer space. The picture above shows work under way on the supporting tower of the radio telescope.



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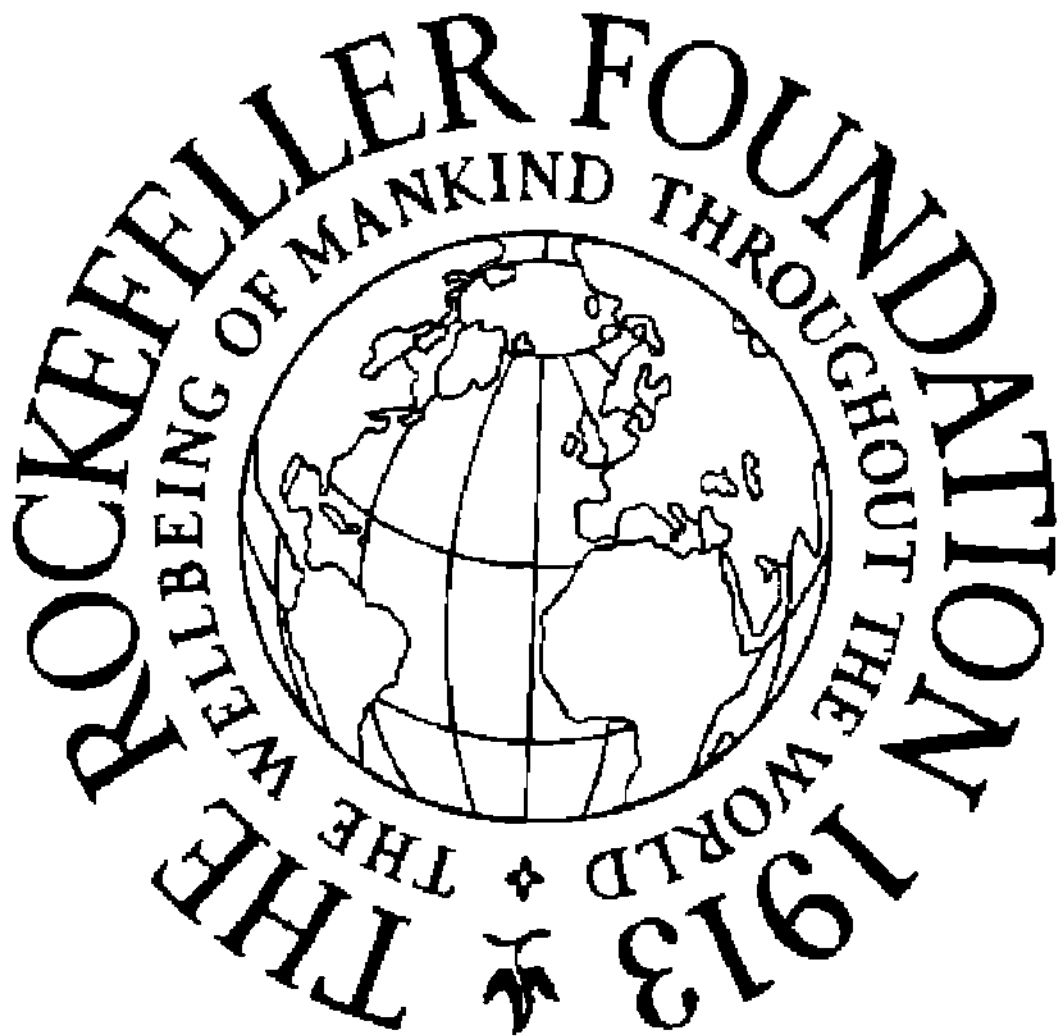
The Liberian Institute, established in Harbel, Liberia, in 1950, devotes its modern facilities to the study of tropical diseases. The picture shows staff members collecting snails for the institute's research program on schistosomiasis (bilharziasis), a parasitic infestation of human beings. Malaria and leprosy are also under investigation. The institute is equipped for field study as well as laboratory research and often accommodates, in addition to its permanent staff, American university investigators who wish to explore special problems.



At the Institute of Animal Behavior, a new research division of Rutgers, the State University of New Jersey, the chief animal now under study is the ring dove. This bird, a pigeon close enough to the wild state to be reasonably representative of natural behavior in birds, can be sufficiently domesticated to exhibit regular courtship and mating cycles throughout the year. The methods used in psychobiological studies of such regular but complex patterns of animal behavior at the institute combine careful recording of gross behavior on the part of the birds and detailed consideration of the anatomical and psychological changes which go on simultaneously within them. In this picture, two researchers observe one of approximately 1,500 doves at the institute's laboratory.



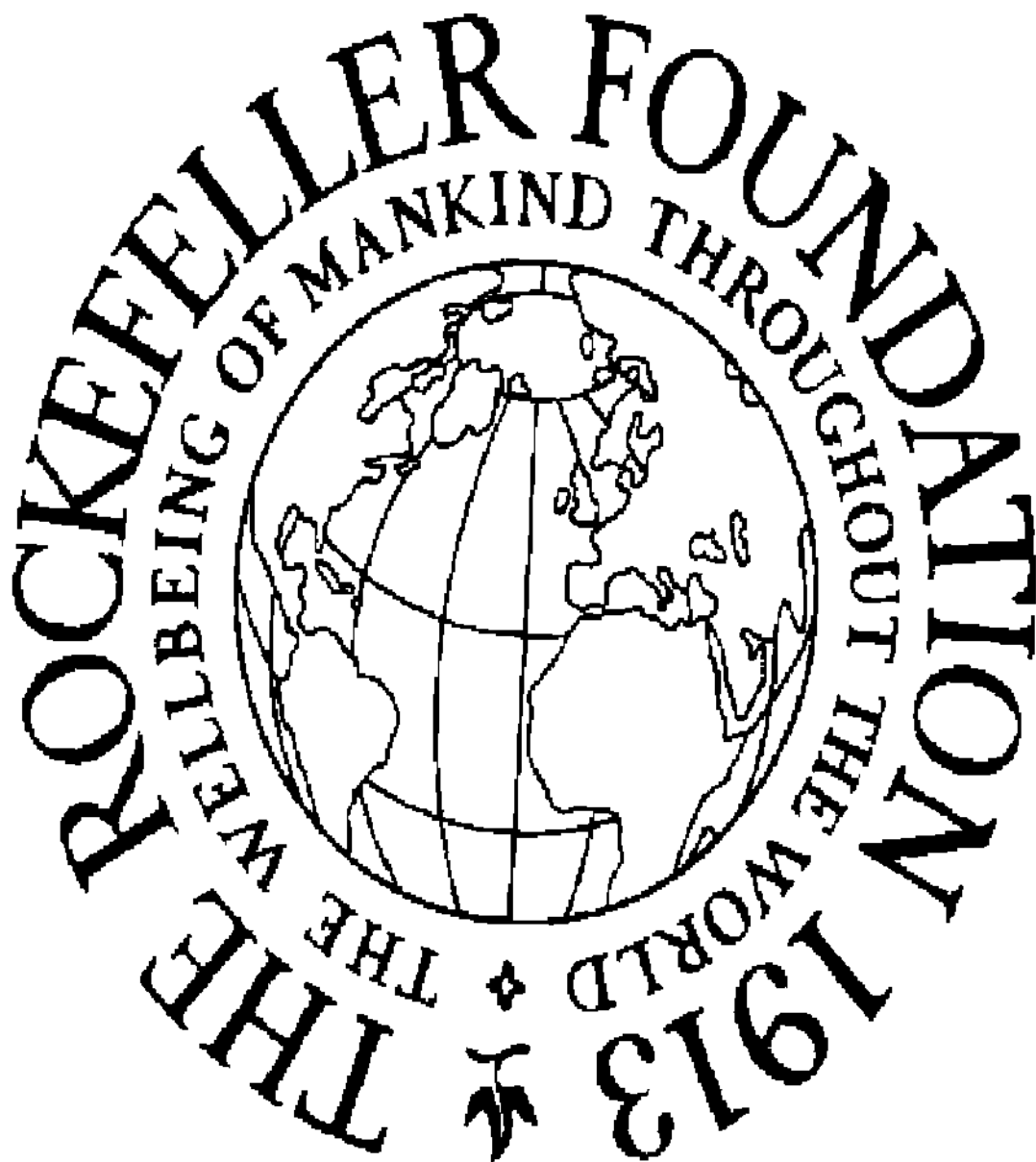
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A study section from the University College, Ibadan, Nigeria, is gathering first-hand information in nearby villages about the factors which cause nutritional diseases among children. Working by direct observation and questioning, as illustrated in this picture, members of the section are developing data about food sources, the actual consumption of food produced in the villages, and the feeding of children from one to five years of age. This research program also provides a field training station in which pediatric students from the college can observe the actual incidence and relative importance of diseases in the villages.

The Institute of General Anatomy and Embryology of the University of Buenos Aires is the most active center of electron microscopy investigations in Latin America. The research program of the institute includes studies of the histophysiology of the adrenal cortex, and investigations, using new techniques, of the relationships between the epithalamic complex and the endocrine glands. In this picture, a staff member uses an electron microscope in the study of the ultrastructure of cells and tissues.



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In Puerto Rico, "Operation Regionalization" is an experiment in the coordination of all publicly supported health and welfare services into a single integrated system to provide the greatest possible service per tax dollar. The operating health and welfare centers in the 16 communities of the Bayamón district, which includes San Juan as well as rural areas, are affiliated with the University Community Hospital for the referral of more serious cases and for the continuous postgraduate training of staff. The hospital, in turn, serves as the primary teaching unit of the School of Medicine of the University of Puerto Rico. The pictures show, *left*, the outpatient department of the University Community Hospital, and, *below*, the waiting room in the health and welfare center in the town of Comerio.

Photo by E. B. ...

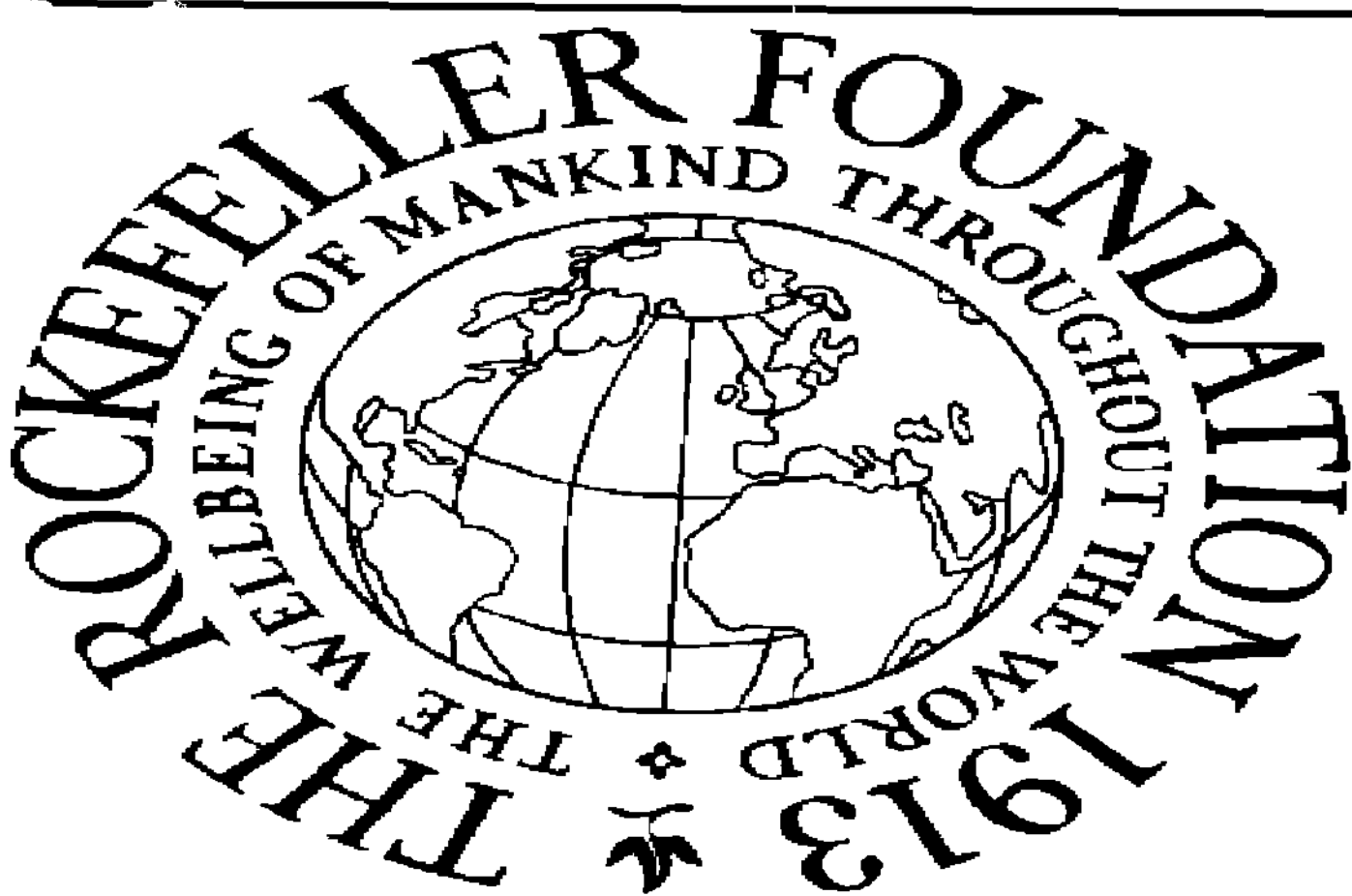


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The All-India Institute of Medical Sciences was established in 1956 to provide medical education of the highest quality and to train teachers for other medical schools in India. The institute will offer instruction in nursing and dentistry, as well as undergraduate and graduate medical education. Already completed on the institute's 150 acres of land in New Delhi are the College of Nursing and nearly 90 per cent of the residential accommodations required for professional and nonprofessional staff. The main institute building, which is to have an attached modern hospital of 650 beds, is under construction; its preclinical unit is nearly complete. The picture below shows a postgraduate student at work in the Department of Pharmacology.

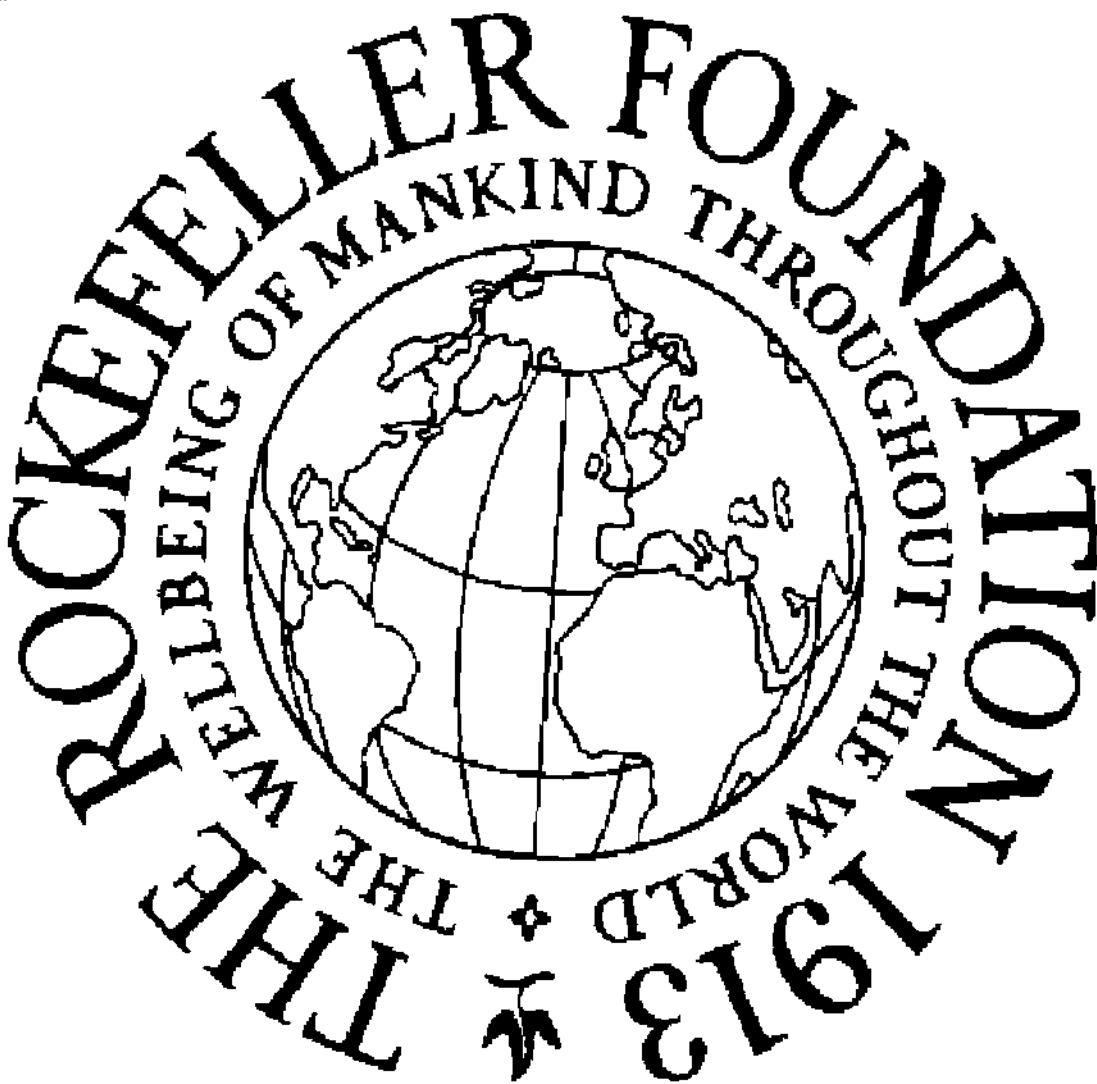


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## Photograph Excised Here

This is a scene in *Cow*, a comedy by Yoo Chi-jin, as it was presented by Shin-Hyop, the leading performing theatrical company in Korea. Mr. Yoo, who is actor and director as well as playwright, is also the Chairman of the Board of the Korean Research Institute for Dramatic Arts, a nonprofit educational institution which is dedicated to developing and preserving Korea's significant dramatic tradition in the face of economic difficulties and competition from the cinema. The institute now has under construction a building near the center of Seoul which will provide classrooms, a small library, workshops, and an arena theatre (seating about 200 people) for dramatic training and experimentation.



## Photograph Excised Here

Under the guidance of Fritz Eichenberg of Pratt Institute and a small staff of artist-printmakers, visiting artists and enrolled students at the Pratt-Contemporaries Graphic Art Centre, New York, have produced a large variety of lithographs, woodcuts, etchings, and mixed-media prints. In addition to original works, these printmakers, some of whom are shown at work here, often produce editions of the prints of outside artists on commission. A few talented painters, most of them from countries outside the United States, have received their first introduction to lithography at the center.



This setting for a new production of *Hamlet* at the Frank Lloyd Wright playhouse of the Dallas Theater Center in Texas was designed by Virgil Beaver to complement director Paul Baker's conception of the play, in which Hamlet is divided into three psychological beings: the human, the courtier, and the would-be matricide. Each being is portrayed by a different actor. The setting features an 11-foot ramp, constructed and assembled in sections, which rises at a 23-degree angle from a revolving stage.



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## Photograph Excised Here

The Program in Religious Drama at Union Theological Seminary offers instruction in both theoretical and practical aspects of drama in its relation to religion. Students take courses which explore the historic, literary, and philosophical background of the drama, as well as its religious aspects. They also participate in dramatic workshops where technical problems of acting, design, and staging are worked out, and plays are presented to the public several times a year. This picture was taken during the first United States production of *Granmer of Canterbury* by Charles Williams, presented in December, 1959.

A varied and rich collection of Thai art treasures will soon be on view in the United States as a traveling exhibition. Some 300 individual items, representing the highest artistic achievements in each of a variety of media, will illustrate the Thai genius in painting, ceramics, textiles, and jewelry, as well as sculpture, the core of the exhibition. The selection of these objects from museums and private collections has been the joint responsibility of cultural officials of the Thai government and an American Commission of Selection, who are shown in this picture in the courtyard of the Bangkok Museum.



Photograph Excised Here

This detail from a painting created by a modern master in 1924 shows deterioration of the paint caused by the breakdown of an animal glue of poor quality beneath it. Artists are still using this material today. To aid in the preservation of valuable works of art, the Institute of Fine Arts of New York University plans to study methods for preventing such defects and treating them when they occur. In addition to carrying on research in the conservation of works of art, including objects of metal, wood, stone, and ceramic, as well as paintings, the institute will provide a four-year course to train specialists in conservation.



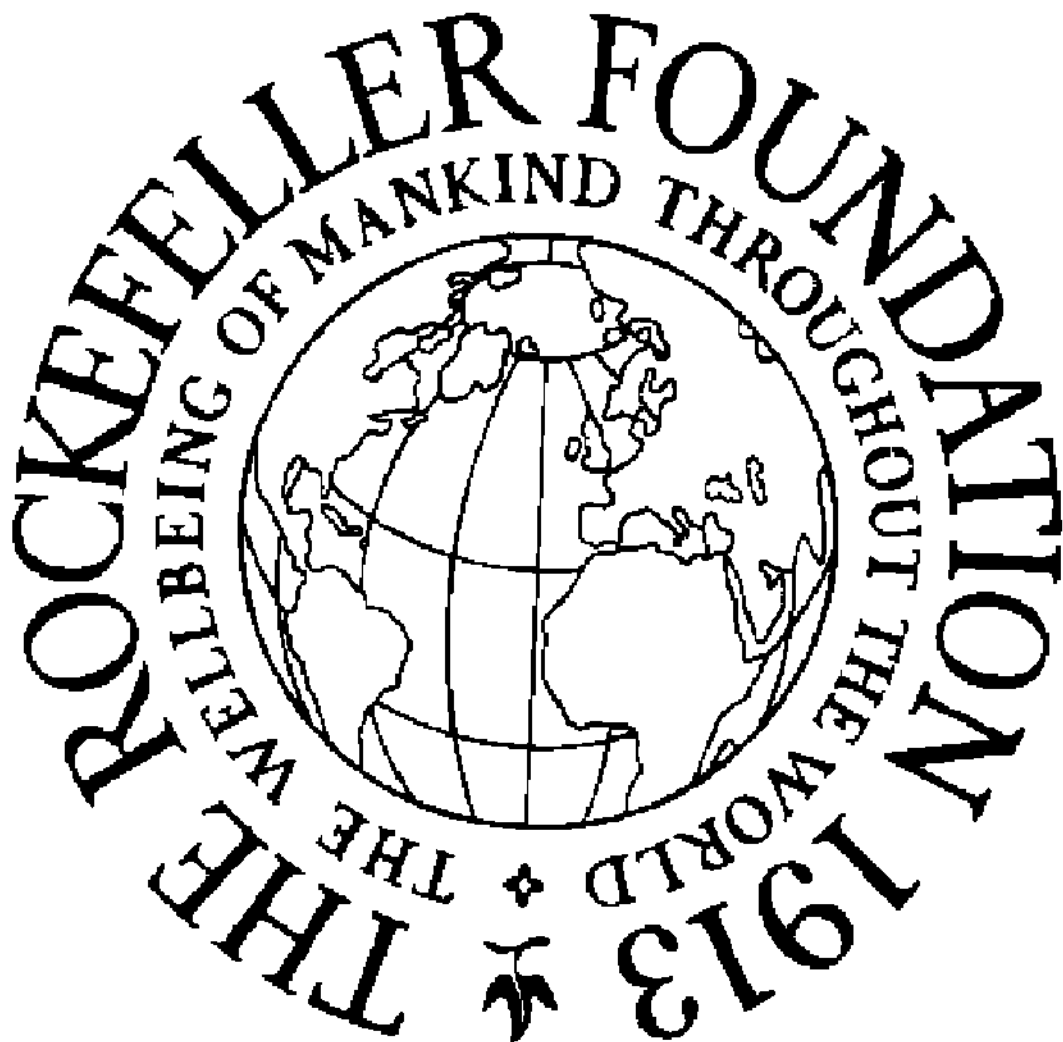
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## Photograph Excised Here

A new method for casting metal sculpture, dramatically simple and comparatively inexpensive, has replaced traditional clay and wax with polystyrene, a lightweight, stiff, porous plastic. First, the artist carves directly in the plastic, which is easily shaped and joined together under heat. The finished plastic figure is packed in a sand mold, and molten metal is then poured in through prepared channels. Upon contact with the molten metal, the polystyrene vaporizes. The metal casting is simply removed when it is cool. This use of polystyrene was developed by Boston sculptor Alfred M. Duca, who has cast his own works by the new process; shown here is the carving of his sculpture *Adam* being placed in its mold.

The first graduate school of agriculture in Mexico was established in 1958 at the National School of Agriculture in Chapingo, near Mexico City. The school itself, founded in 1854, is one of the oldest colleges of agriculture on the continent and has a strong and loyal body of alumni whose interest and influence were an important factor in the extension of instruction to the graduate level. Shown is the original *hacienda* residence, which still contains administrative offices but which is now surrounded by the many modern buildings that house the college's activities. El Horno, the central experiment station of The Rockefeller Foundation's Mexican Agricultural Program, adjoins the campus.



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## Photograph Excised Here

The Rowett Research Institute, near Aberdeen, Scotland, is an international center for the study of the nutrition and physiology of animals of agricultural importance. The staff of the institute, which includes several pioneers in the field of rumenology, carries on basic research in a variety of related areas, including microbiology, enzymology, pathology, biochemistry, and protein and lipid chemistry. *Above*, a member of the Protein and Lipid Chemistry Department prepares a large Soxhlet extractor for extraction of grasses.



## Photograph Excised Here

When the flowers or fruit are removed from soybean plants, aging is delayed, as this photograph of an experiment at Purdue University shows. Such studies suggest that senescence in plants is the consequence of some physiological stimulus that develops with increasing intensity during each of the successive reproductive states. Experts at Purdue have already established that there is a factor (or factors) in aging tissues which induces abscission, the natural separation of parts, and are seeking to establish its exact chemical nature.



The harsh and arid Negev desert, which covers about 60 per cent of the area of Israel, is now barren, although 2,000 years ago it supported flourishing farms in a similar climate. Scholars of the Hebrew University of Jerusalem have discovered the remains of irrigation systems which made this agriculture possible, and have studied the skillful methods of using water incorporated in them. Some of these methods will be employed in large-scale experiments, attempting to establish once again in the Negev an agriculture which can exist on the water supply available there. In this picture, two investigators from the Hebrew University examine an ancient device used to make the most of rainfall: a spillway in a terrace wall between two fields.



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## Photograph Excised Here

How and why the birth rate fluctuates is a key question confronting population specialists in the United States. A national study based on field research was undertaken in 1955 by the Scripps Foundation for Research in Population Problems at Miami University to provide some answers. Now, a second phase of this study, to clarify the usefulness of the foundation's new data and methods and to develop them further, is under way. Again, interviewers from the Survey Research Center at the University of Michigan will conduct a survey among a national sample of married women of childbearing age. One such interview is illustrated here.



MEDICAL AND NATURAL SCIENCES

*Major Interests, 1959*

Professional Education .....	\$4,949,178
Medical Care .....	87,388
Experimental Medicine .....	466,587
The Biological Basis of Behavior .....	317,820
General Biology .....	1,173,080
Genetics .....	447,500
Biochemistry .....	739,963
Biophysics .....	138,779
Virology, including the Foundation's Virus Research Program .....	1,240,370
Special Projects .....	60,650
Field Services .....	426,885
Fellowship and Scholarship Fund .....	1,050,000
Fellowship Fund for Polish Scholars .....	200,000

# MEDICAL AND NATURAL SCIENCES

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**C**ONSOLIDATION OF ALL the Foundation's activities in the medical and natural sciences, as indicated elsewhere in this report, has eliminated certain administrative inconveniences and duplications. More significantly it gives positive emphasis to the unity of purpose and method which should characterize the conduct of scientific research and advanced education. Indeed the appropriations described in this section of the report clearly illustrate the close relationship which ordinarily exists between the discovery of new knowledge and the transmission of existing knowledge to a new generation of students. Almost all of these grants were made to universities which as a class have carried a dual responsibility ever since the founding of the University of Paris. For the most part the appropriations listed under specific disciplinary headings may have been primarily conceived as aid to specific research while those subsumed under "Professional Education" may have been more concerned with the transmission of knowledge. In practice however the programs in question will, if successful, contribute almost equally to research and education.

For example, the large grant to Stanford University represents the Foundation's contribution to the extensive effort being made to establish a new standard of medical

education in a respected private institution on the West Coast. In this case the money will be spent in part for the construction of a building primarily designed to house research laboratories and in part for bringing to the faculty outstanding contributors to knowledge in the sciences basic to the practice of medicine. The grant for the medical school at the American University of Beirut will go largely to provide salaries sufficient to attract to the faculty men capable of undertaking original research so that the institution can provide advanced education for the new generation of teachers needed in the rapidly developing universities throughout the Middle East and North Africa.

As a somewhat different example of how encouragement of research may improve medical education, the grant to Harvard is designed to aid the development of research on the skin in order to place the art of dermatology on the same sort of scientific base as that enjoyed by most of the other medical specialties currently taught in medical schools.

If encouragement of research results in improved education, it is equally true that better education leads ultimately to more productive research. The grants to the University of Pennsylvania and Reed College represent, among other things, a concern for enriching undergraduate training in the life sciences. It is ordinarily at the college level that young people make their choice of career, and there is reason to believe that the recent decline in the number of candidates for medical school and graduate training in the life sciences may be due in part to the relatively dispirited way in which these subjects are presented in high school and college. Part of the difficulty is that our colleges have been hard pressed to provide the facilities necessary to attract first-class teachers against the competition offered by industry and the research laboratories, associated with graduate schools and government departments, which have developed so rapidly

since the last war. The financial problem facing the colleges is a large one and requires the combined efforts of loyal alumni, private foundations, industry, and government. Government funds are provided on a relatively generous scale for support of specific research projects but for various reasons are less freely available for building and equipping laboratories or for salaries of teaching staff. It would be dangerous to suggest that the private foundations can assume more than a very small share of the over-all burden, but it is hoped that a few selected grants in this area may at least serve to call attention to the importance of making sure that our colleges are suitably set up for recruiting and training the next generation of "life scientists."

Continuing the trend of recent years, almost all the grants for specific research projects were made to institutions outside the United States. This policy reflects in part The Rockefeller Foundation's long concern for science as an international enterprise and in part the more earthy consideration that research funds are now widely available in the United States from other sources. The majority of these foreign grants represent continuing interest in laboratories of proven productivity. Special attention may be directed however to the appearance of two African institutions—the University College of Nigeria and the Liberian Institute of the American Foundation for Tropical Medicine, Inc. Although the Foundation has pursued certain specific interests in Africa, notably in connection with yellow fever, for several decades, it is only recently that it has turned to a more comprehensive appraisal of what it may most appropriately contribute to the more general problems confronting this rapidly emerging continent. The grant to the University College of Nigeria is directed toward obtaining accurate estimation of the health status of young children in a group of typical African villages.

## Professional Education

### STANFORD UNIVERSITY

### SCHOOL OF MEDICINE

Six years ago Stanford University began a major development program for its School of Medicine with the decision to consolidate the clinical departments, then in San Francisco, with those in the basic sciences on the Palo Alto campus, and to strengthen the faculty by establishing full-time professorships in all subjects, including the minor specialties. As a consequence of the move, the medical school has made a number of new appointments, among them those of two recent Nobel prize winners, Dr. Joshua Lederberg and Dr. Arthur Kornberg, and instituted a new curriculum which will capitalize on the university campus location of all departments.

Designed to prepare medical students for the wide variety of careers open to them, the new curriculum will provide for the admission of students with varying amounts of college preparation and allow them a considerable degree of freedom in selecting optional courses. About 30 per cent of the student's time will be spent in general university courses; the first three years will be devoted largely to pre-clinical studies, and six to twelve weeks will be kept free each year for elective courses or individual research. In view of these changes the course of study will cover five rather than the customary four years, but candidates will be allowed to enter the medical school after completing only three years of undergraduate work.

To assist the Stanford University School of Medicine in its development program, The Rockefeller Foundation has appropriated \$3,000,000, of which \$2,000,000 will be made available over a ten-year period for strengthening



the basic sciences. The remaining \$1,000,000 will be used to build a basic science unit and is payable when the university has secured \$3,000,000 from other sources for the same purpose. A teaching hospital and a building providing facilities for research in the clinical sciences have already been partially completed.

#### UNIVERSITY OF PUERTO RICO

#### SCHOOL OF MEDICINE

Many graduates of the School of Medicine of the University of Puerto Rico go elsewhere for their internship and residency training, and up to the present a large proportion have not returned to the Island for their professional careers. In an attempt to retain more of the school's graduates for badly needed health care service in the Commonwealth, Dr. Joseph R. Vivas, newly named dean of the School of Medicine, has initiated several plans designed to improve graduate medical education.

A first step was to move the teaching hospital of the medical school to the former Ruiz Soler Tuberculosis Sanatorium, on the site of the future Puerto Rico Medical Center, on the outskirts of San Juan. Renamed the University Community Hospital, the sanatorium, after remodeling, will include research laboratories, offices for faculty members, and an amphitheatre for lectures and clinics. The outpatient department of the hospital, which is to serve as the central unit to which 17 peripheral health centers refer patients, will provide clinical experience for students as well as facilitate the two-way flow of patients and information between the hospital and outlying areas. The service is to be organized into teams composed of a staff member, a fourth-year medical student, an intern, a resident, and a social worker.

The School of Medicine is also planning to expand its library, which contains the only reasonably adequate collection of medical books on the Island. The development planned will benefit not only the students and staff of the school but the many outside physicians who use its facilities.

In 1959 the University of Puerto Rico received \$400,000, available over a five-year period, from The Rockefeller Foundation to assist the relocation of the teaching hospital, and to strengthen the clinical teaching programs and library of the School of Medicine.

#### UNIVERSITY OF SÃO PAULO

#### FACULTY OF MEDICINE AT RIBEIRÃO PRETO

In the eight years since its founding, the Faculty of Medicine at Ribeirão Preto of the University of São Paulo, Brazil, has become a national and international center for physicians, teachers, and investigators. It has been the principal training school for 30 medical educators and research workers who have studied at Ribeirão Preto under grants from a number of different sources, as well as for 18 foreign students from Argentina, Venezuela, Finland, Japan, Peru, Uruguay, Chile, and Paraguay. About half the faculty's graduates have set up practice in Brazil's rural areas.

Although the basic functions of the faculty are supported by the federal and state governments, The Rockefeller Foundation has helped the school since 1953 by providing funds totaling \$400,000 for equipment and supplies, and fellowships and travel grants for members of the faculty. The Foundation has now made an additional \$250,000 available for the further development of the University of São Paulo's Faculty of Medicine at Ribeirão Preto.

## AMERICAN UNIVERSITY OF BEIRUT

## MEDICAL SCHOOL

Long respected as an outstanding medical institution of the Arab world, the Medical School of the American University of Beirut, Lebanon, is being called upon to play a new role in training medical educators for schools of medicine now being developed throughout the Middle East. To meet this demand, the Medical School is being enlarged.

In the past 30 years the school has been instrumental in building up a growing awareness of the medical and public health needs of the region it serves. While this is a desirable result of its teaching and example, the task of providing the increased numbers of medical graduates for present-day requirements is both difficult and costly.

The school has been a forerunner in introducing Western methods of diagnosis and treatment to the Middle East, with American financing meeting a large proportion of the expense. A modernization program begun in 1953 built up the clinical and preclinical departments of the school, and in the next few years the research activities are to be given special support.

The size of the faculty is being increased to give each member more time to conduct and direct research, a revised salary scale is being introduced to assure conditions of practice comparable with Western standards, and a new building which will provide additional laboratory space is being projected.

The Foundation has been interested in the development of the Medical School in Beirut since 1924. In recent years an annual grant of \$100,000 has contributed to the support of the school and has been matched by the university. A larger grant of \$240,000 will be used in 1960 toward

general increase in staff salaries and recruitment of more personnel.

ALL-INDIA INSTITUTE OF MEDICAL SCIENCES  
TEACHING AND RESEARCH EQUIPMENT

The All-India Institute of Medical Sciences was established by a Special Act of Parliament in June, 1956, as an autonomous body to develop patterns of teaching in undergraduate and graduate medical education for other medical colleges and allied institutions in India, and to bring together in one institution educational facilities in all important branches of health activity.

With aid from the Indian government and from New Zealand under the Colombo Plan, the institute's buildings are now rising on land close to the Safdarjang Hospital in New Delhi. Completed are the College of Nursing, a nurses' home, student dormitories, and staff residences; nearly finished is the preclinical unit. Still to come are a clinical teaching unit, some common facilities, the Hospital, the Out-patient Department, and the Dental College. Until these are built, the administration has made several temporary arrangements.

Although the departments in the basic medical sciences now have enough equipment for undergraduate teaching, they need more to expand their research and graduate training. Much equipment is needed for the preclinical and para-clinical units, which are already in operation, as well as for the clinical units, where many departments are just getting under way.

To meet these needs The Rockefeller Foundation has appropriated \$200,000 for teaching and research equipment for the preclinical and clinical departments. The Foundation has also provided fellowships and travel grants to assist in training members of the institute's staff.

## UNIVERSITY COLLEGE, NIGERIA

## DEPARTMENT OF PEDIATRICS

Little real headway can be made toward providing adequate medical care for the children of West Africa until more data are available about the incidence and cause of disease at the village level. This problem has recently become of particular interest to the Faculty of Medicine of the University College, Ibadan, Nigeria.

Unable to obtain the necessary facts from clinical studies conducted in its own well-equipped hospital, the university has decided to send a research team led by Dr. W. R. F. Collis, head of the Department of Pediatrics, into the Ilesha-Imesi area of Nigeria to make a pilot study of disease among children. The group will obtain vital statistics and develop information for use in improving sanitation, health, and medical treatment in the villages. In addition, a field training station will be set up where pediatrics students from the university can spend short periods studying acute ambulatory cases.

Poor nutrition is thought to be responsible for a high proportion of illnesses and deaths at an early age in West Africa, and a special effort will be made to study food sources and feeding habits for a cross section of the child population. Admitted to the hospital now are large numbers of children, aged one to five, suffering from "kwashiorkor," a disease resulting from a borderline protein deficiency complicated by an acute illness such as smallpox. Etiological and epidemiological studies of malaria, probably the greatest cause of deaths among children, and of several serious diarrheal diseases will also be carried out.

As the program develops, it is expected to play an important role in the training of future medical leaders and teachers drawn not only from the students of the college but

from all parts of West Africa. It may well be the first step in the development of a permanent Institute of Child Health and Nutrition in Nigeria. The Nigerian government which, with the Colonial Development and Welfare Fund of the United Kingdom, is responsible for the establishment of the University College Hospital, is giving its full support to the extension scheme. Other offers of future assistance have come from the World Health Organization, the United Nations Children's Fund, the United Kingdom, and agencies throughout West Africa. The Foundation is helping the University College to carry out the rural research and teaching program with a three-year grant of £38,200 (about \$108,870) made in 1959.

CAMPAIGN FOR THE IMPROVEMENT OF  
HIGHER EDUCATION PERSONNEL  
RESEARCH EQUIPMENT

A few years ago, as part of a broad plan to raise standards of teaching and research in Brazilian universities, the government created the Campaign for the Improvement of Higher Education Personnel (CAPES), an agency of the Ministry of Education, and the Brazilian National Research Council (CNPq), both of which have comprehensive fellowship programs. As a result of these programs a substantial number of young Brazilian scholars have now been given graduate training at home or abroad, and senior faculty members have benefited from travel grants. The Foundation has contributed \$269,000 in the past four years to the CAPES fellowship fund for medical and nursing school teacher training.

At present one of the greatest needs of higher education in Brazil is the strengthening of university science faculties, particularly through the development of research in the basic sciences. Recognizing this, CAPES and CNPq are

anxious that newly trained scientists be encouraged to pursue their research interests when taking up faculty appointments, and arrangements are being made to provide universities with some of the materials needed for the individual research projects of certain returning fellows.

A Foundation grant of \$75,000 made to CAPES in 1959 will be used for the purchase of modern equipment essential to the work of a few carefully selected experimental biologists.

#### HARVARD UNIVERSITY

#### DEPARTMENT OF DERMATOLOGY

The advances that have been made in the science of dermatology in recent years are reflected in the broad scope of the work being done in this special field in medical schools. To give the necessary emphasis to this subject, Harvard University in 1948 expanded the physical facilities of its department of dermatology, appointed ten new members to its staff, revised its teaching syllabus, and initiated a research program.

Fundamental studies begun at that time have led to important biochemical findings concerning the skin's resistance to trauma, response to injury, and keratinization. The investigators also made valuable contributions to medical knowledge of skin abnormalities accompanying disorders of lipid metabolism, and the effect of adrenal hormones in various cutaneous diseases.

A Foundation grant of \$75,000 to Harvard University, made in 1959, will assist in the further development of dermatology in close relationship with the disciplines of internal medicine over the next five years. The expanded program of teaching and research in dermatology will be coordinated with the practice of this specialty at the hospitals affiliated with the medical school and will be under the direc-

tion of Dr. Thomas B. Fitzpatrick, head of the department at the university and chief of the dermatology service at the Massachusetts General Hospital. Dr. Fitzpatrick has as his own special research interest the study of pigmentary problems, particularly the regulation of melanin formation.

#### INSTITUTE OF PUBLIC HEALTH

#### RADIATION HEALTH

In 1958 Japan's first laboratory for public health teaching and research in radiation health was constructed at the Institute of Public Health in Tokyo. The institute itself is the country's chief public health training center and even before the building of the laboratory had provided courses in radiation health for public health workers. Now, with more space in the new quarters, its teaching facilities have been expanded and a program of research in radiation health has been initiated. Dr. Takeo Suzuki, head of the institute's Department of Industrial Health, supervises the laboratory staff, which consists of a radiochemist, a radiation biologist, and several other specialists in the field.

Among the investigations planned are studies of the radioactive pollution of air and water as well as the contamination of food and methods of disposing of contaminated waste. Research on internal radiation resulting from inhalation and insufflation of polluted air will include a close analysis of radioactive elements in human organs.

The Institute of Public Health will supply research and teaching equipment for the new laboratory with the help of a \$56,000 grant made by The Rockefeller Foundation in 1959.

#### SOCIETY OF THE NEW YORK HOSPITAL

#### NURSING EDUCATION

Late in 1958 Cornell University and the New York Hospital School of Nursing began a study aimed at identi-



ifying the contribution made to the professional preparation of nurses by the public health nursing field experience included in the standard curriculum. In the study an attempt is being made to describe certain crucial nurse-patient relationships, nursing assignments, and other situations that confront students during the field experience; and to determine whether the experience can be made more meaningful, whether it can be obtained in a shorter time than the usual eight weeks, and whether modifications in present arrangements are needed. The effects of the field assignment on the students' nursing skills, patient preferences, and career plans are also being assessed.

To help Cornell and the New York Hospital School of Nursing continue the study during the next two years, The Rockefeller Foundation has appropriated \$46,976 to the Society of the New York Hospital.

#### UNIVERSITY OF EL SALVADOR

#### SCHOOL OF MEDICINE

Reorganization of the School of Medicine of the University of El Salvador started in 1955 when the government took steps to increase its budget, establish new teaching positions, and limit the number of students admitted. This paved the way for instituting a sound basic sciences program which has made excellent progress in the intervening years. The departments of biochemistry, pathology, microbiology, pharmacology, and physiology are all well established; a department of preventive medicine has been created; and a teaching health center and outpatient facility have been set up adjoining the hospital and medical school. Improvement of these departments will continue as the school lays the necessary foundation for the next stage in the over-all development program—the reorganization of its clinical services.

The United States International Cooperation Administration, the Kellogg Foundation, and The Rockefeller

Foundation have all given their support to the development of the San Salvador school, which promises to assume a position of leadership in Central America. An appropriation of \$44,500 made to the university in 1959 supplements a grant of \$171,000 made in 1957 to provide personnel, equipment, and supplies for teaching in the basic sciences.

UNIVERSITY OF EDINBURGH

FACULTY OF MEDICINE

The University of Edinburgh has recently organized a Curriculum Committee for the purpose of studying the education program of the Faculty of Medicine. A review of other medical institutions is planned in order to present the Curriculum Committee with comparative data for examination and for debate in its conferences. In connection with the review, faculty members will travel to the United States and other countries to study the teaching methods, over-all curriculum structure, and administrative organization of medical schools. It is expected that the recommendations made as a result of these visits will improve training at the Faculty of Medicine, the student body of which includes students from Britain, from the newer members of the Commonwealth, and from other African and Asian countries as well.

The Rockefeller Foundation appropriated £2,000 and \$19,300 (about \$25,000) in 1959 to be used in sending faculty members from the University of Edinburgh to survey foreign medical programs.

TEACHERS COLLEGE, COLUMBIA UNIVERSITY

RESEARCH AND SERVICE IN NURSING

The Institute of Research and Service in Nursing Education at Teachers College, Columbia University, has a threefold program: to conduct and publicize studies of nurs-

ing and nursing education; to train nurses in research methods; and to supply consultant services to selected schools and agencies. It is not the only organization in the United States engaging in these activities, but it is unique in that it is the only one devoted exclusively to them.

The institute was organized and has continued to operate with the aid of a \$100,000 grant from The Rockefeller Foundation, but its total budget has far exceeded the amount of the Foundation's contribution. In addition to Teachers College, its supporters have included state and federal government agencies, private individuals, foundations, industry, and the National League for Nursing.

To help finance the institute for an additional year, during a period of reassessment and planning, the Foundation in 1959 appropriated \$20,000 to Teachers College, Columbia University.

#### OTHER GRANTS

##### *United States*

##### *New England*

Harvard University, Cambridge, Massachusetts:

Dr. David D. Rutstein, professor of preventive medicine, School of Medicine, Boston, and Mrs. Rutstein; to visit Poland to lecture and consult on the development of a teaching program in preventive medicine; \$2,880;

Dr. Joseph Stokes, III, associate in preventive medicine, School of Medicine, and head, Family Health Program, Massachusetts General Hospital, Boston; to observe teaching methods and the work being done in epidemiology and human genetics at centers of social and preventive medicine in Europe; \$2,175;

Dr. Derek Ernest Denny-Brown, professor of neurology, School of Medicine, Boston, and director, Neurological Unit, Boston City Hospital; to participate in the Eighth Latin American Congress of Neurosurgery in Santiago, Chile; \$1,170;

Miss Ruth Sleeper, director, School of Nursing and Nursing Service, Massachusetts General Hospital, Boston; to attend a meeting in Belfast, Northern Ireland, in connection with the Northern Ireland-Canada-United States nursing education research project; \$1,100;

Miss Catherine Bridget Tancock, research assistant, Laboratory of Human Development; to attend a meeting in Belfast, Northern Ireland, in connection with the Northern Ireland-Canada-United States nursing education research project; \$1,100;

### *Middle Atlantic*

American Nurses' Foundation, New York:

To provide field services to nurses from abroad who come to the United States under the Exchange Visitors Program; \$9,500;

Mrs. Jeanne Broadhurst, research associate, International Nursing Project; to attend the World Health Organization Conference on Nursing in Geneva, Switzerland, and to visit former exchange visitors while in Europe; \$500;

American Public Health Association, Inc., New York: to invite four specialists to take part in a symposium on international health at the annual meeting of the association and to visit schools of public health in the United States; \$10,000;

Dr. Eugene P. Cronkite, head, Division of Experimental Pathology, Medical Research Center, Brookhaven National Laboratory, Upton, New York: to observe hospital organization and the problems of patient care in connection with nuclear medicine and radiological hazards at medical centers in Europe; \$1,400;

Columbia University, New York:

Institute of Research and Service in Nursing Education, Teachers College; to help meet administrative expenses of the National Fund for Graduate Nursing Education; \$10,000;

Teachers College; to enable a group of nurses selected from the faculties of several American schools of nursing to participate in a travel seminar on education and society; \$5,000;

Dr. George L. Saiger, assistant professor of biostatistics, School of Public Health and Administrative Medicine; to attend an advanced course in biological assay at the University of Aberdeen, Scotland; \$2,000;

Dr. A. Earl Walker, professor of neurological surgery, School of Medicine, the Johns Hopkins University, Baltimore, Maryland: to participate in the Eighth Latin American Congress of Neurosurgery in Santiago, Chile; \$1,150;

Research Foundation, State University of New York: State University College of Medicine, Syracuse University, New York; to hold a conference for Indian medical educators; \$3,040;

Miss Jeanne La Motte, nurse advisor, Fellowship Branch, Pan American Health Organization, Washington, D.C.: to observe methods of nursing and midwifery education and services at schools of nursing and midwifery in the Middle East and Europe after attending the World Health Organization Conference on Post-Basic Nursing Education in Geneva, Switzerland; \$800;

Professor Manasse G. Sevag, Department of Microbiology, School of Medicine, University of Pennsylvania, Philadelphia: to serve as guest lecturer at the Academy of Sciences of the Soviet Socialist Republic of Armenia and to visit scientific institutions in the Soviet Union; \$1,500;

Dr. Edward Grzegorzewski, professor and head, Department of Preventive Medicine and Public Health, School of Medicine, University of Puerto Rico, San Juan: to observe teaching in preventive medicine and public health at medical schools in Latin America; \$3,050;

### *South*

Institute of Religion, Houston, Texas: clinical studies of the effects of religion on the ill individual, especially on the cancer and heart patient, and evaluation of the data obtained; \$10,000;

University of Tennessee, College of Medicine, Memphis:

Dr. Gerald Baxter Spurr, assistant professor of physiology and clinical physiology; to visit schools of medicine in South America; \$2,075;

Dr. George Barlow, assistant director, Clinical Physiology Laboratories; to visit schools of medicine in South America; \$2,075;

*Central West*

American College of Radiology, Chicago, Illinois: to print copies in Spanish and Portuguese of the *Practical Manual on the Medical and Dental Use of X rays with the Control of Radiation Hazards*; \$9,350;

Dr. H. Marvin Pollard, professor of internal medicine, School of Medicine, University of Michigan, Ann Arbor: to observe developments in medical education at medical schools in Japan; \$1,000;

Miss Frances E. Dunning, assistant professor, School of Nursing, University of Minnesota, Minneapolis: to visit schools of nursing in South America; \$2,450;

Dr. Jules Henry, professor of anthropology, College of Liberal Arts, Washington University, St. Louis, Missouri: to conduct, at the invitation of the Norwegian Association of Child Psychiatry and Allied Professions, a seminar in Oslo, Norway, on the family aspects of schizophrenia, and to observe Norwegian work in child psychiatry; \$1,150;

Miss Joyce E. Day, associate professor, College of Nursing, Wayne State University, Detroit, Michigan: to observe nursing education programs in Japan; \$5,475;

*West*

University of California, Los Angeles:

Expenses connected with the development of a doctoral program in the School of Nursing; \$10,000;

Mrs. Lulu Wolf Hassenplug, professor of nursing and dean, School of Nursing; to observe nursing programs at universities in the Far East and Hawaii; \$2,530;

*Canada*

Miss Amy Elizabeth Griffin, director of nursing education, Atkinson School of Nursing, Toronto: to attend a meeting in Belfast, Northern

Ireland, in connection with the Northern Ireland-Canada-United States nursing education research project; \$1,100;

Mrs. Claribel Richards, executive director, Canadian Mothercraft Society, Toronto: to observe the nursing programs of institutions offering the same services as the Mothercraft Society in the United States and Canada; \$1,230;

Miss Merle Elecia Parkes, clinical instructor, Toronto Western Hospital: to observe nursing education programs at universities in the United States; \$1,390;

### *West Indies*

University College of the West Indies, Mona, Jamaica:

To invite Dr. Joseph Gardiner, Nuffield Department of Obstetrics and Gynecology, University of Oxford, England, to serve as visiting lecturer in the Department of Obstetrics and Gynecology; \$8,200;

To invite Dr. Don Gore to serve as lecturer in surgery during the fellowship study period of Dr. Harry Annamunthodo; \$6,850;

A faculty exchange program among the departments of physiology of the University College, the University of Puerto Rico School of Medicine, San Juan, and the University of Miami School of Medicine, Florida; \$1,810;

Dr. John A. Tulloch, senior lecturer in medicine; to visit medical centers in the United States and Canada; \$1,400;

Dr. Robert John Gourlay, senior lecturer in social and preventive medicine; to attend the conference of the International Corresponding Club in Preventive Medicine in Cali, Colombia, and to observe teaching methods in social and preventive medicine at medical schools in Colombia and El Salvador; \$1,300;

Dr. John Edward MacIver, senior lecturer in hematology; to assist in hematologic research and in the organization of a hematologic service at the Faculty of Medicine, University of Caldas, Manizales, Colombia; \$1,055;

*Latin America*

University of Bahia, Salvador, Brazil: a program in public health nursing in the School of Nursing; \$10,000;

Hermantina Beraldo School of Nursing, Juiz de Fora, Brazil:

Miss Celina Viegas, director; to observe new trends in nursing education and methods and criteria for accrediting schools of nursing at nursing schools in the United States; \$3,450;

Miss Elisabeth J. M. W. Rombach, nursing teacher; for travel between the United States and Brazil to accept an International Cooperation Administration-Point IV fellowship; \$800;

Dr. Jose Geraldo Albernaz, assistant professor of neurology, Faculty of Medicine, University of Minas Gerais, Belo Horizonte, Brazil: to accept a research fellowship at the School of Medicine, University of Washington, Seattle, and to visit other medical schools in the United States; \$1,810;

Dr. Henrique Melega, assistant professor of experimental surgery, Paulista School of Medicine, São Paulo, Brazil: to visit surgical centers in the United States; \$2,775;

Dr. Ruy Joao Marques, professor of tropical medicine, Faculty of Medicine, University of Recife, Brazil: to visit medical centers in Europe, the United States, and Puerto Rico; \$3,475;

Dr. Jacy Carneiro Monteiro, professor of surgery, Faculty of Medicine, University of Rio Grande do Sul, Pôrto Alegre, Brazil: to observe the teaching of surgery and the organization of surgical services in the United States; \$2,475;

University of São Paulo, Faculty of Medicine of Ribeirão Preto, Brazil:

Dr. Zeferino Vaz, dean, and Mrs. Vaz; to visit schools of medicine in North and South America; \$3,825;

Dr. Jose Paulo Marcondes de Souza, professor of orthopedic surgery; to observe the teaching of orthopedic surgery and medical education generally at centers in the United States; \$3,095;



Dr. Jacob Renato Woiski, professor of pediatrics; to visit medical centers in the United States and Mexico; \$2,750;

Triangulo Mineiro, Uberaba, Minas Gerais, Brazil: teaching equipment for the basic science departments of the Faculty of Medicine; \$10,000;

Dr. Ennio Bianchi, director, Institute of Chemistry, and professor of general and organic chemistry, Catholic University of Chile, Santiago: to observe the teaching of chemistry to undergraduate medical students in England while in Europe; \$350;

University of Chile, Santiago:

Local postgraduate training in Chile for selected recent graduates of the Faculties of Medicine of the University of Chile, the Catholic University of Chile, Santiago, and the University of Concepción; \$9,000;

To invite Dr. Hugo Claure-Saavedra to serve as a resident member of the Service of Internal Medicine, Faculty of Medicine; \$2,700;

Dr. Jaime Saavedra Viollier, first assistant, Chair of Medicine A, San Borja Hospital, Faculty of Medicine, and Mrs. Saavedra; to observe research on diagnostic cardiac roentgenology at the Karolinska Institute while in Stockholm, Sweden; \$950;

Dr. Benjamin Viel, professor of preventive medicine and director, Medical School; to visit the Faculty of Medicine, University of Valle, Cali, Colombia; \$300;

University of Caldas, Manizales, Colombia:

A faculty exchange program between the Faculty of Medicine of the University of Caldas and the Faculty of Medicine of the University of Valle, Cali; \$10,000;

Texts and reference books for the library of the Faculty of Medicine; \$400;

University of the Andes, Bogotá, Colombia:

Development of the biology section of the General University Library; \$5,000;

Dr. Francis Robert Hunter, professor and head, Department of Biology; to attend lectures in physiology and conduct research at the Marine Biological Laboratory, Woods Hole, Massachusetts; \$1,200;

University of Valle, Cali, Colombia:

A meeting of selected epidemiologists to study the epidemiological method in clinical research and the teaching program in epidemiology and preventive medicine at the Faculty of Medicine; \$15,000;

Equipment to complete the graduate training facilities of the Department of Physiological Sciences, Faculty of Medicine; \$10,000;

To invite Professor H. G. Swann, Department of Physiology, University of Texas, to serve as visiting director of graduate studies in physiology, Faculty of Medicine; \$10,000;

Postgraduate training in the Faculty of Medicine for physicians from other Latin American countries; \$9,500;

Dr. Argemiro Franco Henao, instructor of epidemiology, Department of Preventive Medicine and Public Health, Faculty of Medicine; to observe the operation and administration of the regionalization program in Puerto Rico; \$1,850;

Dr. Jaime Isaza, associate professor, Department of Surgery, Faculty of Medicine; to visit surgical centers in the United States; \$1,500;

Miss Ines Mora, chief nurse, Department of Preventive Medicine and Public Health; to attend a regional meeting in Buenos Aires, Argentina, and to visit schools of nursing in other Latin American countries; \$1,400;

Miss Ines Viveros, director, School of Nursing; to attend a regional meeting in Buenos Aires, Argentina, and to visit schools of nursing in other Latin American countries; \$1,400;

Dr. Carlos V. Serrano, biochemist, Department of Pediatrics; to make an emergency trip to Colombia while on fellowship study in the United States; \$400;

Dr. Orlando Jorge Aidar, visiting professor of anatomy, Faculty of Medicine, University of El Salvador, San Salvador: to visit centers of anatomy and to attend the VII International Congress of Anatomy in New York before returning to his permanent post at the University of São Paulo, Brazil; \$1,275;

University of Guanajuato, Mexico: equipment and supplies for the Department of Biochemistry, Faculty of Medicine, León; \$10,000;

Dr. Fernando Marroquin Robles, Department of Pathology, National University of Mexico, Mexico City: to continue study at Tulane University of Louisiana, New Orleans; \$2,800;

Dr. José M. Torre, director, School of Medicine, University of San Luis Potosí, Mexico: to attend the meeting in Chicago, Illinois, of the Association of American Medical Colleges, and to visit medical centers in the United States; \$850;

Dr. Victor Alzamora Castro, professor of medicine, Faculty of Medicine, University of San Marcos, Lima, Peru, and Mrs. Alzamora Castro: to visit centers of internal medicine in Europe; \$5,425;

#### *Europe*

University of Brussels, Belgium: teaching materials and equipment for the School of Nursing; \$2,000;

Dr. James Gallagher, lecturer, Department of Social and Preventive Medicine, University College, Dublin, Ireland: to observe comprehensive medical care programs and the teaching of preventive medicine at medical schools while in the United States; \$725;

Dr. Justus Teye Buma, acting director, Netherlands Institute for Preventive Medicine, Leiden: to observe medical care and community health programs in the United Kingdom and the United States; \$2,400;

Professor Wladyslaw Jakimowicz, director, Neurological Clinic, Academy of Medicine, Cracow, Poland: to observe recent developments in work on the pathophysiology of the nervous system at clinical and research institutions in the United States and Europe; \$2,700;

Dr. Wlodzimierz Januszewicz, senior assistant, II Medical Clinic,

Academy of Medicine, Warsaw, Poland, and currently a Rockefeller Foundation Fellow at the College of Physicians and Surgeons, Columbia University, New York: to accompany Professor K. Rowinski on his visits to medical schools in the United States; \$1,309;

Professor Ksawery Rowinski, professor of pediatric radiology, and director of medical schools, Ministry of Health, Warsaw, Poland: to observe developments in postgraduate medical education and in pediatric radiology at medical schools in the United States; \$2,400;

Miss Maria Minczewska, instructor, Studium for Teachers in Nursing Schools, Warsaw, Poland: to visit nursing schools in Belgium and Germany; \$1,750;

Miss Maria Zelia Caldeira Quintas Alves, superintendent of nursing, Maternal Institute, Lisbon, Portugal: to observe public health nursing services and public health administration in the United States; \$2,400;

Dr. E. Maurice Backett, professor of public health and social medicine, University of Aberdeen, Scotland: to visit centers of medical education and epidemiology in the United States, the West Indies, and Canada; \$2,145;

Miss Elsie Stephenson, director, Nursing Studies Unit, University of Edinburgh, Scotland: to observe nursing education programs in the United States and Canada; \$2,230;

Florence Nightingale International Foundation, London, England: expenses of the chief consultant to the foundation in connection with an International Seminar on Nursing Problems to be held in Delhi, India; \$4,600;

Miss Ellen Johanne Broe, director, Florence Nightingale Education Division, International Council of Nurses, London, England: to attend a meeting in Belfast, Northern Ireland, in connection with the Northern Ireland-Canada-United States nursing education research project; \$200;

University of London, England:

Dr. William Stanley Walton, professor of public health, London School of Hygiene and Tropical Medicine; to observe the teaching

of preventive medicine and public health in the United States and Canada; \$1,200;

Dr. Ruth E. M. Bowden, professor of anatomy, Royal Free Hospital School of Medicine; to study medical education and procedures at medical schools while in the United States; \$450;

Miss Joan Woodward, consultant in industrial sociology and part-time lecturer at the Imperial College of Science and Technology and at the University of Oxford; to attend a meeting in Belfast, Northern Ireland, in connection with the Northern Ireland-Canada-United States nursing education research project; \$200;

Eric Harrison Jones, secretary, Northern Ireland Hospitals Authority, Belfast: to visit nursing programs in the United States and Canada; \$1,620;

Dr. Margaret Helen Read, London, England: to serve as consultant to the World Health Organization Conference on Nursing held in Geneva, Switzerland, during October, 1959; \$400;

Miss Florence Eileen Elliott, matron, Royal Victoria Hospital, Belfast, Northern Ireland: to visit nursing programs in the United States and Canada; \$1,620;

Professor Brian G. Maegraith, dean, School of Tropical Medicine, Liverpool, England, and Mrs. Maegraith: to visit centers of tropical medicine and public health while in the United States in connection with Dr. Maegraith's appointment as a member of the National Academy of Sciences Study Group for Africa South of the Sahara; \$900;

Dr. Dragoljub Vasiljevic, Department of Surgery, Faculty of Medicine, University of Belgrade, Yugoslavia: to visit centers of open heart surgery while in the United States; \$700;

#### *Africa*

Dr. John Grayson, professor of physiology, University College, Ibadan, Nigeria: to visit the laboratories of Professor J. Gillman at

the University of the Witwatersrand, Johannesburg, South Africa, and of Professor J. Magnes at the Hebrew University of Jerusalem, Israel; \$2,340;

### *Middle East*

American University of Beirut, Lebanon: to assist the School of Public Health in obtaining the services of visiting professors; \$5,400;

University of Ankara, Turkey:

To continue the services of visiting teachers in the Department of Child Health; \$12,000;

Dr. Ihsan Dogramaci, director, Research Institute of Child Health, and Mrs. Dogramaci; to visit departments of pediatrics at medical institutions in the United States, Canada, and Mexico; \$5,400;

Dr. Cavit Sökmen, professor and head, Second Department of Medicine, Faculty of Medicine; to observe developments in medical education and in hematologic research at medical schools in the United States; \$2,750;

### *South Asia*

All-India Institute of Medical Sciences, New Delhi:

Dr. Bal Krishan Anand, professor and head, Department of Physiology; to observe recent developments in physiology and in medical education in Japan, the United States, Canada, Argentina, and Europe; \$6,600;

N. B. Chatterji, deputy administrative director; to observe medical and hospital administration in the United States and the United Kingdom; \$4,250;

Dr. Sangham Lal, professor of surgery; to observe recent developments in surgery and in medical education in the United States and the United Kingdom; \$4,200;

Dr. Khushwant Lal Wig, professor of medicine; to observe recent developments in medicine and in medical education in the United States and the United Kingdom; \$4,200;

Dr. Kamarazu Narasimha Rao, director of medical services for Andhra Pradesh, Hyderabad-Dn, India: to observe recent developments in medical education and in public health in the United States, Canada, and the United Kingdom; \$5,400;

Christian Medical College and Hospital, Vellore, India: equipment for the cardiovascular laboratory, Department of Thoracic Surgery; \$10,000;

University of Lucknow, King George's Medical College, India: to continue for an additional year the services of Dr. Shiva Datt Sanwal and Dr. Madan Mohan Singh; 14,400 rupees (about \$3,060);

Madras Medical College, India: equipment for research in cardiology in the Institute of Pediatrics, under the direction of Dr. R. S. Ramachandran; \$6,000;

Dr. Sharat C. Desai, dermatologist and venereologist, King Edward Memorial Hospital, Seth Gordhandas Sunderdas Medical College, Bombay, India: to observe work in dermatology, mycology, and pathology at medical centers in the United States; \$1,500;

#### *Far East*

Dr. Gustav J. V. Nossal, Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia: to accept a fellowship at Stanford University, Palo Alto, California; \$2,900;

University of Melbourne, Australia:

Dr. David Hungerford Ashton, lecturer in botany; to observe techniques and vegetation illustrating ecological principles at centers of research in biology in the United States and Canada; \$1,400;

Dr. Victor Martin Trikojus, professor of biochemistry; to visit biochemical research laboratories and teaching institutions in the United States; \$1,200;

Dr. Geoffrey Shedden Adam, professor of obstetrics, Medical School, University of Queensland, Brisbane, Australia: to observe recent developments in medical education and obstetrics at medical schools while in the United States; \$945;

Dr. Alan Llewelyn Williams, pathologist, Royal Children's Hospital, Melbourne, Australia: to visit pediatric centers while in the United States; \$425;

Dr. Kokichi Tsuchiya, professor, Orthopedic Department, Fukushima Medical College, Japan: to observe the teaching of clinical orthopedic surgery and research on bone metabolism at medical institutions in the United States; \$1,100;

Keio University, Tokyo, Japan: equipment for the Department of Pathology, School of Medicine; \$5,573;

Dr. Shuro Nishimura, senior assistant in neurosurgical research, Kyoto University Hospital, Japan: to observe clinical and research work in neurosurgery at departments of neurosurgery while in the United States; \$600;

Dr. Siro Kawaguti, professor of zoology, Faculty of Science, Okayama University, Japan: to visit centers of scientific research and to observe new developments in research and teaching in the United States; \$3,900;

Dr. Teruo Matsuura, research assistant, Institute of Polytechnics, Osaka City University, Japan: to observe research on structural and biosynthetic problems of natural substances in medical and chemistry departments in Europe; \$2,250;

Dr. Noburo Kamiya, professor of biology, Faculty of Science, Osaka University, Japan: to visit centers of botanical research in the United States and Europe; \$1,650;

Dr. Masao Muto, professor of surgery and dean, School of Medicine, Tohoku University, Sendai, Japan: to observe medical education and new surgical techniques in the United States; \$1,180;

Dr. Hideo Ueda, professor of internal medicine, Faculty of Medicine, University of Tokyo, Japan: to observe medical education in general and internal medicine in particular at medical centers in the United States; \$3,700;

Dr. Harvey McKay Carey, professor of postgraduate obstetrics and gynecology, University of Auckland, and medical director, National



Women's Hospital, Auckland, New Zealand: to observe teaching methods and to visit centers of obstetrical and gynecological teaching and research in the United States; \$1,300;

Dr. Edward George Sayers, dean, Faculty of Medicine, University of Otago, Dunedin, New Zealand: to observe experimental work in medical education at medical centers in the United States and Canada; \$2,100.

## Medical Care

### COLUMBIA UNIVERSITY

#### NEW YORK CITY HEALTH SERVICES COMMISSION

In February, 1959, Mayor Robert F. Wagner established the Commission on Health Services of the City of New York to study the city's total health facilities and to develop plans for reducing costs and improving medical care in its public and private hospitals.

Foremost among the problems which the commission is considering is the soaring cost of hospital service, already 258 per cent over the 1946 figure per patient per day. In the hope of cutting the hospitals' expenses the commission is currently studying the coordination of public and private hospitals and the application of modern industrial management techniques to hospital administration. The provision of better ambulant care and of more home care programs, and the improvement of nursing home facilities, also under consideration, are measures which may decrease the number of patients requiring hospitalization as well as the total days of hospital care required per patient.

To improve health facilities the commission is investigating the possibilities of centralizing costly equipment and of arranging for closer relations between the city's hospitals and medical schools.

In partial support of the work of the commission The Rockefeller Foundation has appropriated \$40,000 outright to Columbia University. Dr. Ray E. Trussell, executive director of the commission, is also head of Columbia's School of Public Health and Administrative Medicine.

#### OTHER GRANTS

Columbia University, New York: a study of the nursing resources and needs of Puerto Rico, by the School of Public Health and Administrative Medicine; \$10,000;

Harvard University, Cambridge, Massachusetts: preliminary studies and planning in connection with a proposed research project on professional competence, to be conducted at the Department of Preventive Medicine, School of Medicine, Boston, by Dr. Osler L. Peterson; \$10,000;

University of Southern California, Los Angeles: development of a health information research center in the School of Medicine; \$8,600;

Health Research, Incorporated, Buffalo, New York: to invite several foreign research scientists to the United States to discuss the planning and results of a study of the diagnoses of uterine cancer; \$3,648;

Dr. Trygve Gjestland, professor of preventive medicine, Medical School, University of Bergen, Norway: to observe medical care programs in Europe, the United States, and Canada; \$3,025;

Dr. Philip Derek Bedford, consultant physician, Cowley Road Hospital, Oxford, England: to observe the teaching of geriatrics and gerontology and the management of diseases of the aging at medical schools in the United States; \$2,675;

Julio A. Perez, project director, Puerto Rico Medical Center, Department of Health of Puerto Rico, San Juan: to observe the organization and management of medical care centers in Europe and the United States; \$2,500;

Dr. Michio Hashimoto, assistant to the head, Health Center Section, Public Health Bureau, Ministry of Health and Welfare, Tokyo,

Japan: to visit regionalization and medical care programs in the United States, Puerto Rico, and Canada; \$2,450;

Dr. John Owen Fisher Davies, senior administrative medical officer, Oxford Regional Hospital Board, England: to observe comprehensive medical care programs in the United States and Puerto Rico; \$2,340;

Dr. Eugene Kirsten, family internist, Montefiore Hospital Medical Group, New York: to observe teaching methods for family physicians in Great Britain; \$1,750;

Health Insurance Plan of Greater New York, New York: supplement to a previous grant in aid for additional expenses of completing a study of hypertension; \$400.

## Experimental Medicine

### NATIONAL INSTITUTE OF CARDIOLOGY

### LABORATORIES OF EXPERIMENTAL MEDICINE

Founded fifteen years ago by its present director, Dr. Ignacio Chavez, the National Institute of Cardiology, Mexico City, initially consisted of a 150-bed hospital together with the necessary clinical laboratories and service facilities. Since that time the institute has become the major Latin American clinic for the treatment of heart diseases and an international center for training physicians in this specialty.

In conjunction with these activities the institute's staff have engaged in a program for the prevention of rheumatic fever and contributed to the development of modern heart surgery with their work on cardiac catheterization and differential angiocardiology. The institute has become well known also for its researches in electrocardiology.

Since 1949 Dr. Chavez has broadened the base of the research program. In that year he added two full-time investigators, in physiology and pharmacology, and finally, in 1958, he was successful in providing facilities for nine addi-

tional basic research units. With each of the new laboratories to be headed by a specially trained director, research will be conducted in embryology, biochemistry, renal physiology, hormones, rheumatic fever, coagulation and thrombosis, tissue culture, experimental electrocardiography, and experimental surgery.

To assist the development of the new laboratories, The Rockefeller Foundation has appropriated \$200,000, of which half will be available for laboratory equipment and the other half for general support over a four-year period.

#### UNIVERSITY OF VALLE

#### EXPERIMENTAL MEDICINE

The principal aims of the relatively new Faculty of Medicine of the University of Valle, Cali, Colombia, are to demonstrate modern medical education as adapted to the needs of the area, and to train academic personnel for the medical colleges of Latin America. In stressing regional requirements to the degree that it does, the faculty is breaking new ground; and its work is being watched with interest in many countries. Visits to the school by delegations from other medical faculties are a frequent occurrence.

The faculty has been increasing its research activities gradually, as the staff has grown and as laboratories and associated facilities have been constructed. Currently a further extension of the research program is planned in the three interrelated fields of biochemistry, obstetrics and gynecology, and internal medicine.

Dr. Antonio Colas, who will have charge of the work in biochemistry, has already formed a research team and started the studies on steroids and enzyme systems which will occupy him in the next few years. Dr. Colas was trained at the University of Edinburgh and served as head of the Department of Biochemistry and Physiology at the Univer-

sity of Salamanca before his appointment to the Cali faculty in 1957.

In the Department of Obstetrics and Gynecology, Dr. Alvaro Cuadros will direct research on electrolyte and fluid changes in toxemias of pregnancy. As part of the program, cooperative work with scientists at two other institutions is planned—the University of Oregon and Cornell University Medical College in New York.

Two internists who are now completing their training, Dr. Eduardo Gaitan and Dr. Jacobo Ghitis, expect to undertake investigations in the fields of endocrinology and metabolism, and of hematology. The initial work of Dr. Gaitan will deal with the relation of the endocrine system to nutrition, with special emphasis on the mechanisms of edema formation in patients with severe malnutrition. Dr. Ghitis will concern himself with the causes of anemia and other hematological conditions.

The Rockefeller Foundation has been assisting the development of the medical and nursing schools of the University of Valle since 1953. Grants have totaled more than \$825,000, and 43 fellowships have been provided for advanced study by members of the faculties of both schools. In 1959 the Foundation renewed its support with a grant of \$125,000 for the new research programs in the Faculty of Medicine. The appropriation will be available through July, 1962.

#### AMERICAN FOUNDATION FOR TROPICAL MEDICINE, INC.

##### LIBERIAN INSTITUTE

At the Liberian Institute, established in Harbel in 1950 by the American Foundation for Tropical Medicine, Inc., scientists from various countries are cooperating in research on tropical health problems. So far, they have probably devoted more attention to malaria than to any other single

disease, but under an International Cooperation Administration contract they are now conducting greatly expanded programs for the investigation of schistosomiasis and trypanosomiasis.

Dr. Robert S. Bray, an Australian protozoologist on the staff of the institute, attracted wide attention by his success in establishing the four principal human strains of malaria in chimpanzees. He and some of his colleagues have also conducted a series of field studies on the susceptibility of West Africans to different strains of malaria and on the effect of various drugs in controlling and preventing infection.

The plant of the institute includes a large, well-equipped laboratory building, three residential houses for the staff, and a guest house for visiting investigators. In addition, a small station is being constructed in the hill country, a little over 100 miles away, for field work.

Originally the institute was supported principally by contributions from industrial firms, but now it derives part of its income from other sources. In addition to the International Cooperation Administration, the National Institute of Allergy and Infectious Diseases and the World Health Organization recently gave assistance to its program in the form of grants for special purposes.

To facilitate long-range planning at the institute, by providing a fund which can be held in reserve or spent as needed, The Rockefeller Foundation has made an outright grant of \$100,000 to the American Foundation for Tropical Medicine, Inc., New York.

#### OTHER GRANTS

University of São Paulo, Brazil: research in clinical medicine, under the direction of Professor A. B. de Ulhoa Cintra; \$18,000;

Cornell University, Ithaca, New York: a series of symposia on finer

anatomy held in connection with the VII International Congress of Anatomy during April, 1960; \$7,500;

Dr. Edward H. Hon, Department of Obstetrics and Gynecology, School of Medicine, Yale University, New Haven, Connecticut: to develop and conduct biophysical research in the Department of Obstetrics, University of Sydney, Australia; \$5,017;

Dr. Jan Oszacki, docent and acting head, II Surgical Clinic, Academy of Medicine, Cracow, Poland: to visit centers of cardiac surgery in the United States and Great Britain; \$3,750;

University College, Ibadan, Nigeria: expenses of members of the Department of Medicine in connection with collaborative work in cardiovascular research with other African medical schools; 900 West African pounds (about \$2,570);

Dr. George E. Burch, Henderson Professor of Medicine, School of Medicine, Tulane University of Louisiana, New Orleans: to visit medical institutions in Africa and the Middle East to observe particularly diseases of the cardiovascular system, and to attend the Vectorcardiography Symposium in Wroclaw, Poland; \$1,650;

Dr. Leon Israel Taft, hematologist, Department of Pathology, Royal Children's Hospital, Melbourne, Australia: to visit pediatric hematological centers in the United States; \$1,500;

Dr. Serafin V. Pose, assistant professor of physiology, Faculty of Medicine, University of the Republic, Montevideo, Uruguay: to conduct research in obstetrical physiology at Western Reserve University, Cleveland, Ohio; \$1,200;

Owen S. Hames, radiological physicist, Auckland Hospital, New Zealand: to observe physics departments and dosimetry and treatment planning in supervoltage therapy at radiological physics centers while in the United States and Canada; \$400.

## The Biological Basis of Behavior

UNIVERSITY OF PISA

RESEARCH IN NEUROPHYSIOLOGY

For the past few years research in physiology at the University of Pisa has been centered on studies of the reticular system, the cerebellum, and the relationships between the thalamus and the cerebral cortex. To enlarge the research program, Professor Giuseppe Moruzzi, head of the Institute of Physiology, is introducing behavioral studies in physiological psychology, to be housed in a new laboratory at the institute.

The projected studies will combine the techniques of neurosurgery and neurophysiology with procedures for training animals to respond to a given stimulus. After the animal's response has been established, the changes in habitual reactions when neural circuits are interrupted or stimulated will be studied.

The staff at the institute will continue the investigation of the reticular system and related areas. This system governs such functions as respiration and circulation; Professor Moruzzi has discovered that impulses arising in this area also control the level of sleep, arousal, and consciousness. Through more intensive investigation the scientists hope to find out whether the reticular system may in addition play a role in the process of conditioned learning.

Grants from the United States Air Force and the Italian Research Council support the major part of the research on the project. A Rockefeller Foundation appropriation of \$55,000, available over a five-year period, will help purchase and maintain equipment essential to the behavior studies laboratory.



## UNIVERSITY OF OXFORD

## BIOCHEMICAL RESEARCH ON MENTAL ILLNESS

Almost complete obscurity surrounds the nature, causes, and treatment of some of the more important kinds of mental illness, yet one-half of all hospital beds are occupied by the mentally ill, and three out of every hundred children born can expect to become mental patients for some period of their lives. The solution of this grave problem is the object of many lines of research, one of which indicates that mental disease, and particularly schizophrenia, may be related to abnormal chemical factors.

The British Medical Research Council has recently established a research group to carry out a large-scale and intensive investigation in this challenging field under the general supervision of Sir George Pickering, Regius Professor of Medicine at the University of Oxford. The program is under the immediate direction of Dr. Ian Bush, internationally known authority on partition chromatography—a method for separating and isolating single compounds from mixtures of compounds.

Schizophrenics at a mental hospital near Oxford and normal volunteers are to be kept on a standard diet of known composition with known drug intake. Their body fluids will then be analyzed by electrophoresis and chromatography. Any unusual substances found are to be subjected to biological and pharmacological study, and patients of special interest will be examined at the metabolic ward of the Institute of Psychiatry of the University of London.

In 1955 a Foundation grant of \$156,000 provided equipment and facilities for Sir George Pickering's research. In 1959 a five-year grant of \$41,000 was made to the University of Oxford to help in the search for biochemical abnormalities which may be associated with mental disease.

## AMERICAN UNIVERSITY OF BEIRUT

## RESEARCH IN NEUROPHYSIOLOGY

As part of the development of graduate medical education at the American University of Beirut, Lebanon, the Medical School is planning a research program in neurophysiology. The work will be directed by Dr. Suhayl J. Jabbur, who is presently a Rockefeller Foundation Fellow at the University of Washington. His research there already has helped produce original work on pyramidal tract and cortical relationships. When he returns to the American University to take charge of neurophysiological research, Dr. Jabbur will continue his studies on the motor cortical influence on afferent transmission through sensory nuclei.

The development of the program will be helped by a \$33,000 grant, available through June, 1962, from The Rockefeller Foundation to the American University of Beirut. Most of the appropriation will be used for the purchase, in the United States, of equipment essential to the proposed research.

## RUTGERS, THE STATE UNIVERSITY

## PSYCHOBIOLOGICAL STUDIES OF ANIMAL BEHAVIOR

Research on the apparently instinctive behavior patterns of animals has accounted for much of the progress that has been made in the science of animal behavior in the past two decades. In general there have been two theoretical approaches to the subject of stereotyped behavior, one stressing its "innate" or genetically determined nature, the other emphasizing the learning that may be involved.

In recent years, scientists preoccupied with the role of learning have begun to use quantitative analytic techniques to evaluate the theories of the genetic school. Dr. Daniel S. Lehrman of Rutgers is one of the leaders in this movement

in America. Dr. Lehrman and his associates are conducting laboratory research on the reproductive cycle of the ring dove in an effort to learn more about what happens in the birds, psychologically and biologically, when they seem to be acting instinctively.

The work is far from complete, but the data gathered thus far indicate that reproductive behavior is not entirely the expression of a preformed neural pattern but includes a regular set of interactions between the parents and between them and their offspring, each of which acts as a stimulus for setting off the next member of the series. At many if not at all points the process of learning may enter in a variety of subtle ways.

To assist with the costs of expanding the program under Professor Lehrman's direction, the Foundation has appropriated \$30,000 to Rutgers, payable after the university secures \$58,000 for the same purpose from other sources.

#### KAROLINSKA INSTITUTE

#### RESEARCH IN NEUROPHYSIOLOGY

Professor Ragnar Granit and his colleagues at the Nobel Institute for Neurophysiology, Karolinska Institute, Stockholm, Sweden, have in the past few years been making a valuable contribution to the training of young investigators who come from many different parts of the world to study at their laboratory. They are now expanding the facilities of the laboratory for their own research and to improve accommodations for visiting students.

The work of the laboratory is concentrated on the electrical activity of the nervous system and specialized sense organs. Research has been done on the physicochemistry of vertebrate nerve membranes; the propagation and transmission of nerve impulses; the electrophysiology of vision;

the regulation of blood flow in the brain; and the maintenance of motor control and of the internal environment.

To meet some of the costs of new equipment and of research and training, the Foundation in 1959 made a five-year grant of \$30,000 to the institute. A small portion of the funds will be used for travel expenses of junior Swedish investigators from Professor Granit's group to enable them to attend meetings and visit other laboratories.

#### UNIVERSITY OF COPENHAGEN

##### EXPERIMENTAL PHYSIOLOGY

A personal professorship in zoophysiology at the University of Copenhagen, Denmark, was awarded to Dr. Torkel Weis-Fogh in 1958. During the previous four years Dr. Weis-Fogh had been carrying on in Cambridge, England, an important series of studies on the physiology of insect flight. These investigations will now be continued in the laboratory recently converted for his use at the Institute of Physiology at the university. Among the topics to be investigated is the chemistry of special rubber-like proteins found in the wing-hinges of most insects. It is hoped that an analysis of these proteins, present in nearly pure form in certain tendons of dragonflies and damsel flies, will help in the understanding of arthropod cuticle structure and of the physicochemical behavior of other connective tissue.

The major part of the \$23,000 grant appropriated to the University of Copenhagen by The Rockefeller Foundation in 1959 will be used for equipment and materials essential to the proposed research in physiology.

##### OTHER GRANTS

Institute of Biology and Experimental Medicine, Buenos Aires, Argentina: research in physiology, under the direction of Dr. Bernardo A. Houssay; \$15,000;

University of Bahia, Faculty of Medicine, Salvador, Brazil: research in physiology in the Laboratory of Physiology, under the direction of Professor Jorge A. Novis; \$10,000;

Kyoto University, Japan: research in physiology in the Department of Physiology, Faculty of Medicine, under the direction of Professor Takuzo Otani; \$10,000;

Tokyo Medical and Dental University, Japan: research in the Department of Physiology, under the direction of Dr. Susumu Hagiwara and Dr. Yasuji Katsuki; \$10,000;

Australian National University, Canberra: research equipment and supplies for use in the Department of Physiology, John Curtin School of Medical Research; \$10,000;

University of the Andes, Bogotá, Colombia: research expenses of Dr. M. Dale Arvey, visiting research professor, Department of Biology; \$9,000;

University of Pisa, Italy: equipment for research in animal behavior, by Professor Floriano Papi, Institute of Zoology and Comparative Anatomy; \$6,200;

University of Turin, Italy: equipment for research in animal behavior, under the direction of Professor Leo Pardi, Institute of Zoology; \$6,200;

University of Rio Grande do Sul, Pôrto Alegre, Brazil: research in neurohistology, under the direction of Dr. Paolo Contu, Institute of Anatomy, Faculty of Medicine; \$5,700;

University of Arkansas, Fayetteville: research on the chemistry of the nervous system, under the direction of Dr. William K. Jordan, Department of Neurology, School of Medicine; \$5,000;

Juntendo University, Tokyo, Japan: research on the physiology of muscle contraction, under the direction of Dr. Hidenobu Mashima, Department of Physiology; \$5,000;

University of the Republic, Montevideo, Uruguay: research in neurophysiology in the Department of Physiology; \$5,000;

Dr. Meliha Terzioglu, professor of physiology, University of Istan-

bul, Turkey: to visit physiology laboratories in the United States and Latin America, and to attend the Physiological Congress in Buenos Aires, Argentina; \$4,650;

Dr. Peter R. Morrison, associate professor of zoology and physiology, University of Wisconsin, Madison: to study the physiology of native wild mammals in South America; \$2,920;

Dr. Maurice Edward Krahl, professor of physiology, University of Chicago, Illinois: to serve as visiting professor in the Institute of Experimental Physiology, Faculty of Medicine, University of Rio Grande do Sul, Pôrto Alegre, Brazil; \$1,000;

Professor Jerzy Kaulbersz, Department of Physiology, Academy of Medicine, Cracow, Poland: supplement to an earlier grant in aid for additional expenses of visits to centers of research in physiology in the United States and Canada; \$150.

## General Biology

### UNIVERSITY OF PENNSYLVANIA

#### DIVISION OF BIOLOGY

As part of a major redevelopment program concerned with strengthening its facilities and resources, the University of Pennsylvania in 1957 consolidated work in botany, microbiology, and zoology into a combined Division of Biology under the chairmanship of Professor David R. Goddard. The interests of division staff members, who now number 24, embrace all the important branches of biology, with special emphasis being given to developmental biology, genetics, including its biochemical and immunological phases, experimental and mathematical study of the evolution of populations, and cellular biology.

The Division of Biology has close working relationships with the basic science departments of the Medical School, and with the Wistar Institute of Anatomy and

**Biology.** Their cooperative endeavors are now being facilitated by the construction of a central building that will bring together under one roof the Division of Biology, the departments of physiology, microbiology, experimental surgery, and public health of the Medical School, and a section of the Eldridge Reeves Johnson Foundation for Medical Physics, whose work on the biophysical aspects of enzyme reactions in living cells complements the studies of the Division of Biology on the cellular physiology of plants and animals.

The total cost of the new University of Pennsylvania building is estimated at \$5,400,000. To the amounts contributed by the Longwood Foundation, the National Institutes of Health, and the university itself, The Rockefeller Foundation added \$430,000 in 1959.

#### REED COLLEGE

##### RESEARCH IN BIOLOGY AND BIOCHEMISTRY

Within ten years of its establishment in 1913, Reed College in Portland, Oregon, had earned a distinguished reputation for its well-developed program in the sciences and for its production of scientists. By attracting a first-class faculty, and by affording every inducement to excellence in scientific research possible to a small college, Reed has consistently maintained a brilliant record through the ensuing years. A current program of expansion, necessitated by the demands of modern work in the biological sciences, will provide new research laboratories, more teaching space, and additional staff for the Departments of Biology and Chemistry.

The members of the Department of Biology, headed by Professor Lewis H. Kleinholz, are engaged in individual researches that include advanced studies in neurosecretion and invertebrate endocrinology; physiological work on en-

zymes of higher plants; investigations of growth and differentiation in amphibia, and of tumor formation in higher forms; and the genetics of pigment formation in bacteria. To facilitate these and other current investigations, and to make possible the initiation of new ones, the college is constructing a new biology building, now nearing completion.

The Department of Chemistry, which is also chiefly concerned with problems of biological interest, has a cobalt bomb and small pickle barrel reactor for radiation studies. Dr. Arthur H. Livermore, chairman of the department, is especially interested in the biosynthesis of sulphur compounds, and his colleagues are working on the synthesis of bacterial pigments, the kinetics of ribonuclease reactions, and the determination of amino acid sequences in protein molecules. Ten years ago a well-equipped chemistry building was constructed and a new wing is now being added.

Several of the research projects at the college are being assisted by grants from government agencies. The Rockefeller Foundation is joining with the National Institutes of Health, private individuals, corporations, and other foundations to provide the funds required for the present expansion program with an outright grant of \$250,000.

#### COLUMBIA UNIVERSITY

#### LAMONT GEOLOGICAL OBSERVATORY

Oceanography is concerned with the structure of the ocean basins, the character and movement of the waters within them, and the habits and history of the living things which have made these waters their home. It has made crucial contributions to man's theoretical understanding of the origin and development of the present form of the earth and the evolution of life, as well as to the practical art of navigation and the utilization of natural resources. But study of the ocean has never been more urgent than it



is today, now that society recognizes the importance of the sea as a vast mineral reserve and potential source of food and is confronted with the problems of underwater navigation, disposal of atomic waste, and other considerations of a rapidly advancing technology.

One of the three important institutions in the United States devoted to the study of oceanography is now the Lamont Geological Observatory of Columbia University, which was founded as recently as 1949 with the gift of the 100-acre Lamont estate on the Palisades and a modest endowment. Its director, Dr. Maurice Ewing, has developed new methods for studying the rocky substructure and the overlying layer of sediment at the bottom of the sea and formulated provocative theories on the causes of periodic glaciation and the events leading to the present form of the earth's crust.

The observatory first received assistance from The Rockefeller Foundation in 1954, when a \$90,000 appropriation established a section on marine biology. In 1957 the Foundation provided \$200,000 as an outright grant toward endowment of the Lamont Geological Observatory and an additional \$100,000 for the research in marine biology. A new appropriation of \$200,000 to Columbia University will be allotted to the observatory's endowment during a three-year period, payable as the university secures matching amounts from other sources.

#### MARINE BIOLOGICAL LABORATORY

Since its establishment in 1888, the Marine Biological Laboratory at Woods Hole, Massachusetts, has been a center for summer work on the biology of marine organisms. From a small operation serving a few investigators, the laboratory has grown steadily over the years so that it now accommodates approximately 450 qualified scientists

and students who come to the laboratory each summer from major universities in the United States and abroad. Besides providing excellent facilities for research, the laboratory offers students the rare opportunity of associating informally with leading scientists in almost every branch of modern biology.

Another much-used facility of the laboratory is its library, which contains one of the finest collections of marine biological literature in the world and is open for use throughout the year. As the capital plant of the laboratory has become more fully developed during the last few years, the administration has encouraged the use of more of its facilities on a year-round basis. A group of 25 workers is now permanently established there, and a new research building is to be kept open during the year to allow visiting investigators to employ specialized equipment, such as that needed for work with radioisotopes.

Since 1922 The Rockefeller Foundation has appropriated \$1,788,400 for the general support, endowment, buildings, and equipment of the laboratory. In 1959 the Foundation continued its assistance with a \$100,000 grant, available over the next five years, for general support of the Marine Biological Laboratory.

#### NAGOYA NATIONAL UNIVERSITY

#### EXPERIMENTAL BIOLOGY

Widely regarded as one of Japan's leading embryologists, Dr. Tuneo Yamada has been conducting research in experimental embryology at the Biological Institute of Nagoya National University. Associated with him at the institute are several promising young investigators, whose work concerns the fundamental chemical substances controlling the formation of cells and determining their role in the structure and function in the body.

Recent research conducted by Dr. Yamada and his staff has shown that certain embryonic cells, normally giving rise to epidermal cells in tissue culture, form structures such as hindbrain, spinal cord, and tail somites under the influence of ribonucleoprotein from guinea pig kidney, while ribonucleoprotein from guinea pig liver induces formation of forebrain, eye, and nose. These effects were found to reside primarily in the protein rather than in the nucleic acid portion of the ribonucleoprotein.

The \$40,000 grant made by The Rockefeller Foundation to Nagoya National University in 1959 will be used to purchase equipment and materials needed to further research in the Biological Institute as well as in the other departments of the university's Faculty of Science.

#### OTHER GRANTS

University of London, England: equipment for the Department of Botany, Imperial College of Science and Technology; £5,000 (about \$14,500) payable when the university secures an equal amount from other sources for the same purpose;

University College of North Wales, Bangor: equipment and journals for use in the Department of Zoology; \$13,500 for a three-year period;

Stanford University, Palo Alto, California: preliminary studies of instrumentation for a cytochemical-microscope-television system as a prototype for investigations in planetary biology, under the direction of Dr. Joshua Lederberg; \$10,000;

Tokyo Metropolitan University, Japan: research in cytology in the Department of Biology, under the direction of Dr. Katsuma Dan; \$10,000;

Botanical Garden of Rio de Janeiro, Ministry of Agriculture, Brazil: research in plant physiology, under the direction of Dr. Luiz G. Labouriau; \$9,000;

University of the Andes, Bogotá, Colombia:

Research in cell physiology in the Department of Biology; \$8,400;

Research in biology, under the direction of Professor Francis Robert Hunter; \$6,000;

University of Rome, Italy: equipment for use in the Institute of Zoology, under the direction of Professor Pasquale Pasquini; \$8,200;

University of Bari, Italy: research in experimental embryology and histology, under the direction of Professor Rodolfo Amprino; 3,000,000 Italian lire and \$3,000 (about \$8,000) for a three-year period;

University of Tokyo, Japan: research in medical mycology in the Department of Microbiology, Faculty of Medicine; \$7,500;

University of Chile, Santiago: a cooperative research project in cytochemistry at the Institute of Biology, directed by Professor Gabriel Gasic; \$6,700;

University of Parma, Italy: research in plant physiology, under the direction of Professor Fausto Lona, Institute of Botany; \$6,500;

Kyoto University, Japan: laboratory equipment and supplies, and expenses of research in the Medical School under the direction of Dr. Shozo Ishii; \$5,100;

University of São Paulo, Brazil: research in organic chemistry in the Polytechnic School, under the direction of Professor Marcello de Moura Campos; \$4,000;

Dr. N. P. Badenhuizen, Department of Botany, University of the Witwatersrand, Johannesburg, South Africa: to visit botanical and biochemical centers in the United States and Canada; \$3,850;

Japan Monkey Center, Inuyama: translation and publication of research on the ecology of the Japanese monkey, under the supervision of Dr. Denzaburo Miyadi, professor of zoology, Kyoto University, and managing director, Japan Monkey Center; \$3,400;

Dr. Erasmo Marre, Department of Botany, University of Milan, Italy: to visit departments of plant physiology and plant biochemistry in the United States; \$3,100;

Professor Raffaele Ciferri, Institute of Botany, University of Pavia, Italy: to visit centers of research in medical mycology in the United States; \$2,850;

Polish Academy of Sciences, Warsaw:

Equipment for use in the Office of Bibliography and Scientific Documentation; \$4,700;

To rent research facilities for a two-year period at the Naples Zoological Station, Italy; \$2,500;

Institute of Science, Bombay, India: research on cytology, under the direction of Dr. N. B. Inamdar, Department of Zoology; \$2,000;

Dr. Valentine Jackson Chapman, professor of botany, University of Auckland, New Zealand: to visit marine biology centers in the United States; \$1,900;

Dr. P. J. Deoras, assistant director, Department of Entomology, Haffkine Institute, Bombay, India: to visit scientific centers in North America; \$1,800;

University College of Wales, Aberystwyth: research in plant physiology, under the direction of Professor P. F. Wareing, Department of Botany; \$1,700;

Dr. Hans Klaus Kaiser, senior physician, Internal Medicine Clinic, Rudolf-Virchow Hospital and Free University of Berlin, Germany: to accept a National Institutes of Health training fellowship in microbiology at the Johns Hopkins Medical School, Baltimore, Maryland; \$1,650;

Dr. Mario H. Burgos, director, Institute of Histology and Embryology, Faculty of Medical Sciences, National University of Cuyo, Mendoza, Argentina: to attend the Gordon Conference on Cell Structure and Function and to observe medical research and the organization of the basic sciences in medical schools in Latin America and the United States; \$830;

Dr. Nezihe Oztan, instructor, Institute of Zoology, University of Istanbul, Turkey: to study methods of research in comparative endocrinology at laboratories while in England; \$400;

Fund for grants of amounts not exceeding \$500 for allocation under the supervision of the Foundation's Director for Medical and Natural Sciences; \$5,000.

## Genetics

### RESEARCH IN HUMAN GENETICS IN BRAZIL

Since 1940, when pioneer research in pure genetics was begun at the University of São Paulo by the late Andre Dreyfus, Brazilian scientists have won international recognition for their studies, particularly in the field of *Drosophila* population genetics. More recently, increasing attention has been given to human genetics, with the University of São Paulo taking the initiative in offering the first course in human genetics to freshman medical students and in introducing a broad program of research in the field.

Brazilian geneticists, who have for a number of years cooperated closely in their studies of *Drosophila* population genetics, have now formulated a coordinated program of research in human genetics that will take advantage of various unique local study situations and avoid unnecessary duplication of effort. Scientists at the Universities of Bahia, Paraná, Rio Grande do Sul, and São Paulo will participate in the joint program, which The Rockefeller Foundation is assisting with grants totaling \$120,250.

The planning of the national research program will be the responsibility primarily of the Committee on Human Genetics of the Brazilian Society of Genetics. To enable the cooperating scientists to meet periodically, and to defray some of the expenses of foreign advisors invited to Brazil and of publications arising from the work, the Foundation has appropriated \$12,000 to the Brazilian Campaign for the Improvement of Higher Education Personnel for use by the Committee on Human Genetics.

The University of São Paulo is strengthening its library resources so that research literature on human genetics as well as on *Drosophila* and radiation genetics can be made available to investigators throughout Brazil. To help the university purchase library materials and increase its support of the researches in human genetics led by Dr. O. Frotapessoa and Dr. P. H. Saldanha, the Foundation has appropriated \$43,400.

One of the human genetics research projects at the University of Paraná, Curitiba, that will be assisted by a \$20,000 grant from the Foundation is a study of consanguineous marriages in several Brazilian states being conducted by Dr. N. Freire-Maia.

In connection with the collaborative program, the University of Rio Grande do Sul, Pôrto Alegre, is establishing a blood serum bank to which all the participating scientists will have access. A grant of \$32,650 from the Foundation will help the university meet some of the expenses of the bank, of visiting specialists, principally anthropologists, and of the field research program on blood groups of southern Indian tribes directed by Professor F. M. Salzano.

The University of Bahia, in Salvador, where studies of several Indian tribes, including one in an isolated region of the Amazon Basin, are under way, has received a \$12,200 grant for research and field studies. Professor Roberto Santos and Dr. Cora Pedreira are directing the program in human genetics.

#### UNIVERSITY OF WISCONSIN

#### MEDICAL GENETICS DEPARTMENT

With the help of a Rockefeller Foundation appropriation in 1956, a program of teaching and research in medical genetics was established in the Medical School of the University of Wisconsin. More recently, medical genetics has

been given full departmental status under the direction of Professor James Crow, formerly professor of zoology and genetics in the Medical School. Dr. Newton Morton, a statistical geneticist in the Department of Anatomy, is the first staff member to be appointed; Dr. Crow hopes shortly to add to the new department a qualified pediatrician and a person trained in the field of genetics and histocompatibility.

Some of the problems in genetics confronting the department, as well as other centers of research in medical genetics, are those posed by the increasing industrial and military use of atomic energy and those found in the genetic background of familiar conditions such as hardening of the arteries, diabetes, and nervous or mental diseases. Other challenging questions needing investigation include genetic variations in lower organisms which condition the fluctuation of virulence observed in influenza epidemics or the development of resistance to antibiotics.

The Department of Medical Genetics will meet some of its initial needs in organization and development with the aid of an outright grant of \$100,000 made by The Rockefeller Foundation in 1959.

#### UNIVERSITY OF TEXAS

#### GENETICS RESEARCH

The excellent work of a small group of geneticists has long been outstanding among research programs at the University of Texas. Particularly noted for research on *Drosophila*, the genetics department has what may be the largest collection of this fruit fly in the world. To analyze the relationship between specific modifications of genes and the evolution and survival of new species, the researchers combine laboratory breeding experiments with field studies covering the western North American desert, the Caribbean, and the Marshall Islands. Cytological experiments on



*Drosophila*, the mold *Neurospora*, and certain higher plants include studies of the effect of chemical and physical events on mutation, differences between normal and malignant cells, and various effects of anti-tumor agents.

Plans are under way for greatly increased local support of the development of research throughout the university. A terminal grant of \$40,000 made to the university in 1959 brings to \$310,520 the amount given by the Foundation for genetics research in Texas since 1936.

#### JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE

##### GENETIC EFFECTS OF CONSANGUINITY

Although the high rate of consanguineous marriage in Japan provides unusual opportunities for research in genetics, large-scale studies have been undertaken only recently. One of these is being carried on in Shizuoka by the Subcommittee on Consanguinity Investigation of the Science Council of Japan with the cooperation of about 40 Japanese geneticists and physicians.

The Shizuoka study involves surveys of entire schools, review of the family records kept by municipalities, direct interviews, and elaborate physical and mental examinations. Most of the information collected to date requires further analysis and evaluation, but much valuable data are already in hand on the prevalence of abnormalities of possible genetic origin, and a considerable amount of anthropometric, psychometric, and clinical data on Japanese children has been amassed. The study is also expected to yield important information, not now available, concerning comparative death rates and the effect of consanguinity on sterility and spontaneous abortion.

To help finance the genetic studies in Shizuoka, The Rockefeller Foundation has appropriated \$38,000 to the Japan Society for the Promotion of Science for the use of

the Subcommittee on Consanguinity Investigation. Members of the subcommittee are cooperating closely with scientists conducting a similar study in Hiroshima and Nagasaki under the auspices of the Atomic Bomb Casualty Commission.

UNIVERSITY OF LONDON

LONDON HOSPITAL MEDICAL COLLEGE

Since Sir A. E. Garrod's work on what he termed in-born errors of metabolism early in this century, the field of biochemical genetics has become one of the most promising avenues toward better understanding both of human genetics and of the ways by which metabolic processes are carried on in the organism. It is now recognized that hereditary biochemical variation in human beings is almost universal, and quite apart from such significant but normal individual chemical differences as the blood groups, the list of genetically controlled abnormalities associated with chemical variation is growing rapidly.

Important contributions to the field of human biochemical genetics are being made by Dr. H. Harris and his group at the London Hospital Medical College. Dr. Harris and his colleagues have developed active research programs on inherited variations in amino acid metabolism, and plasma protein and enzyme variation, the genetics of cystinuria, a fairly common hereditary condition, and hereditary variation in the structure of the enzyme cholinesterase. The scientists have identified a new plasma protein not previously described that appears to be genetically determined, and discovered the excretion of cystathionine in a family of mental defectives who exhibit a new kind of error in amino acid metabolism of methionine.

To help support the studies of Dr. Harris and his co-workers during the next three years, The Rockefeller Foundation has appropriated £10,500 (about \$30,000) to the

London Hospital Medical College of the University of London, England. A previous grant was made for their work in 1956.

#### UNIVERSITY OF NAPLES

##### RESEARCH IN GENETICS

The chair of genetics at the University of Naples, Italy, was established in 1946. Since then, under the leadership of Professor Giuseppe Montalenti, the department has increased its course offerings for science and medical students, equipped its laboratories, and launched a successful research program. Research conducted up to now has emphasized both *Drosophila* and human genetics. In the latter field, microcythemia, a hereditary anemia relatively common in the Italian population, is being studied along with serum proteins such as the haptoglobins and various abnormal hemoglobins.

The research program in genetics at the University of Naples will be assisted by a Rockefeller Foundation grant of 16,000,000 Italian lire (about \$26,400), available during a two-year period.

#### OTHER GRANTS

University of Milan, Italy: research in genetics in the Institute of Genetics, under the direction of Professor Claudio Barigozzi; \$13,000 for a three-year period;

University of Adelaide, Australia: research on "kuru," a neurological disease occurring in New Guinea, under the direction of Professor H. N. Robson and Professor J. H. Bennett; \$10,000;

University of Brazil, Faculty of Philosophy, Rio de Janeiro: research in biochemical genetics, under the direction of Dr. Chana Malogolowkin, in the Department of Chemistry directed by Dr. J. C. Cardoso; \$10,000;

University of Turin, Italy: research in human genetics, under the direction of Acting Professor Ruggero Ceppellini, director, Department of Medical Genetics; \$10,000;

Government Hospital, Tel Hashomer, Israel: research on the genetics of a biochemical abnormality in various ethnic groups, under the direction of Dr. Chaim Sheba; \$9,500;

University of Minas Gerais, Belo Horizonte, Brazil: research in cytology and genetics in the Institute of Biology, Faculty of Philosophy; \$9,500;

Tokyo Medical and Dental University, Japan:

Research on the genetic effects of radiation, under the direction of Dr. Katumi Tanaka, Department of Human Genetics; \$7,000;

Research on genetics and blood groups, under the direction of Dr. Tanamoto Furuhashi, professor of legal medicine; \$4,000;

Kyushu University, Fukuoka, Japan: research on the genetics of isolated populations, under the direction of Dr. Toshiyuki Yanase; \$4,100;

Dr. Tsutomu Sugahara, assistant head, Department of Induced Mutation, National Institute of Genetics, Misima, Japan: to visit scientific centers in North America; \$3,450;

University of Naples, Italy: a small symposium on human biochemical genetics in relation to the problem of gene action, held early in 1959; \$3,000;

University of Manitoba, Winnipeg, Canada: research in genetics at the University of Wisconsin, Madison, by Dr. Irene Uchida, head, section of genetics, Department of Pediatrics; \$2,100;

Columbia University, New York: research in genetics, under the direction of Dr. Raymond Appleyard, in the Department of Zoology headed by Professor Francis Ryan; \$1,800;

Dr. Adrienne Ficq, Laboratory of Animal Morphology, University of Brussels, Belgium: to visit the Department of General Biology, University of São Paulo, Brazil, in connection with studies of cell physiology in *Rhynchosciara*; \$1,450;

American Museum of Natural History, New York: to invite Dr. Björn Kurtén, assistant professor of paleontology, University of Helsinki, Finland, to visit laboratories of genetics and zoology in the United States; \$1,200;

Dr. Friedrich Ehrendorfer, assistant professor, Botanical Institute, University of Vienna, Austria, and scientific officer, Department of Botany, Viennese Museum of Natural History: to conduct collaborative research at the University of California, Davis, and to attend the International Botanical Congress in Montreal, Canada; \$1,000;

Dr. Edmundo Raul Covarrubias Berrios, assistant, Department of Biology, Juan Noé Institute, Faculty of Medicine, University of Chile, Santiago: to attend a course in human genetics at the University of São Paulo, Brazil; \$950;

Dr. Henry Bernard Davis Kettlewell, Nuffield Fellow in Genetical Research, Genetics Laboratory, Department of Zoology, University of Oxford, England: to observe work in ecological, and particularly entomological, genetics while in the United States; \$800.

## Biochemistry

### STANFORD UNIVERSITY

#### NATURAL PRODUCT CHEMISTRY

Natural product chemistry, the examination of naturally occurring plants and biological products to determine the chemical structure of their active biological agents, has become increasingly important in recent years. Among its achievements have been the discovery of an inexpensive method of mass producing cortisone from yams in Mexico and the subsequent determination of the compound's chemical structure, and the development of hypotensive and tranquilizing drugs from *Rauwolfia serpentina*. It has also become apparent that chemical studies of plant products

offer an important method for differentiating the biogenetic pattern of those species indistinguishable by conventional taxonomic or botanical criteria.

A program in natural product chemistry was originated in 1952 by Dr. Carl Djerassi at Wayne State University, under which postdoctoral fellows from abroad first studied in his laboratory and then returned to their own countries to collect indigenous plant samples, begin analyses in the field, and send the results to Dr. Djerassi's laboratory for chemical examinations requiring more highly complicated techniques and equipment. The Rockefeller Foundation supported this program, under which 68 fellows from 21 countries, principally in Latin America and Asia, were trained, with appropriations totaling \$40,000 from 1953 to 1957.

In the last year or so, since he has been at Stanford University, Dr. Djerassi has expanded his program to provide additional experience in the field for the fellows and to establish new centers of investigation abroad. As part of their field work the fellows will now also instruct local personnel in methods of collection and analysis. The new program will be assisted by a \$125,500 Rockefeller Foundation appropriation to Stanford.

#### UNIVERSITY OF PARANÁ

#### RESEARCH IN CELL PHYSIOLOGY

To plan its new Institute of Biochemistry, the University of Paraná, Brazil, several years ago called Professor Metry Bacila from the State of Paraná's Institute of Biology and Technological Researches (IBPT). Since then, Professor Bacila has been working actively to bring the plan to fruition. At present, the State of Paraná has agreed to construct a building large enough to permit future expansion of the institute, the university has provided it with an operating budget, The Rockefeller Foundation has appropriated

funds for major specialized equipment, and Professor Bacila has launched a general research program.

The general research program of the institute centers on the physiology of microorganisms, especially the function and composition of the respiration cycle of intact cells and mitochondria. Techniques of enzyme chemistry and cytochemistry are being extensively utilized, and comprehensive studies carried out, for example, on the metabolism of pathogenic yeasts. With the help of guest scientists from other institutions, an intensive six-week course on the physiology of microorganisms has been given for the past three years.

The Rockefeller Foundation has appropriated \$72,000 to the institute, available during the three-year period beginning July 1, 1959, for equipment, supplies, and other expenses of research. Since 1952 the Foundation has made grants totaling \$40,000 to IBPT, the state organization, and a grant of \$60,000 to that organization is now current.

#### UNIVERSITY OF LONDON

#### HUMAN NUTRITION LABORATORY

The problem of protein malnutrition is particularly acute in underdeveloped countries because people in these areas receive a high proportion of their limited protein intake from plant sources, which frequently lack one or more essential amino acids and are thus generally inferior to animal proteins in biological value.

To find better sources of proteins among plants indigenous to these areas, the Human Nutrition Laboratory of the London School of Hygiene and Tropical Medicine, University of London, and the Human Nutrition Research Unit of the British Medical Research Council, have collected and prepared local foods for study of their protein characteristics. By experimentally producing in animals two of the severe types of protein malnutrition which occur in man,

these scientists have made it possible to assay various vegetable proteins for the prevention and cure of protein deficiency.

In the course of their experiments the biochemists have developed a technique for expressing in quantitative terms the protein values of foods consumed by man, which they are now using to establish requirements of the amino acids essential to growth and health. Studies are currently in progress on the supplementation of deficient diets with various vegetable protein sources, such as legumes, leaf proteins, and flour residues.

To aid the research of the Human Nutrition Laboratory, The Rockefeller Foundation has appropriated £24,000 (about \$69,000) to the London School of Hygiene and Tropical Medicine.

#### UNIVERSITY OF BIRMINGHAM

#### ORGANIC CHEMISTRY

With the close of World War II, the provincial universities of Britain entered a period of spectacular growth and change. One of the manifestations has been new construction. At the University of Birmingham, for example, a building program is in progress which is expected to cost close to £10,000,000. Of this amount, about £1,000,000 is being used for the enlargement and modernization of the chemistry laboratories.

Before his retirement in 1948, Sir Norman Haworth created at the University of Birmingham one of the strongest schools of carbohydrate chemistry in the world. His successor, Professor Maurice Stacey, has continued to develop the program and has also oriented part of the work in organic chemistry to meet the need for research on nucleic acids, on microbial chemistry, and on the chemistry of fluorine compounds.



At Birmingham in recent years Professor Stacey has been directing the research activities of a number of young team leaders who are interested in the structure and synthesis of enzymes involved in the metabolism of sugars, in the chemistry of the polysaccharides of human tissues in health and disease, and in the synthesis of various amino sugars. Other sections of the department are concerned with such widely diverse problems as the structure of volatile fluorochloro-hydrocarbons as possible noninflammable anesthetics, and the comparative biochemistry of adenine-containing nucleotides of microorganisms.

For additional equipment for research in organic chemistry, the Foundation has made a two-year grant of \$60,000 to the University of Birmingham.

#### UNIVERSITY OF LOUVAIN

#### LABORATORY OF PHYSIOLOGICAL CHEMISTRY

For research on enzymes and the part they play in the synthesis of proteins within a cell, Professor Christian de Duve and his associates at the University of Louvain, Belgium, have, in the past ten years, developed some greatly refined methods of cell particle fractionation. Their techniques of differential separation have revealed the existence of one enzyme, uricase, in a type of granule not previously described, and the distribution patterns of three other enzymes have been confirmed. With further research there is hope that new series of granules may be uncovered and made available for study.

This work is attracting considerable attention and support from scientific organizations both in Belgium and abroad. The more such data can be gathered, the more quickly may it be understood how a cell stores energy, makes enzymes, and converts atoms and simple molecules into the stuff of life.

The introduction of semi-automatic apparatus and the purchase of a Siemens electron microscope have facilitated the work of accumulating fraction samples and subjecting them to chemical and biological analysis. The university is doubling the space allotted to the laboratory and it will soon be possible for more technicians and equipment to be devoted to the work.

The Foundation has been contributing to the support of Professor de Duve's research since 1950. In 1959 an additional \$60,000 was made available for use over a four-year period.

UNIVERSITY OF LUCKNOW

DEPARTMENT OF BIOCHEMISTRY

The University of Lucknow is one of the leading centers for higher learning in the productive and populous Gangetic Plain of Northern India. For a number of years its Medical College has received substantial aid from The Rockefeller Foundation.

To assist in the development of better facilities for premedical training and for research and training in the biological sciences, the Foundation has appropriated 201,700 rupees (about \$42,800) for the cost of constructing teaching and research laboratories for the newly created Department of Biochemistry of the Science Faculty. As one of the few programs with departmental status in the science faculty of an Indian university, the new department is expected to play an important role in the development of biochemistry in India.

UNIVERSITY OF PADUA

INSTITUTE OF ORGANIC CHEMISTRY

A group of Italian scientists who are studying the structure and synthesis of biologically active compounds will be

aided by The Rockefeller Foundation through the next three years. The Foundation has appropriated \$38,000 to the University of Padua for use in the Institute of Organic Chemistry under the direction of Professor Silvio Bezzi.

Professor Bezzi, a skilled organic chemist and X-ray crystallographer, is a leader in his field. In addition to his academic posts, he is codirector, with Professor Giordano Giacomello of the University of Rome, of the Center for Studies in Structural Chemistry of the Italian National Research Council.

Research in the Institute of Organic Chemistry at Padua is proceeding along two general lines. One group of workers is using X-ray crystallographic analysis to investigate the structure of various compounds of biological interest, particularly those which contain sulfur in the molecule. Within the past year Professor Bezzi and this group have been extending their studies to include work on the detailed molecular architecture of amino acids and the simpler polypeptides. Another team, led by Dr. Ernesto Scoffone, is occupied with chemical studies of the structure of proteins and of the synthesis of polypeptides. Dr. Scoffone is spending the present year at the Rockefeller Institute, New York, on a Foundation fellowship.

#### INSTITUTE OF BIOCHEMICAL INVESTIGATIONS

Recently the Institute of Biochemical Investigations (Campomar Foundation) in Buenos Aires was moved from a small private villa to ample new quarters provided by the Ministry of Health. In a related development, its director, Dr. Luis F. Leloir, was named research professor of biochemistry at the University of Buenos Aires, to enable him to receive candidates for graduate degrees.

Dr. Leloir is one of the most distinguished biochemists in Latin America. He has worked at the institute since 1947,

developing a research program focused in general on intermediary carbohydrate metabolism. The program has attracted wide attention in Argentina and abroad, and for several years has been supported in part by grants from the United States Public Health Service.

Dr. Leloir has been honored in the United States as well as in his own country. Last year he received the first T. Duckett Jones Memorial Award of the Helen Hay Whitney Foundation in recognition of his work on a new enzyme believed to be responsible for the synthesis of glycogen, or animal starch, in mammals.

In support of the research program under Dr. Leloir's direction, the Foundation has appropriated \$30,000 to the Institute of Biochemical Investigations, for use during a two-year period.

#### KYOTO UNIVERSITY

#### RESEARCH IN BIOCHEMISTRY

After nearly ten years in the United States conducting research with such eminent scientists as Dr. Arthur Kornberg, 1959 Nobel Prize winner, Dr. Osamu Hayaishi was called upon to head the Department of Medical Chemistry at Kyoto University, Japan. Since his inauguration there in 1958, the number of investigators conducting experiments in the laboratory has increased by 14. The interest of the group has centered on investigations of enzymes, particularly those involved in the synthesis and degradation of B group vitamins and the metabolism of amino acids, proteins, and nucleic acids. Such research can be furthered considerably when conducted in a laboratory where work with radioisotopes can be safely carried on.

An isotope laboratory will be constructed in the Department of Medical Chemistry with the help of a three-year grant of \$30,000 made by The Rockefeller Foundation to

Kyoto University. The appropriation will also be used for equipment and supplies needed for continued research in biochemistry.

#### INDIAN INSTITUTE OF SCIENCE

#### BIOCHEMISTRY AND PHARMACOLOGY

Founded in 1911 to provide advanced technological training, the Indian Institute of Science in Bangalore has developed into one of the leading research centers in India, with a broad program in the physical and biological sciences and, more recently, the social sciences.

For research in the Departments of Biochemistry and Pharmacology, the Foundation has made a three-year grant of \$26,500 to the institute. The funds will be used primarily for the purchase of equipment and supplies for which foreign currency is needed.

#### UNIVERSITY OF TOKYO

#### INSTITUTE OF APPLIED MICROBIOLOGY

In the present-day attempt to increase world food crop production, the search for new plants which can convert atmospheric nitrogen into a form which will enrich the fertility of soils is becoming more and more the subject of scientific investigation. Such studies have been undertaken as part of the research program at the Institute of Applied Microbiology of the University of Tokyo. Professor Atsushi Watanabe, of the institute's staff, has collected 600 samples of blue-green algae in the Orient and South Seas regions and has isolated from them 12 species showing high nitrogen-fixing activity. Further experiments show that the application of nitrogen-fixing algae to paddy fields increases rice yields up to 20 per cent.

In 1959 the University of Tokyo received a \$23,000 grant from The Rockefeller Foundation for its research in microbiology. Most of the appropriation will be used to purchase a mass spectrometer, which will further research on nitrogen fixation and other studies being done at the Institute of Applied Microbiology.

#### UNIVERSITY OF VIENNA

#### INSTITUTE OF BIOCHEMISTRY

The first chair of biochemistry in an Austrian university was established in 1959 at the University of Vienna for Professor Hans Tuppy, internationally recognized for his contributions to knowledge of the structure of insulin and the pituitary hormone oxytocin.

At the Institute of Biochemistry Professor Tuppy plans to continue his analysis of cytochromes, a group of respiratory enzymes, in order to elucidate the relation between the structure of enzymes and their activity in the living organism. Investigations of abnormalities in enzyme function which result from induced mutations in strains of bacteria, and others related to human biochemical genetics are also planned by Professor Tuppy and his associates.

A Rockefeller Foundation grant of \$20,000 to the University of Vienna will be utilized during a two-year period for the purchase of research equipment and supplies for the Institute of Biochemistry.

#### OTHER GRANTS

University of Lund, Sweden: research on the synthesis of biologically active compounds, under the direction of Professor Gösta Ehrensvärd; \$15,000 for a three-year period;

American Institute of Nutrition: expenses of Asian scientists attending the Fifth International Congress on Nutrition; \$10,000;

Kanazawa University, Japan: research in the Department of Bio-

chemistry, Medical School, under the direction of Dr. Yasuyuki Takagi; \$10,000;

Toho University, Tokyo, Japan: research in neurochemistry in the Department of Physiology, School of Medicine, under the direction of Dr. Yasuzo Tsukada; \$10,000;

University of Tokyo, Japan:

Development of teaching in biochemistry, under the direction of Professor Norio Shimazono, professor of biochemistry and chairman, Department of Biochemistry, Faculty of Medicine; \$10,000;

Supplement to a previous grant in aid for additional expenses of equipment for research in the Department of Chemistry under the direction of Dr. Nobue Tamiya; \$16;

University of Toronto, Canada: research on phosphatides, under the direction of Dr. Erich Baer, Department of Synthetic Chemistry, Charles H. Best Institute; \$9,000;

University of Milan, Italy: equipment for use in research on plant physiology at the Institute of Botany; \$8,500;

Nagoya National University, Japan: research on the chemistry of bioluminescence, under the direction of Dr. Yoshimasa Hirata, Faculty of Science; \$8,000;

University of Bologna, Italy: equipment for use in the Institute of Biochemistry; \$7,200;

University of Adelaide, Australia: research in biochemistry, under the direction of Dr. Eric S. Holdsworth, reader in biochemistry; \$6,500;

University of Zagreb, Yugoslavia: research on the organic chemistry of biologically important compounds, under the direction of Professor Kresimir Balenovic, Institute of Chemistry; \$6,000;

University of San Marcos, Lima, Peru: research in cell metabolism at the Institute of Biochemistry and Nutrition, Faculty of Medicine, by Dr. Marino Villavicencio; \$5,340;

University of London, England: research in enzyme chemistry, under

the direction of Professor R. S. Nyholm, Department of Chemistry, University College; £1,800 (about \$5,200);

University of Munich, Germany: to appoint a visiting investigator in the Biochemical Institute directed by Professor Fedor Lynen; \$4,000;

Dr. Satimaru Seno, director, Department of Pathology, Medical School, Okayama University, Japan: to visit scientific centers in North America; \$4,000;

Osaka City University, Japan: equipment for research in brain chemistry in the Medical School; \$4,000;

Dr. Sinisa B. Bogdanović, professor of pharmacology, Faculty of Medicine, University of Belgrade, Yugoslavia: to visit centers of pharmacology, experimental biology, and medicine in the United States and Canada; \$3,700;

University of Aberdeen, Scotland: equipment for use in the Department of Biological Chemistry; \$3,000;

University of Oslo, Norway: equipment for use in the Institute of Biochemistry; \$2,400;

American Association for the Advancement of Science, Gordon Research Conferences, Washington, D.C.: travel expenses of European scientists participating in the 1960 Gordon Research Conference on proteins and nucleic acids; \$2,000;

Professor Enzo Leone, Institute of Applied Biochemistry, University of Sassari, Italy: to study in the Department of Biochemistry, New York University, New York, and to visit other laboratories of biochemistry in the United States; \$1,800;

University of Turku, Finland: research equipment for the Pharmacological Institute; \$1,700;

Dr. Aree Valyasevi, pediatrician, Siriraj Hospital and Medical School, Bangkok, Thailand: to receive field training at the Institute of Nutrition of Central America and Panama, Guatemala City, Guatemala; \$1,575;



University of Ghent, Belgium: research equipment for use in the Institute of Biochemistry; \$1,500;

Professor Michael Laskowski, Department of Biochemistry, School of Medicine, Marquette University, Milwaukee, Wisconsin: to visit research institutions in Poland; \$1,400;

Dr. Douglas R. D. Shaw, senior lecturer, Biochemistry Department, Faculty of Medicine, University of Otago, Dunedin, New Zealand: to visit biochemical laboratories and biochemistry teaching centers while in the United States; \$832;

Polish Academy of Sciences, Warsaw: to invite Dr. A. M. Michelson, Chemists Laboratory, Dublin, Ireland, to participate in teaching and research at the Institute of Biochemistry and Biophysics; \$500.

## Biophysics

### UNIVERSITY OF BUENOS AIRES

#### INSTITUTE OF GENERAL ANATOMY AND EMBRYOLOGY

At the Institute of General Anatomy and Embryology of the University of Buenos Aires, a group of experimental biologists conducting researches in cell chemistry, physiology, and ultrastructures will be assisted by a \$66,000 grant from The Rockefeller Foundation. Part of the appropriation, which is available during a three-year period, will be used for the purchase of a modern electron microscope.

Under the direction of Professors Eduardo DeRobertis and Roberto E. Mancini, institute scientists are carrying on investigations of the histochemical localization of phospholipids; the histophysiology of the adrenal cortex and the adrenal medulla; the localization, metabolism, and excretion of proteins and protein hormones; the relationships between the epithalamic complex and endocrine glands; experimental (chick) embryology; and electro- and neurophysiology.

Two members of the institute's research team are former Rockefeller Foundation Fellows, and the institute itself received a \$15,000 grant from the Foundation in 1957.

#### UNIVERSITY OF UPPSALA

#### INSTITUTE OF PHYSICS

Products of the radar age and of atomic physics, the new methods of electron spin and of nuclear magnetic resonance have given the scientist delicate new means of probing the structure of molecules. Using these techniques in their work on the structure of metalloenzyme complexes and of hemoglobin, a group of collaborating physicists, biologists, and chemists at the Institute of Physics of the University of Uppsala, Sweden, has assembled equipment which is among the best in Europe. The group, which is directed by Professor Kai Siegbahn, has found, however, that full utilization of the equipment is restricted by the lack of facilities for making determinations at very low temperatures.

For purchase of a cooling device, a liquid helium and hydrogen cryostat, The Rockefeller Foundation has appropriated \$21,000 to the University of Uppsala.

#### OTHER GRANTS

Karolinska Institute, Stockholm, Sweden: equipment for research on the structure of biological substances, under the direction of Professor Arne Engström; \$15,000;

Medical Research Council of Great Britain, London, England: research on the X-ray crystallography of proteins at the Unit for Research in Molecular Biology, Cambridge, under the direction of Dr. Max F. Perutz; £5,000 (about \$14,500) for a two-year period;

University of the Republic, Montevideo, Uruguay:

Research in the Institute of Physics, Faculty of Engineering, on

the biophysics of the blood circulatory process in man, under the direction of Professor Walter S. Hill; \$10,000;

Professor Walter S. Hill, director, Institute of Physics, Faculty of Engineering; to visit centers of research on the hemodynamics of blood circulation and related subjects in the United States; \$2,350;

University of Rome, Italy: research on the ultrastructure of bone, under the direction of Professor Vincenzo Caglioti, Institute of General and Inorganic Chemistry; 3,360,000 Italian lire (about \$5,500);

Dr. Noboru Yamagata, government officer, Institute of Public Health, Tokyo, Japan, and professor of chemistry, Gunma University, Maebashi: to observe research and teaching in biogeochemistry, radiochemical analysis, and radiation health at medical and chemical centers in the United States; \$3,775;

University of London, England: equipment for use in research in biophysics at King's College; \$654.

## Virology

### VIRUS RESEARCH PROGRAM

The Rockefeller Foundation in 1959 appropriated a total of \$1,194,640 for the support of its virus research program, carried on in central laboratories in New York and five field laboratories in the United States, Trinidad, Latin America, India, and the Union of South Africa. A description of the program follows page 43.

### OTHER GRANTS

Christian Medical College and Hospital, Vellore, India: research in virology, under the direction of Dr. Ruth Myers; \$10,000;

National University of Athens, Greece: research in virology, under the direction of Professor Constantine Moutousses, Department of Microbiology; \$6,000;

National University of Mexico, Mexico City: research on the role of bats in the transmission of rabies at the Institute of Biology, under the direction of Bernardo Villa R.; 66,000 Mexican pesos (about \$5,415);

Dr. Yoh Nakagawa, professor of microbiology, Medical School, Kurume University, Japan: to observe recent developments in virology at virological centers in the United States; \$3,850;

Harvard University, Cambridge, Massachusetts: to invite Professor George Ivanovics to serve as visiting lecturer in the Department of Bacteriology and Immunology, School of Medicine, Boston; \$3,610;

A conference, held during October, 1959, concerning methods of furthering cooperation among various groups now investigating the biology of arthropod-borne viruses; \$3,000;

Dr. Aaron Klug, Birkbeck College Crystallography Laboratory, University of London, England: to visit centers of X-ray crystallography and of virus research in the United States; \$2,750;

University of Otago, Dunedin, New Zealand: a survey of arbor viruses in the southwest Pacific Islands, under the direction of Professor J. A. R. Miles, Department of Microbiology, Medical School; \$2,600;

Dr. Akinyele Fabiyi, Lagos, Nigeria: to visit virus research laboratories in Belém, Brazil, and Port-of-Spain, Trinidad; \$1,715;

Dr. Alexander L. Terzin, professor of microbiology, Virological Institute, Medical Faculty, University of Sarajevo, Yugoslavia: to observe research and teaching in virology and immunology at virus laboratories and medical schools in the United States; \$1,675;

Dr. Torsten Johnsson, director, Virology Laboratory, State Bacteriological Laboratory, Stockholm, Sweden: to study the techniques used at The Rockefeller Foundation Virus Laboratories, New York, and to visit other virology centers while in the United States; \$1,670;

Dr. Donald L. D. Caspar, assistant professor of biophysics, Yale University, New Haven, Connecticut: to conduct research in virology at Birkbeck College, University of London, England; \$1,500;

Dr. Joseph L. Melnick, professor of virology and epidemiology, College of Medicine, Baylor University, Houston, Texas: to attend the Scientific Meeting of the Standing Advisory Committee for Medical Research in the British Caribbean, and to visit virus laboratories in Belém, Brazil, and Port-of-Spain, Trinidad; \$1,215;

Dr. William F. Scherer, Department of Bacteriology and Immunology, University of Minnesota, Minneapolis: to visit The Rockefeller Foundation virus research program in Port-of-Spain, Trinidad; \$730.

## Special Projects

### UNIVERSITY OF SÃO PAULO

#### RESEARCH IN NUCLEAR PHYSICS

Professor Oscar Sala, a former Rockefeller Foundation Fellow, is a member of the small group of brilliant physicists who have given Brazil its position of leadership in physics in Latin America and whose work contributes importantly to international progress in nuclear research. A contract professor in the Faculty of Philosophy, Sciences, and Letters of the University of São Paulo, Professor Sala built and put into operation a Van de Graaf generator with a capacity of 3.5 to 4 million electron volts which, together with a betatron and a 5,000 kilowatt experimental reactor also available at São Paulo, form the research tools of the São Paulo group.

Professor Sala and his associates have been concerned largely with studies of neutron capture and stripping reactions. Better to understand the stripping reaction, they are embarking on a line of research utilizing the powerful new time-of-flight technique for measuring neutron polarization. The stripping reaction is the effect observed in bombardments with deuterons or heavier nuclei, whereby only part of the incident particle merges with the target nucleus

and the remainder proceeds with most of its original momentum in practically its original direction. The problem of neutron polarization is an extensive and important one occupying the attention of a number of physicists in this country and elsewhere.

Several Brazilian agencies, in addition to the university, are supporting the work of Professor Sala and his associates. The Brazilian National Research Council contributes to the budget, and CAPES (Campaign for the Improvement of Higher Education Personnel) furnishes funds for the local expenses of visiting scientists and consultants. In 1959 the Foundation appropriated \$36,650 to the University of São Paulo for the research expenses of Professor Sala and his group, available for a two and one-half year period. The sum will be used principally for expenditures which must be made in foreign currencies.

#### OTHER GRANTS

University of San Luis Potosí, Mexico: physics and biology teaching materials, and salaries of instructors in the department of biology of the Preparatory School; \$10,000;

Nagoya National University, Japan: an interdisciplinary research project on the relationship of cultural patterns and personality, under the direction of Dr. Tsuneo Muramatsu, professor of neuropsychiatry; \$6,600;

American Public Health Association, Inc., New York: to produce a monograph series on vital and health statistics; \$6,000;

Association of American Medical Colleges, Evanston, Illinois: expenses of members of a committee formed to consider the association's possible role in improving the recruitment of medical personnel for foreign assistance programs; \$1,400.

## Humanities

HUMANITIES

*Major Interests, 1959*

Intercultural Studies .....	\$2,039,256
Humanistic Research .....	211,338
The Arts .....	1,117,870
Special Projects .....	328,390
Fellowship and Scholarship Fund .....	350,000



## HUMANITIES

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**T**HE MAJOR EMPHASES in The Rockefeller Foundation's program in the humanities continue to be indicated by the first three headings on the opposite page: Intercultural Studies, Humanistic Research, and the Arts. In addition, the Foundation attempts to meet some of the related special needs and opportunities that are, from time to time, brought to its attention. These three, with Special Projects and the support of advanced training through fellowships and scholarships, describe, in so far as headings can, the work of the Foundation in the general area of the humanities.

In 1959 a substantial number of the grants were for ongoing projects discussed in earlier reports under one or another of these headings. It is convenient therefore to take this opportunity to comment on two subheadings—drama and history—which are well represented by grants noticed in this year's report. The Foundation's interest in these fields may be better understood if they are considered separately from the more inclusive general headings.

### DRAMA

Two 1959 grants for projects in Dallas, Texas, and Seoul, Korea, illustrate a long-standing Foundation concern with a healthy institutional base for the production of both new and classical drama. While the recent Foundation grants to the Lincoln Center for the Performing Arts in New York

have been widely noted, it has long been clear that the development of drama in the United States depends as well on vigorous centers outside New York City. Earlier grants to the American Shakespeare Festival Theatre and Academy at Stratford, Connecticut, to Karamu House in Cleveland, Ohio, and to the drama program of the Virginia State Museum in Richmond were a recognition of this need. In 1959 the opening of the Dallas Theater Center, designed by Frank Lloyd Wright, offered a new and favorable opportunity to assist one more regional venture with strong local backing and a promising artistic program. It is only through such local support and initiative that the United States can create and sustain an artistic culture commensurate with its wealth and its beliefs in democracy and decentralized authority.

The Foundation has hesitated to support large projects in the arts outside the United States before gaining a clearer understanding of what could be accomplished at home. Nevertheless, during the past few years, through both grants and fellowships modest assistance has been given work in drama in Brazil, Chile, Indonesia, Ceylon, the Philippines, and Turkey. Recent help in the last three countries is represented among the smaller grants reported in 1959; drama is also represented by fellowship awards in the West Indies Federation, the Philippines, Brazil, Mexico, and Japan.

A living theatre, Foundation officers believe, is an important asset to a free people, one not lightly to be abandoned. It can advance general self-awareness and make possible fruitful derivation from the best of world culture. The troubled modern history of the Republic of Korea has increased the need for such expression at a time when the country's few resources for drama were devastated. It is, therefore, encouraging to find a few of Korea's cultural leaders seeking to create a new center for drama education and performance and to start once more the slow process of

creating a national dramatic literature. Mr. Yoo Chi-jin, the director of the Korean Research Institute for Dramatic Arts, is well known to many leaders in drama in North America and Europe through his writing and through the associations he established abroad several years ago as a Fellow of The Rockefeller Foundation.

Drama and religion can both benefit from a reestablishment of the partnership that existed in earlier periods. It is with this in mind that the Foundation has supported the program in religious drama at Union Theological Seminary. But the latest grant for this program—like most of the major grants in the arts in 1959—is a continuation of earlier assistance. There are, of course, many important undertakings for which more than one round of help is both necessary and justifiable. The Foundation, however, to maintain its ability to deal with new and challenging opportunities, must expect the institutions it aids to build other bases of support so that the Foundation, after a few years, can turn its attention elsewhere.

#### HISTORY

The classification of grants in the humanities is always difficult and at least potentially misleading. While the classification does indicate some of the Foundation's major concerns, the reader will do well to look beyond the classification to the descriptions of the projects before drawing conclusions as to what is stressed or what is omitted. For example, the field of history is not conspicuous in our classification nor in the individual project labels, yet it benefits from a substantial proportion of humanities appropriations. Under "Intercultural Studies," the 1959 grant of £40,000 to St. Antony's College, Oxford, may, from the point of view of the staff and program of that college, be considered to be wholly for history. Perhaps half of the \$1,000,000

appropriated to Harvard University's Center for Middle Eastern Studies and to the London School of Oriental and African Studies could also properly be so allocated. The grant to Cornell University for research on Southeast Asia will be entirely used for the acquisition of historical materials. Under "Special Projects," the grant to Veracruz University, Mexico, is largely for history and the grant to Michigan State University for the benefit of the University of the Ryukyus, Okinawa, at least partly so. Over 40 per cent of the funds allocated for fellowships in the humanities in 1959 went to historians.

A review of this sort indicates that in this reasonably typical year over one-quarter of all funds provided by The Rockefeller Foundation under its program in the humanities were for the benefit of historical work. It should be added that although almost all of the money involved was granted to institutions, the ultimate purpose generally envisaged has been to support and provide facilities for individual scholars.

## Intercultural Studies

UNIVERSITY OF LONDON

SCHOOL OF ORIENTAL AND AFRICAN STUDIES

Founded in 1917 as an autonomous unit of the University of London, the School of Oriental and African Studies has become a leading British center for scholars from Europe, Asia, Africa, and the United States. Through the individual publications of the faculty and its program of seminars, pilot research projects, and study conferences and tours, the school attempts to develop approaches to studies of the non-Western civilizations which will foster the col-

laboration of an international community of scholars and men of affairs.

In its work the school draws upon such important documentary sources as those of the India Office Library, the Public Records Office, and the British Museum, as well as its own large collection of volumes on Asian and African literatures, languages, arts, religions, and history, for which it will soon erect a new library building. The construction will provide needed working space, including a main reading room with full bibliographic and reference service, stack areas, and seminar rooms.

To assist with both the general research development program and the library construction, The Rockefeller Foundation has appropriated a total of \$500,000. One grant of \$250,000 will enable the London School of Oriental and African Studies to continue its research program for a period of approximately ten years. The second, also of \$250,000, is payable when the school has obtained the remainder of the £300,000 estimated to be the construction cost of the library, not later than June, 1961.

#### HARVARD UNIVERSITY

#### CENTER FOR MIDDLE EASTERN STUDIES

Aware of the pressing need for better understanding of the Middle East in the West, Harvard University established a Center for Middle Eastern Studies in 1954 to combine and reinforce teaching and research on the area. Under the direction of Sir Hamilton Gibb, distinguished British scholar, the center offers instruction and carries on studies in the languages, literatures, histories, economies, and cultures of the Middle East, with particular emphasis on the modern period. At present the center has a staff of 11, and offers some 50 courses.

Every effort is being made at the center to assure a proper balance between work in the humanities and the social sciences, between linguistic and subject competence, and between studies of the past and of the current problems of the Middle East. Its staff cooperates in study programs and in instruction with other departments of the university, and its courses are open to students outside the regional studies program. Doctoral degrees are offered in joint programs with other departments, and such arrangements are now regularly in effect with the Departments of Anthropology, Economics, Government, History, Linguistics, and Semitic Languages.

A postdoctoral fellowship program for which the Foundation granted \$205,000 in 1956 has been carried on by the center since its establishment. Eleven fellows, including young scholars from Turkey, Israel, Lebanon, and Jordan, are at present working on such topics as Turkish political thought and entrepreneurship in the Middle East.

As a contribution to the long-term support of the Center for Middle Eastern Studies, The Rockefeller Foundation in 1959 made an outright grant of \$500,000 to Harvard University, Cambridge, Massachusetts.

#### STUDIES OF TIBET

Encircled by formidable mountain ranges, Tibet has through the centuries preserved an almost legendary isolation. It is estimated that not more than 200 Europeans have penetrated into Tibet in the past two centuries, and at present probably not more than a dozen Westerners have fluent command of colloquial Tibetan. In spite of the paucity of direct interchanges between Tibet and the West, however, centers for study of the country and its culture have come into being in a number of European countries, Japan, and the United States.

Opposition to the efforts of Communist China to bring Tibet under direct administrative control, which culminated in the Tibetan revolt of 1959, has brought some 25,000 Tibetans to Nepal, India, and Sikkim. Among these refugees are lamas, members of the Tibetan ruling class, traders familiar with the economic life of the country, and others who can contribute in important ways to Western knowledge of their unusual country and its culture. To enable centers of Tibetan studies to enjoy the collaboration of these Tibetans, the Foundation appropriated \$250,000 during December, 1959.

The Foundation's grant will provide for separate allocations to enable various institutions to invite two or three Tibetans to spend several years cooperating in studies of the country and its civilization. Selection of the Tibetan scholars will be the responsibility of the several institutions, which will develop programs that make the best use of their visitors' special skills and knowledge. The particular interests of the centers are varied, some giving primary attention to historical, literary, and religious studies and others concentrating on contemporary social, economic, political, or cultural problems.

By the end of the 1959 calendar year, the Foundation had made three allocations from the special fund to finance some of the preliminary steps in the development of Tibetan studies programs. Professor Rolf A. Stein, of the Fifth Section of the *École Pratique des Hautes Études*, Paris, received \$7,750 for visits to various centers of Tibetan studies and Tibetans in South Asia. The same amount was given to Dr. Turrell V. Wylie of the University of Washington, Seattle, to enable him to survey the resources in South Asia for further research on Tibet and to visit major centers of Tibetan studies. The last allocation made in 1959, in the amount of \$6,500, will meet the expenses of Hugh E. Richardson, British and later Indian representative in Lhasa,

who will place his extensive knowledge of the country at the disposal of centers of Tibetan studies and help select and arrange the travels abroad of the Tibetan scholars now in India, Nepal, and Sikkim.

**FRANKLIN PUBLICATIONS, INC.**

**ENGLISH-ARABIC DICTIONARY**

Although several English-Arabic dictionaries have been in use for some time, a new volume being prepared for publication is planned for a wider audience of Arabic-speaking readers of English, including business and professional men as well as students, teachers, and scholars. In size and in range of vocabulary, this dictionary will be similar to desk or collegiate English dictionaries published in the United States and England; when completed it will contain about 1,500 pages and up to 100,000 terms. A greater number of current technical and scientific words will be included, and definitions will take account of geographical variants of Arabic dialects.

Compilation and publication of the dictionary will be the work of specialists from many nations. Eminent scholars representing Middle Eastern countries will form an advisory committee which will guide the editorial staff located in Beirut, Lebanon, and Arabic experts in various fields will advise on the definitions and inclusion of geographic variations. Lexicographers and linguists in the United States and Europe will help on technical matters in English. Franklin Publications, Inc., New York, is sponsoring the dictionary and will handle the business arrangements for its publication. Associated publishers are expected to distribute the book in various countries; the royalties received will be reserved for the editorial expenses of future editions.

In 1959 The Rockefeller Foundation appropriated



\$115,000 to Franklin Publications to help meet the costs of producing the dictionary. The grant, available through 1962, is payable when Franklin Publications secures an equal amount from other sources for the same purpose.

ST. ANTONY'S COLLEGE, UNIVERSITY OF OXFORD  
STUDIES IN MODERN HISTORY

St. Antony's College of the University of Oxford was founded in 1950 for graduate studies in modern history. Since that time, under the leadership of Warden F. W. D. Deakin, research by students and cooperating scholars from other Oxford colleges has been encouraged, the college library has been strengthened, and a series of publications has been started. In part because of the interests of both its founder and Mr. Deakin, the college has emphasized the study of contemporary Europe and Asia.

The grant of £40,000 (about \$114,000) appropriated to St. Antony's by The Rockefeller Foundation in 1959 will provide flexible funds for research over the next seven years.

UNIVERSITY OF PENNSYLVANIA  
STUDY OF ARGENTINE NATIONALISM

Few scholars or other specialists in the United States have undertaken studies of major, long-term problems of contemporary Latin American society. To remedy this situation in part, scholars at the University of Pennsylvania will begin the investigation of one complex phenomenon in one important Latin American country: the political, economic, and cultural aspects of nationalism in Argentina.

Although one of the major aims of the study is to isolate the factors, not yet identified, contributing to Argentine nationalism, it is possible to outline some of the pre-

liminary questions. What forces contributed to the shift from political to economic nationalism? How did economic nationalism develop under Perón, and what is its relation to the revolt against Perón and the near-revolt against the Frondizi government? What is the relation of nationalism to the structure of Argentine society? How have Nazism, Fascism, and Communism modified Argentine nationalism, and how has nationalism in turn influenced Argentina's relations with certain foreign countries?

The study will be directed by Professor Arthur P. Whitaker, professor of Latin American history, who will supervise the research of three to six younger scholars and the editing of the results. Assisting them will be specialists in history, anthropology, literature, sociology, and economics from the university, its Foreign Policy Research Institute, and other institutions. Dr. Whitaker and his associates will spend considerable time in Argentina, where their work will be reviewed by Argentine scholars at the University of Buenos Aires. Beginning March 1, 1959, the work will be financed during a period of over three years by The Rockefeller Foundation, which has appropriated a sum of \$75,000 for the study.

#### CORNELL UNIVERSITY

#### RESEARCH ON SOUTHEAST ASIA

Since 1951, when it began, the Southeast Asia Program at Cornell University has helped scholars in two of the major regions of the world achieve greater mutual understanding. It has encouraged Americans to engage in specialized research and training on the history and culture of Southeast Asian countries. At the same time, Cornell has undertaken cooperative projects with institutions in Southeast Asia and has given graduate training to scholars from the region.

The university spends substantial amounts every year to add to its collection of research materials on Southeast Asia. To provide additional funds for this purpose, The Rockefeller Foundation has made an outright grant of \$75,000 to Cornell University, Ithaca, New York. Part of the grant will be set aside as "free" money, to be spent when unpredictable opportunities for acquisition arise. The remainder will be used to purchase microfilms of important documents, and possibly to obtain other less conventional materials. For example, steps may be taken to build up a collection of tape-recorded interviews with leaders who have played a major role in recent Southeast Asian history.

#### UNIVERSITY COLLEGE, NIGERIA

#### ARABIC AND ISLAMIC STUDIES

Educators in Nigeria, which attains its independence in 1960, have become increasingly aware in recent years of the importance to their students of knowledge of African history, culture, and institutions. One aspect of African history of particular interest to Nigeria is Islam and its social institutions. Since the Middle Ages, when the Muslim religion was introduced to sub-Saharan Africa across desert trade routes, Islam has shaped the lives and customs of a growing number of West Africans. Nigeria's northern region is solidly Muslim, and some 50 per cent of the country's entire population embrace the Islamic faith.

The University College in Ibadan, Nigeria, is now planning to introduce teaching and research in three subjects basic to an understanding of Islamic culture and civilization in Africa—its language, its history, and its thought. Of considerable value to the program will be collections of manuscripts recently found in northern Nigeria which promise to throw light on the history of Islamic penetration of Africa and the spread of Muslim culture and institutions. Through

study of such phenomena as the Islamic renaissance throughout the western Sudan in the eighteenth century that culminated in Nigeria in the Fulani holy war, University College scholars hope to help explain how Muslim societies in West Africa developed into their present form.

The Rockefeller Foundation is contributing to the establishment of this new University College program with a grant of £24,550 (about \$69,900) for use during a three-year period.

#### INTERNATIONAL INSTITUTE FOR THE STUDY OF RELIGIONS IN JAPAN

The International Institute for the Study of Religions in Japan, a nonprofit educational center in Tokyo, was organized as a direct result of suggestions by Buddhist leaders interested in promoting religious freedom and related human rights. It is directed by Dr. William P. Woodard, long associated with Congregational mission activities in Japan, but is interfaith in character. The board of directors includes, as chairman, Dr. Hideo Kishimoto, professor of religion at the University of Tokyo, and a representative group of other scholars and priests.

The institute has served an important function by bringing together in a single organization representatives of all the major religions in Japan. Of particular interest among its activities has been sponsorship of a series of seminars for younger religious leaders for discussion of common problems concerning the relationship between religious ideas or organizations and contemporary society or thought in other fields.

In addition, the institute is one of the best channels for contact between foreign visitors, whether missionaries or scholars, and non-Christian religious organizations in Japan.

Finally, it maintains a library and issues publications in both Japanese and English.

In 1959 the Foundation made an outright grant of \$48,000 to the institute to help support its general program through the next six years. Part of the grant will be used to provide an assistant to Dr. Woodard.

#### INTERNATIONAL PRESS INSTITUTE

##### ASIAN PRESS PROGRAM

Established in 1951 in Zurich, Switzerland, the International Press Institute is a nonprofit membership corporation that seeks to further and safeguard freedom of the press, promote the exchange of accurate and balanced news among nations, and improve journalistic practices. To forward these aims, it maintains research and publication programs and organizes seminars and conferences. At present it has a membership of about 1,000, of whom over 200 are Asian publishers, editors, and correspondents.

About four years ago the institute began to extend its activities for the Asian press. A first conference of Asian editors was held in Japan in 1956, and a second in Ceylon in 1957 at which such problems as the sources, channels, and adequacy of Western news coverage of Asia, and such obstacles to the flow of news as high cable rates and editorial policies, were discussed. Plans are now being made for working seminars in Asia for editors, and for the institute's Ninth Annual Assembly to be held in Tokyo.

Under an appointment to take effect in 1960, A. G. P. Vittachi, editor of the *Ceylon Observer*, will assist the International Press Institute in the direction of the Asian press program as its Asian representative. To help finance the expenses of this new post, The Rockefeller Foundation has appropriated \$38,700 for use through 1961.

## FONDATION DES ÉTATS-UNIS

## EUROPEAN ASSOCIATION FOR AMERICAN STUDIES

Under the aegis of the European Association for American Studies, whose members come from Western European countries where American studies figure in university curricula, a group of European scholars will attempt to delineate "The American Image in Europe." During the next three years some twelve younger members of the association will undertake research on three aspects of the general topic: the political image of America in different European countries, the impact of American educational theories in Europe, and the activities of American writers in Europe in the years immediately following World War I.

Founded in 1954, the association intends to center its research activities on two fields in which it believes European scholars can make especially significant contributions: transatlantic influences and comparative studies of the European and American continents.

Continuing its aid to the association, The Rockefeller Foundation has appropriated \$20,000 to the Fondation des États-Unis, an autonomous agency of the University of Paris. The appropriation will provide for grants in aid to the scholars undertaking the research and for further conferences.

## OTHER GRANTS

University of Florida, Gainesville: further development of its research library on the Caribbean; \$18,000 for a three-year period;

University of London, England:

School of Oriental and African Studies; preparation of an atlas to

illustrate the history of Islam and of the Muslim peoples, by Donald Pitcher; £5,500 (about \$15,700) for a two-year period;

Professor Robin A. Humphreys, professor of Latin American history; to visit centers of graduate training and research in Latin American history in Puerto Rico and the United States; \$700;

Brown University, Providence, Rhode Island: to continue a program of activities relating to the teaching of English in Egypt, under the direction of Professor W. Freeman Twaddell; \$15,251 for a three-year period;

Association for Asian Studies, Inc., Ann Arbor, Michigan: support of the Committee on South Asia; \$15,180 for a three-year period;

University of Leiden, Netherlands: research on the history of Korean culture, by Dr. Frits Vos; \$11,000 for a two-year period;

Professor John Echols, chairman, Far Eastern studies, Cornell University, Ithaca, New York: to visit Europe and Asia to survey contemporary developments in Southeast Asian literature; \$10,000;

Harvard University, Cambridge, Massachusetts:

Dr. Harold S. Powers, instructor, Department of Music; to study the raga system of music in South India; \$10,000;

Dr. Moshe Perlmann, lecturer in Israelian studies, Center for Middle Eastern Studies; to conduct research on the early history of the Zionist movement and on interconfessional polemics in Islam in the Middle East; \$7,000;

University of Tokyo, Japan: study in the United States and Europe of the history of the German Social Democratic Party, by Professor Hayashi Kentaro, Faculty of Letters; \$10,000;

University of Washington, Seattle:

To enable an American scholar to conduct research and teaching in the humanities at the National Taiwan University, Taipei, National Republic of China; \$9,500;

Dr. Leon N. Hurvitz, assistant professor of Japanese language and literature, Far Eastern and Russian Institute; to review current research on Tibet in Japan; \$5,461;

- Robert B. Ekvall, Far Eastern and Russian Institute; to visit India to study the potential contributions Tibetans in India can make to knowledge of Asian affairs; \$5,169;
- Indiana University, Bloomington: selection and administration of a traveling exhibition of Thai national art treasures; \$9,000;
- Linguistic Society of India, Calcutta: linotype matrices to be used in the publication of linguistic research; \$9,000;
- McGill University, Montreal, Canada: comparative study, in the Faculty of Divinity, of Christian ethics, by Dr. Isma'il Faruqi, research associate, Institute of Islamic Studies; C\$435 and \$8,000 (a total of about \$8,475);
- University of Ankara, Turkey: to appoint a visiting professor of American literature in the Faculty of Letters; \$7,920;
- Kokugakuin University, Tokyo, Japan: a new translation of the *Kojiki*, by Donald L. Philippi, graduate student in Japanese literature; \$7,600;
- University of Cambridge, England: study of constitutional theory and law in contemporary Islam, by Dr. Erwin I. J. Rosenthal, university lecturer in Hebrew; \$7,400;
- President Ko Hirasawa and Dean Masaaki Kosaka, Kyoto University, Japan: to observe university administration and educational activities in the United States; \$7,350;
- Korea University, Seoul: to continue the services in the Asiatic Research Center of John Harvey, American scholar; \$6,000;
- American University at Cairo, United Arab Republic: to enable Dr. Christel Kessler to assist Dr. K. A. C. Creswell, authority on Muslim art and architecture, in his studies; \$5,450;
- Hokkaido University, Sapporo, Japan: microfilms of periodicals needed by the Slavic Institute; \$5,000;
- Dr. Walther Braune, professor of comparative religion, Free University of Berlin, Germany: to observe recent developments in Middle Eastern studies in the United States, Canada, and Great Britain; \$3,900;



Dr. Philip Mosely, director of research, Council on Foreign Relations, New York: to visit scholarly centers in the Far East; \$3,700;

Yale University, New Haven, Connecticut: study of South Indian music, by Professor Howard L. Boatwright, Department of Music; \$3,000;

A conference, held during September, 1959, concerning Tibetan studies in the United States; \$2,900;

Professor Kenneth Ch'en, Department of Oriental Languages, University of California, Los Angeles: to survey current research on Tibet in Europe; \$2,900;

Rhodes-Livingstone Institute, Lusaka, Northern Rhodesia: research on the history of African missions, by Robert Rotberg; £965 (about \$2,750);

Luis Gonzalez y Gonzalez, historian, Colegio de México, Mexico City: to visit European centers of Latin American studies; \$2,500;

Expenses of European scholars participating in a conference on Tibetan studies at the Foundation's Villa Serbelloni, Bellagio, Italy; \$2,400;

K. R. Kripalani, secretary, National Academy of Letters, New Delhi, India: to establish contacts on behalf of the academy with literary and cultural organizations in Asia, North America, and Europe; \$1,000;

Dr. James A. Frost, dean, State University Teachers College, Oneonta, New York: to visit Japan en route to Ceylon to serve as visiting professor of American history at the University of Ceylon, Peradeniya; \$1,000;

Dr. Charles A. Ferguson, director, Center for Applied Linguistics, Washington, D.C.: to attend a conference on the teaching of Arabic to non-Arabs at the Institute of Islamic Studies, Madrid, Spain; \$900;

Professor Ernest N. McCarus, director, United States Foreign Service Institute Field School, Beirut, Lebanon: to attend a conference on the teaching of Arabic to non-Arabs at the Institute of Islamic Studies, Madrid, Spain; \$550.

## Humanistic Research

UNIVERSITY COLLEGE OF THE WEST INDIES

DEPARTMENT OF HISTORY

The University College of the West Indies, Jamaica, as an aid to understanding and explaining the past of the English-speaking Caribbean, has embarked on a program to organize and preserve the archives of the scattered West Indian territories. Preparatory to the publication of a guide to research materials, the staff of the college's history department is working with an archivist to make an inventory for each community in the area. All records and documents will be evaluated and arranged, and many items which are old and fragile will be microfilmed.

Many of the islands are sending their archives to the college for microfilming or custody. These collections will provide a central source of reference material of inestimable value to historians and other scholars. The cooperative nature of this effort is particularly appropriate as the widely separated West Indian communities have recently joined together in a Federation.

To help finance the program over a three-year period, the Foundation made a 1959 appropriation to the college of £13,800 (approximately \$39,330).

KEIO UNIVERSITY

LINGUISTIC ANALYSIS OF ISLAMIC ETHICS

Professor Toshihiko Izutsu of Keio University, Japan, has concentrated his recent studies on several major languages, principally Arabic. Through concurrent research in

comparative linguistics he has developed a technique of semantic analysis for defining value concepts in different language groups. Continuing his work in these areas, Professor Izutsu intends in the next two years to examine the changing uses of the Arabic language as a means of describing the development of moral consciousness and concepts of the Muslims in the Middle East.

Professor Izutsu's new project, which involves consultations with philosophers, linguists, and Islamic scholars at institutions in Beirut, Paris, and Cambridge, Massachusetts, will be supported by a two-year appropriation of \$20,000 from The Rockefeller Foundation.

#### OTHER GRANTS

University of London, England: preparation for publication of selected correspondence of Jeremy Bentham, in the University College; \$15,500 for a two-year period;

Center for Advanced Study in the Behavioral Sciences, Stanford, California: to invite Sutan Takdir Alisjahbana, Indonesian philosopher, to study in the United States the implications for philosophy of recent research in the social sciences; \$14,500;

Institute for Contemporary History, Munich, Germany: research on recent German history; 48,000 West German marks (about \$12,000) for a two-year period;

Cornell University, Ithaca, New York: studies of the Quechua language, principally in Peru, by Dr. Donald F. Solá, assistant professor, Division of Modern Languages; \$10,000;

Sleepy Hollow Restorations, Inc., New York: historical research in Great Britain and on the Continent; \$10,000;

University of Milan, Italy: full-time research and writing on philosophy, by Dr. Ferruccio Rossi-Landi, Faculty of Letters and Philosophy; \$10,000;

State University of Iowa, Iowa City: research and writing on Aztec civilization under the Spanish regime, 1519-1810, by Professor Charles Gibson; \$9,830;

University of Illinois, Urbana: preparation of a biography of Charles Sanders Peirce, by Professor Max H. Fisch, Department of Philosophy; \$9,300;

University of Chicago, Illinois: study of nineteenth-century American political thought, by Stanley Elkins, research associate; \$8,500;

Massachusetts Institute of Technology, Cambridge: research in linguistics in the Center for Communication Sciences, by Mrs. Tatiana Slama-Cazacu, fellow, Academy of the Rumanian People's Republic; \$7,480;

Swarthmore College, Pennsylvania: studies in ethical theory, by Professor Richard Brandt, head, Department of Philosophy and Religion; \$6,920;

University of Chile, Santiago: further studies of the social and economic history of colonial Chile, by Alvaro Jara Hantke and Rolando Mellafe Rojas; \$6,332;

University of Nebraska, Lincoln: research on the history of the Nazi SS leadership corps, by Dr. Robert Koehl, associate professor of history; \$4,996;

Dr. Norwood R. Hanson, professor of philosophy, Indiana University, Bloomington: to undertake a philosophical analysis of assumptions and reasoning basic to experimental psychology, in collaboration with R. L. Gregory, university demonstrator in experimental psychology, University of Cambridge, England; \$4,300;

University of Cambridge, England: preparation for publication of philosophical manuscripts of the late G. E. Moore, by Dr. Casimir Lewy; £1,225 (about \$3,500);

Colegio de México, Mexico City: a study of Mexican-Peruvian commerce during the colonial period, 1530-1810, by Luis Felipe Muro, Peruvian historian; \$3,000;

University of Washington, Seattle: study of the impact on Asia of

the Russian Revolution of 1905, by Dr. Ivar Spector, associate professor of Russian civilization and literature; \$2,000;

Professor Tao Chen-yu, historian, Institute of Modern History, Academia Sinica, Taipei, National Republic of China: research in Japan on the tenure of Yuan Shih-kai as Chinese viceroy in Korea; \$1,800;

University of Oxford, England:

Professor C. L. Wrenn, member of the university committee on phonetics and general linguistics; to observe work in phonetics and general linguistics in the United States; \$1,150;

Michael George Brock, fellow and tutor, Corpus Christi College; to consult materials, while in the United States, related to a study of the British Reform Act of 1832; \$800;

Columbia University, New York: preparation for publication of a manuscript on Russian ethical and social theory, by Dr. George L. Kline, assistant professor of philosophy; \$1,000;

Kenyon College, Gambier, Ohio: a three-day conference on current problems in philosophy; \$800.

## The Arts

### NEW YORK UNIVERSITY

### CENTER FOR ART CONSERVATION

Although a substantial portion of the art heritage of the world is now held in American collections, until recently the United States did not have any agency concerned with research and instruction in the conservation of art objects. A conference held to explore this problem, at the Brooklyn Museum in 1958, resolved that an agency should be established to train professional conservators, provide standards of examination and treatment of art works, conduct and

stimulate research in art conservation, and keep art custodians and others abreast of developments in art conservation. The conference concluded that a suitable location would be at a university in a city with ample museum resources.

To meet the requirements set forth by the Brooklyn Museum conference, New York University has established a center for teaching and research in art conservation at its Institute of Fine Arts. Toward its initial support The Rockefeller Foundation has appropriated a sum of \$500,000 to be available during the nine-year period that began July 1, 1959. The Foundation helped finance the Brooklyn Museum conference, as well as a related one at the Boston Museum of Fine Arts on the scientific examination of works of art.

The research of the center will be directed toward gaining knowledge of how art objects deteriorate and how deterioration can be minimized or prevented. The major program of instruction will be a four-year course for specialists in art conservation. But those in the joint museum training program now offered by the institute and the Metropolitan Museum of Art will be given an introduction to the theory and practice of art conservation with the aim of creating a future group of museum curators with high standards and a full knowledge of the problems of conservation. In addition, the analysis of structure and material involved in study of conservation will give better understanding of the art works of the past to those preparing for university teaching and research in the history of art and archaeology.

#### AMERICAN SYMPHONY ORCHESTRA LEAGUE, INC.

#### CONDUCTORS' WORKSHOP PROGRAM

In 1952 the American Symphony Orchestra League, Inc., initiated a program of workshops for the training of

orchestral conductors in the United States. These workshops enabled conductors of both amateur and professional orchestras to spend brief periods of study and practice with a major symphony orchestra and its permanent conductor.

With assistance from The Rockefeller Foundation the league gradually expanded its workshops, eventually dividing them into summer workshops and classes for more advanced candidates. The summer sessions were carried on with an assembled orchestra of professional musicians under the direction of Richard Lert, conductor of the Pasadena Symphony Orchestra, and the advanced classes took place periodically with the Philadelphia, Cleveland, and Pittsburgh orchestras and their conductors, Eugene Ormandy, George Szell, and William Steinberg. An additional workshop devoted to operatic repertory was undertaken with the Juilliard Opera Theatre.

During the next three years the league intends to expand its workshop program still further by increasing the length of the sessions from 8 to 12 weeks and by extending the scope of its offerings. Among the new features will be scholarships to enable exceptionally talented college and high school musicians to attend the summer sessions, and increased opportunities for conductors and composers to collaborate on performance and for a few advanced conductors to gain experience in recording techniques. Sessions will be organized in North Carolina, Tennessee, and, if possible, in the Midwest and East.

The Rockefeller Foundation will assist the new program with an appropriation of \$178,000, available during the period ending in June, 1963. Previous Foundation assistance to the American Symphony Orchestra League, Inc., Charleston, West Virginia, totaled \$315,000 since 1954.

## MEXICAN CENTER OF WRITERS

## ENCOURAGEMENT OF CREATIVE WRITING IN MEXICO

The Mexican Center of Writers, founded in 1950, is a group dedicated to encouraging writing in Mexico as an art and as a medium of popular communication, and to building contacts between the literary worlds of the United States and Mexico. To achieve the first of its aims the center awards fellowships to young Mexican and American writers which free them from other obligations for writing. Their work receives criticism at bimonthly meetings from center staff, former fellows, and leading Mexican writers. Toward its second objective, the center maintains contacts with publishers in the United States, issues a monthly bulletin on recent Mexican literature, purchases books for foreign libraries and collectors, reviews English-language books for the *Mexico City News*, and translates Mexican writing into English.

The center has been a major force in Mexico's current literary renaissance. Two of the most influential Mexican novels of the past decade, *Pedro Páramo* by Juan Rulfo, and *La región más transparente* by Carlos Fuentes, were both written while the authors were fellows of the center. Almost all former fellows are now writers, critics, teachers, editors, or theatrical directors.

First a part of the creative writing program of Mexico City College and subsequently sponsored by the Mexican-American Cultural Institute, the center is now chartered under Mexican law as a self-perpetuating, tax-exempt, cultural and educational institution. To its Board of Directors belong writers, critics, businessmen, and professional people. Miss Margaret Shedd, whose efforts were instrumental in bringing the center into existence at Mexico City College, serves as director of the center.



Of the \$183,420 The Rockefeller Foundation has already appropriated to the Mexican Center of Writers, \$50,000 was on a matching basis. A new grant of \$82,000 began August 1, 1959, when the Foundation appropriated \$9,000 for a three-year period and an additional \$73,000 on a matching basis.

#### PRATT INSTITUTE

##### PRATT-CONTEMPORARIES GRAPHIC ART CENTRE

The lithographs, woodcuts, etchings, and other prints produced at the Pratt-Contemporaries Graphic Art Centre in New York during its first three years of operation give an impressive indication of the quality and variety of work which the center seeks in a modest way to promote. They are representative of the American graphic art that has been so well received at home and abroad since World War II. Artists and craftsmen have come from all parts of the world to study and practice this art under the unique conditions to be found at the center. Examples of their work have been exhibited at the Riverside Museum and at the "Art U.S.A.-1959" show at the Coliseum in New York.

The center conducts regular classes for its students, produces editions of prints on commission, and provides a workshop where visiting artists may experiment, learn new techniques, and employ the printing facilities available. These activities, begun on a small scale in 1956, are gradually being expanded. By moving to more suitable quarters and adding to its small teaching staff, the center is now preparing to accommodate a greater number of artists and to serve them better.

The Foundation, which assisted the Pratt Institute in establishing the center, has given \$69,000 for its further development over the next three years.

## UNION THEOLOGICAL SEMINARY

## RELIGIOUS DRAMA

Through its religious drama program, now in its fourth year, Union Theological Seminary is giving students an opportunity both to explore the potentialities of drama as part of religious experience and to study practical methods for stage production. The program includes formal courses in the history, literature, and philosophical and religious implications of religious drama; workshops where technical problems relating to staging, designing, and acting are worked out, and where ideas and interpretations are discussed; and finally the production of plays for the public. Regular students at the seminary and special students interested in the professional theatre are eligible to participate.

The distinguished British stage director, E. Martin Browne, who has been associated with the production of all of T. S. Eliot's plays, serves on a part-time basis as visiting professor in connection with the program. Others who have participated, by discussing various aspects of drama and religion in the courses or workshops, have included noted critics, directors, and writers, such as John Mason Brown, Tyrone Guthrie, and W. H. Auden.

To help the seminary continue the established portions of the program, and branch out in several new directions, the Foundation in 1959 made a three-year grant of \$55,000. The new work to be undertaken will include experimentation with the use of music in the theatre, the encouragement of new playwriting, the translation of foreign plays, the preparation of teaching aids, and the provision of modest guidance for religious drama programs elsewhere in the country.

## AMERICAN-KOREAN FOUNDATION, INC.

KOREAN RESEARCH INSTITUTE FOR  
DRAMATIC ARTS, INC.

South Korea, a country with an important tradition of the theatre, is making a valiant effort to revive its dramatic arts. In the difficult years since 1945 there has been mounting interest not only in the theatre of the past but also in the production of contemporary plays. To give direction to this development, the Korean Research Institute for Dramatic Arts, Inc., has recently been formed, with Mr. Yoo Chi-jin, leader in the field of drama in South Korea, at its head. For its program of dramatic training and production, the institute is to have classrooms, library, workshops, and a small arena theatre in a new building in central Seoul.

The arena theatre, seating approximately 200 people, will fill a serious gap in South Korea's theatre facilities. It will serve as a practice ground for student productions and will assist professional groups which are now operating. It is expected that small-scale production, encouraged in this way, will soon develop in Seoul and spread to other communities outside the capital.

To the considerable sum collected locally for construction of the new building, the Foundation in 1959 contributed \$45,000 through a grant to the American-Korean Foundation, Inc., New York.

## DANCE NOTATION BUREAU

## LABANOTATION

One of the best methods yet devised for recording the movements of a dance in written form, Labanotation, was first published by Rudolf von Laban in Germany in 1928.

The system attracted considerable attention, particularly in the United States, and in 1940 the Dance Notation Bureau, Inc., was established in New York City to record dance compositions on a commission basis and to help interested individuals gain a command of the system.

Miss Ann Hutchinson, president of the bureau, and her associates have recorded a number of important works from ballet, musical comedy, and modern dance. Some of these compositions, among them "Symphony in C" by George Balanchine and Hanya Holm's choreography for "Kiss Me Kate," have been accorded copyright.

Other activities of the bureau, including the publication of textbooks and the quarterly *Dance Notation Record*, are designed to facilitate the learning of Labanotation, to maintain standardization in recording, and to keep the system up to date.

To help support this work over the next five years and to provide scholarships for a few qualified individuals wishing to study at the bureau, the Foundation in 1959 appropriated \$35,000.

#### DALLAS THEATER CENTER

#### REPERTORY THEATER

In December, 1959, the Dallas Theater Center celebrated the opening of its new playhouse, designed by Frank Lloyd Wright and built with funds contributed by Dallas citizens. Along with the theatre in which at least four new productions are staged during an annual 35-week season, the center includes facilities for a graduate school in the theatrical arts, a young people's theatre, and adult education in the performing arts.

The nucleus of the theatre company consists of the director, Paul Baker, well known for his directing at the

Baylor University Drama Department, and a carefully chosen group of repertory actors. Two to five of the members of the troupe are selected from English actors while seven are chosen from American graduates of university drama schools. These principal actors and all other members of the company will have the opportunity during their participation in new repertory productions of working with and learning from experienced professionals who will be brought in as visiting lecturers.

Also contributing their talents to the theatre are visiting foreign drama students and established artists of other countries. Thus, by drawing on professional, foreign, and American sources in producing its plays, the Dallas Theater Center hopes to establish a creative and living repertory theatre.

A grant of \$28,000 made by The Rockefeller Foundation in 1959 was used to establish 14 fellowships, to be given over a two-year period to the American actors in repertory at the Dallas Theater Center.

#### AMERICAN INTERNATIONAL MUSIC FUND, INC.

#### PERFORMANCE OF CONTEMPORARY WORKS

The scheduling of contemporary symphonic music by American and Canadian orchestras is hindered by the difficulty the conductor finds in becoming familiar with the work of contemporary composers. He finds it hard both to read through the large number of scores submitted annually to an orchestra and to know how the music will sound even after it has been read.

To alleviate this situation, the American International Music Fund, Inc., has sponsored a plan whereby the major symphonies in the United States and Canada are encouraged to schedule works by living composers hitherto unperformed

by the orchestra in question, and unrecorded commercially by any orchestra. The fund provides for these works to be recorded on tape during their performance so that they may be submitted to a jury, which chooses two prize-winning works annually for possible commercial recording and release. These tapes are also made available for study in the public libraries of some of our larger cities, as well as in the Library of Congress.

The fund now plans in addition to make the tapes available to religious, educational, and cultural organizations for group listening, to educational broadcasters, and to music publishers for use by composers and conductors. The Rockefeller Foundation has granted \$24,000 to the fund for use in the two-year period beginning July 1, 1959. The Foundation had previously appropriated \$54,000 to the American International Music Fund, Inc., New York.

#### OTHER GRANTS

Bedri Rahmi Eyuboglu, painter and teacher, Academy of Fine Arts, Istanbul, Turkey: to visit artists, art schools, and museums in Europe, Mexico, and the United States; \$10,000;

Massachusetts Institute of Technology, Cambridge: research on new processes of casting metal, by Alfred Duca, sculptor; \$10,000;

Library of Congress, Washington, D.C.: to extend its recording program in contemporary Latin American literature, and to make the recordings available for use by scholars and students; \$9,800;

University of California, Berkeley: research on ways to incorporate existing architectural forms into major urban redevelopment designs, under the direction of Assistant Professor Barclay G. Jones, Department of City and Regional Planning, and Assistant Professor Stephen W. Jacobs, College of Architecture; \$9,700;

University of Ankara, Turkey: to invite Dr. Grant H. Redford, associate professor of English, University of Washington, Seattle, to

continue to assist in the development of the work of the Theatre Institute; \$9,600;

New School for Social Research, New York: continued study of the relation of function to design in large cities, by Mrs. Jane Jacobs; \$8,000;

University College, Ibadan, Nigeria: a survey of African drama in Nigeria, by Wole Soyinka, Nigerian dramatist; £2,782 (about \$7,900);

Mexican Center of Writers, Mexico City: compilation, editing, and translation into English of an anthology of Mexican literature, under the direction of Lysander Kemp; \$7,500;

Philippine Normal College, Manila: support of the drama program; 14,760 Philippine pesos (about \$7,380) for a three-year period;

University of the Ryukyus Foundation, Shuri, Okinawa: Masayoshi Adaniya, assistant professor of art, University of the Ryukyus; to visit art galleries and museums in the United States; \$4,630;

Professor S. Soemardja, director, School of Art and Architecture, Technological Institute, University of Indonesia, Bandung: to observe art, architecture, and architectural training in the Philippines, Japan, Hong Kong, and Singapore; \$3,200;

University of Ceylon, Peradeniya: studies of the drama in Japan and Korea, by Dr. V. E. R. Sarathchandra, professor of Sinhalese literature; \$2,900;

Dr. Donovan Michael Sullivan, lecturer-elect in Asian art, School of Oriental and African Studies, University of London, England: to visit Chinese art collections in the United States; \$2,200;

Dr. Hans A. Halbey, director, Klingspor Museum, Offenbach, Germany: to exhibit the museum's collection of books at museum and university libraries in the United States and Mexico; \$1,800;

Professor Mario J. Buschiazzo, University of Buenos Aires, Argentina: to visit centers of research on American art while in the United States; \$1,600;

Karawitan Conservatory of Surakarta, Indonesia: recordings, books, and publications; \$1,500;

Miss Elizabeth Stevenson, biographer, Atlanta, Georgia: to visit Japan in connection with a study of the life of Lafcadio Hearn; \$1,200;

Harvard University, Cambridge, Massachusetts: completion of a history of the Bauhaus movement, by Dr. Hans Maria Wingler, research fellow, Busch-Reisinger Museum of Germanic Culture; \$1,000;

Istanbul Conservatory of Music, Turkey: orchestral instruments and supplies; \$1,000;

Musashino Music Academy, Inc., Tokyo, Japan: musical instruments for a gagaku orchestra in the Musashino College of Music, Tokyo; 320,000 yen (about \$960).

## Special Projects

### UNIVERSITY OF CEYLON

#### LANGUAGE STUDIES

In recent years a significant change in the languages of instruction has been taking place in schools on various levels in Ceylon. On the primary and secondary levels, Sinhalese, the official language of Ceylon, and Tamil, the mother tongue of one-third of the population, have come to be used as the media of instruction while English is taught as a second language. The University of Ceylon, however, has used English as the language of instruction in all fields except Oriental studies.

Although students are admitted to the university on the basis of tests given in Sinhalese and Tamil as well as in English, many of them encounter difficulties in the course



work conducted solely in English. The University of Ceylon is attempting to prepare these students for their studies by developing tests and intensive instruction in English as a language of communication. At the same time, the university is beginning work in Sinhalese and Tamil so that the faculty can progressively use these languages in instruction, in examinations, and in translations from English. Both these efforts will be reinforced by research on the similarities and differences among the three languages, and by the use of methods and materials developed elsewhere in the world for teaching English as a second language.

A three-year grant of \$93,250 given to the University of Ceylon by The Rockefeller Foundation in 1959 will be used for four purposes: to obtain the services of foreign language specialists to teach linguistics as applied to language teaching; to send university faculty members to the United States to study language teaching methods, lexicography, and descriptive linguistics; to organize a working conference of Ceylonese teachers of English; and to purchase materials needed for improved teaching of English and allied linguistic research.

#### VERACRUZ UNIVERSITY

#### FACULTY OF PHILOSOPHY AND LETTERS

Two years ago when Dr. Gonzalo Aguirre Beltrán, an eminent Mexican social anthropologist, became rector of Veracruz University, the university began to establish a full-time faculty in the humanities. At present it has full-time professors in history, philosophy, literature, and anthropology, the four departments that comprise the faculty, and a larger enrollment in classes in these fields than ever before.

Rector Aguirre and his colleagues now plan to strengthen the Faculty of Philosophy and Letters further by adding

six more full-time professors to the teaching staff, and by launching a research program dealing with contemporary problems in the State of Veracruz. The latter is expected to develop the university into a center of studies, principally historical, for the Gulf Coast of Mexico.

Serving the most populous and richest state in the country, and the Gulf Coast generally as well, Veracruz University is one of Mexico's most important regional institutions of higher learning. To help the university with the costs of enlarging the Faculty of Philosophy and Letters, of undertaking the projected research program, and of expanding the humanities library, the Foundation has made a five-year grant of 888,000 Mexican pesos and \$16,000 (a total of about \$88,800).

#### MICHIGAN STATE UNIVERSITY

#### UNIVERSITY OF THE RYUKYUS LIBRARY

Established in 1950 as the first institution of higher learning in Okinawa, the University of the Ryukyus now has an enrollment of 3,000, a predominantly Okinawan faculty of 350, and a substantial campus, including the Shikiya Memorial Library, dedicated in 1955.

Under a cooperative program between the University of the Ryukyus and Michigan State University, an American librarian will now spend a year in Okinawa reviewing the administrative needs of this library, and at least two Okinawans will study library science abroad.

To enable Michigan State University to assist the University of the Ryukyus library, The Rockefeller Foundation has appropriated \$50,000 for use over a three-year period. This is in addition to previous grants to the University of the Ryukyus Foundation to buy library books and to invite foreign scholars for short visits.

## UNIVERSITY OF NUEVO LEÓN

## FACULTY OF ECONOMICS

As part of a revised curriculum designed to give students in its Faculty of Economics a thorough grounding in the social issues underlying economic policy and experience in research techniques, the University of Nuevo León in Monterrey, Mexico, is inaugurating a two-year, required course in contemporary civilization and establishing a Center of Economic and Social Research. The new economics program will be open to a limited number of full-time students and will be conducted by full-time faculty members.

The course in contemporary civilization is similar in outline to Western civilization courses offered in the United States, but gives greater emphasis to Latin American and non-Western cultures. It is intended to provide students with the knowledge of their society and its development needed for sound application of economic concepts and methods to issues of social policy.

To help the University of Nuevo León finance the new course, The Rockefeller Foundation has appropriated \$36,500 for use through August, 1962. Under its program in the social sciences, the Foundation appropriated an additional \$28,000 in 1959 for the Center of Economic and Social Research.

## OTHER GRANTS

Southern Illinois University, Carbondale: study of community development programs in the free world, by Professor Richard W. Poston; \$10,000;

United Board for Christian Higher Education in Asia, New York: to enable an American librarian to serve for one academic year as

advisor and supervisor at the libraries of Tunghai University, Taiwan, National Republic of China, and Chung Chi College, Hong Kong; \$6,500;

University of Ceylon, Peradeniya:

K. D. Somadasa, assistant librarian; to pursue advanced study in library science and administration in the United States; \$9,475;

A. T. A. de Souza, lecturer in English; to observe the teaching of English as a second language at centers in Asia, North America, and Europe; \$6,100;

To enable members of the language departments to attend a special linguistic school in India; \$3,750;

Kuk-Whan Sul, journalist and member, Board of Directors, Segye News Service, Seoul, Korea: to visit institutions and individuals in the field of journalism in Asia, Europe, Canada, and the United States; \$5,175;

State Historical Society of Wisconsin, Madison: a conference on the history of mass communications; \$5,000;

University of the Andes, Bogotá, Colombia: to send two faculty members to the United States for study in linguistics; \$3,600;

Mexican-American Cultural Institute, Mexico City: to complete a survey of English teaching in Mexico; \$2,820;

Hikoyasu Tanaka, director, Tokyo Metropolitan Hibiya Library, Japan: to visit libraries in the United States while en route to Japan from Europe; \$950;

Miss Fina Ott, retired reference librarian: to visit Japan to assist in the organization of the library of the Japan Women's University, Tokyo; \$800;

Dr. Silvio Ceccato, director, Center of Cybernetics, University of Milan, Italy: to consult scientists, while in the United States with his associates, Dr. Enrico Maretti and Dr. Enrico Albani, on the design of a machine to duplicate certain brain operations; \$670;

Fund for grants of amounts not exceeding \$500 for allocation under the supervision of the Foundation's Director for Humanities; \$5,000.

## **Social Sciences**

SOCIAL SCIENCES

*Major Interests, 1959*

The Social Sciences as Scientific Disciplines..	\$ 599,650
The Quest for Economic Development.....	485,755
Problems of Contemporary Western Society..	1,626,590
Legal and Political Philosophy.....	231,245
Fellowship and Scholarship Fund .....	500,000

## SOCIAL SCIENCES

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**T**HE FOUNDATION'S PROGRAM in the social sciences emphasizes long-term objectives which require steady effort over substantial periods. Extension of fundamental knowledge in the basic social science disciplines, development of key centers of social science training and research in major underdeveloped areas, study of persistent problems dominating contemporary society—the three chief areas of program emphasis in recent years—are not tasks for those bent on quick achievements and constant novelty in program. Much that sounds familiar to regular readers of these Annual Reports will, therefore, be found in the following review of appropriations in 1959. Within this continuity of effort there will be seen, however, evidences of progress and of change responsive to the urgent concerns of our time.

The first appropriation discussed, for example—a grant to the Scripps Foundation for Research in Population Problems at Miami University—is continuing support begun in 1943 for basic work on the dynamics of population growth. It should also be noted that the grant assists the second major step in a significant research innovation in this field begun with a grant reported in 1954.

The appropriation to the National Institute of Economic and Social Research in Great Britain provides another example. Support for the institute's program of fundamental economic research was started in 1937. The present grant represents further support for this program but also helps a new emphasis on problems critically affecting underde-

veloped economies. The grant to the German Institute for Economic Research in Berlin, on the other hand, is a first grant, also for support of basic research in economics, but on a new problem posed by the division of Germany between free and Communist economies.

Other examples of limited innovation within the underlying continuity of the program's long-range objectives will be seen in the pages that follow. The grants made in any particular year depend, of course, on which needs and opportunities arise or mature in that year. The grants which were made last year or will not be ready for recommendation until next year have an important bearing on which ones appear in this year's report. For this reason, the report in any single year may give a misleading impression of program balance or of shifts in emphasis. The reader who is interested in having a dependable overview of the Foundation's current program in the social sciences should review the preceding three or four Annual Reports while reading this one.

## The Social Sciences as Scientific Disciplines

MIAMI UNIVERSITY

SCRIPPS FOUNDATION FOR RESEARCH  
IN POPULATION PROBLEMS

The ability to predict accurately the future growth of population in the United States has substantial practical importance for many public and business purposes: estimating future needs for schools and teachers, assessing future manpower potential for the nation's economic and military needs, planning social security and retirement programs, forecasting future markets for housing and other durable



goods, and planning long-range capital investments. Apart from the risks of catastrophic warfare, the most unpredictable component in population growth is the birth rate.

To gain more reliable knowledge of the birth rate, the Scripps Foundation for Research in Population Problems at Miami University, Oxford, Ohio, in cooperation with the Survey Research Center of the University of Michigan, began in 1955 a national study of family growth in the United States. Wives were asked about the present and anticipated size of their families and what efforts they made to regulate family growth. With interviews satisfactorily completed for over 92 per cent of a national sample, the survey was unusually successful. Interestingly, predictions of births made on the basis of the study were lower than predictions based on conventional methods, in which wives' expectations have not been taken into account. When the major report from the study was published early in 1959 as *Family Planning, Sterility, and Population Growth*, it attracted widespread attention.

The Scripps Foundation has now begun a second phase of its national study of family growth, which will again be directed by Dr. P. K. Whelpton. It is investigating the relation between the expectations of the wives in 1955 and their actual childbearing from 1955 to 1960, measuring any changes in wives' attitudes and practices during the five-year period, and trying to learn more about the factors influencing attitudes toward childbearing and actual childbearing. As in 1955, the Survey Research Center of the University of Michigan will conduct the field study. The new data will be collected at the time of the 1960 Census so that it can more readily be used in conjunction with the Census data.

For the new study The Rockefeller Foundation has appropriated \$219,000 for a four-year period. In previous years the Foundation appropriated a total of \$270,686 to the Scripps Foundation for research on population distribu-

tion, fertility trends, and future population growth, and \$91,835 to the Survey Research Center of the University of Michigan for its work in cooperation with the Scripps Foundation from 1954 to 1956.

NATIONAL INSTITUTE OF ECONOMIC  
AND SOCIAL RESEARCH

BASIC ECONOMIC RESEARCH

Great Britain's National Institute of Economic and Social Research is an independent, nonprofit organization which studies the social and economic conditions of contemporary society in fields such as capital and investment, consumer demand, wage determination and price formation, monetary policy, international trade, company finance, and changes in the position of major social groups. The institute's findings have taken the form of books and articles, and this year it has launched a bimonthly *Review* of economic activity.

With a grant of £65,000 (about \$185,250) from The Rockefeller Foundation, the institute will undertake basic research in two challenging areas of transnational concern. One is inflation, which is asserted to be "wage-induced" by some, and by others to be "demand-induced." The institute's economists will try to determine whether evidence can be marshaled in support of either assertion. The other area is international trade, especially the problems which underdeveloped countries encounter when a shift occurs in the terms of trade.

Prior to the present grant, which is payable outright on or before December 31, 1959, the institute had received \$510,627 for its general budget and specific research projects and \$108,000 for the expenses of the International Association for Research in Income and Wealth.

## GERMAN INSTITUTE FOR ECONOMIC RESEARCH

## EAST GERMAN AFFAIRS

The German Institute for Economic Research in Berlin undertakes the preparation of weekly and quarterly analyses of business cycles, economics in industry, national accounting, international economics, Eastern affairs, and East German affairs. With its background of research dating from 1925 and its access to information on the German economy, the institute is also ideally equipped for more theoretical and long-term studies.

Dr. Gerhard Abeken, director of the section on East German affairs, now plans to inaugurate a continuing study on the comparative economic development of East and West Germany since the war. Dr. Abeken has had considerable success in analyzing and interpreting East German statistics. His special study should provide useful data for testing interesting hypotheses concerning economic development in a planned and in a capitalistic economy.

The institute is a nonprofit organization whose regular operating costs are met by the federal government, the Government of West Berlin, the governments of the German Länder, and German industries.

To help finance the research entailed in Dr. Abeken's study, the Foundation in 1959 made an appropriation of 200,000 West German marks, the equivalent of \$48,000, available over a four-year period.

## UNIVERSITY OF VIENNA

## STUDY OF ADOLESCENT YOUTH

Dr. Leopold Rosenmayr, founder and director of the Social Science Research Laboratory of the University of Vienna, Austria, has for some years been studying family

life and social structure in Vienna and their relation to the values and behavior of major groups in Austrian society. Using a combination of empirical field research and historical investigation, he and his colleagues have gathered information also on such practical subjects as the housing problems of the aged and the employment of women outside the home, as well as on more theoretical issues.

At the request of the Austrian Ministry of Education, Professor Rosenmayr and his group have recently undertaken a study of a basic question of social structure of which juvenile delinquency is believed to be one manifestation: the changes in the attitudes of male youths toward their families during a period of declining authoritarian structure in Austrian family life. The results are expected to throw light on a number of theoretical as well as practical problems relating to family organization and adolescent behavior in modern society. To enable Professor Rosenmayr to extend the sampling of youth groups to a nation-wide basis, The Rockefeller Foundation in 1959 made a grant of \$24,700 to the university for the use of the laboratory over a two-year period.

LONDON SCHOOL OF ECONOMICS  
AND POLITICAL SCIENCE

POPULATION INVESTIGATION COMMITTEE

The Population Investigation Committee is the major body in Great Britain concerned with sponsoring and conducting objective investigations of population questions. Among its members are a number of professors of the London School of Economics and Political Science, where the committee maintains its headquarters.

Since World War II the committee has become increasingly interested in studies of marriage, in part because of changes in population and family life in Britain brought

about by a rising marriage rate at lower ages and an increasing divorce rate. Currently, Professor David V. Glass, chairman of the committee, is conducting a comprehensive investigation of marriage and divorce trends during the past one hundred years in England and Wales as a background for the examination of these changes.

Information for the study will come from two sources: statistical and other documentary materials; and direct interviews with a representative national sample of adults. Files of divorce petitions and samples extracted from marriage certificates will yield data on divorce by social class and by age at marriage for various occupational groups. Through interviews with married couples and with unmarried men and women between the ages of 18 and 25, the committee expects to obtain information on changing customs and attitudes concerning courtship and marriage. The study is expected to yield important information on the consequences the powers of the office in the manner of the fourth Chief of these changing courtship and marriage habits on family life and population growth in the future.

In the past The Rockefeller Foundation has supported various sociological and demographic studies at the London School of Economics and Political Science and has assisted Professor Glass in his visits to graduate centers of teaching and research in the United States. In 1959 the Foundation provided £10,000 (about \$28,500) to enable the Population Investigation Committee to carry on its study of changing marriage habits in Great Britain for a two-year period.

#### PRINCETON UNIVERSITY

#### STUDY OF THE OFFICE OF CHIEF JUSTICE

In the opinion of some observers, the role of the Chief Justice of the United States has at times been crucial in American history. Though not every incumbent has invoked

Justice, John Marshall, according to this view all fourteen, potentially at least, have enjoyed far-reaching authority. To disentangle the powers inherent in the office from those arising from the more personal qualities of the incumbent is the objective of a detailed inquiry into the history and problems of the office of the Chief Justice being undertaken by Professor Alpheus T. Mason of Princeton University.

Professor Mason, a lifetime student of the Supreme Court, is author of *The Supreme Court from Taft to Warren*, *The Supreme Court: Vehicle of Revealed Truth or Power Group*, *Brandeis: A Free Man's Life*, the standard biography of Chief Justice Harlan Fiske Stone, and other volumes in this general area. At his disposal for the new study are the papers of Chief Justice Marshall, only recently made available, as well as an extensive literature of general and fugitive writings.

In partial support of Professor Mason's project, The Rockefeller Foundation has made a three-year grant of \$21,000 to Princeton University, New Jersey.

#### OTHER GRANTS

École Pratique des Hautes Études, Sixth Section, Paris, France: a summer seminar on the uses of mathematics in the social sciences; \$10,000;

Institute for Social Research, Oslo, Norway: research on the Norwegian elite, under the direction of Professor Vilhelm Aubert; \$9,900;

University of Southampton, England: research on British corporate investment in the United States and Canada, under the direction of J. H. Dunning; £3,195 (about \$9,100);

Stanford University, Palo Alto, California: to complete and equip a small-group research laboratory for the Department of Sociology; \$8,000;

University of Pennsylvania, Philadelphia: research on the structure of the American economy, under the direction of Professor Lawrence R. Klein, Wharton School of Finance and Commerce; \$8,000;

National Opinion Research Center, Chicago, Illinois: a study of relationships between mental health and prejudice; \$7,000;

Ohio State University, Columbus: study of English population history from 1700 to 1850, by Dr. John T. Krause, instructor in history; \$6,050;

Econometric Society, New Haven, Connecticut: commissioning and publication of four analytical survey articles, by the editor of *Econometrica*; \$5,000;

College of the City of New York, New York: completion of *The Age of Nationalism*, by Dr. Hans Kohn; \$3,150;

University of Chicago, Illinois: to invite Dr. Michael Michaely, instructor in economics, Hebrew University of Jerusalem, Israel, to participate in teaching and research in international economics at the University of Chicago; \$2,000;

A fund for grants of amounts not exceeding \$500 for allocation under the supervision of the Foundation's Director for Social Sciences; \$5,000.

## The Quest for Economic Development

UNIVERSITY OF CHILE

FACULTY OF ECONOMICS

During recent years the University of Chile has considerably strengthened its Faculty of Economics. The first Graduate School of Economics in Latin America was founded at the university, and its Institute of Economic Research was reorganized in 1955.

With the aid of visiting professors from Europe and the United States and of members of several international economic commissions located in Santiago, the Graduate School offers a two-year program of courses and seminars, and supervises research leading to the award of a special certificate. Younger Chilean scholars returning from advanced study abroad add strength to the faculty, which also draws on the staff of the Institute of Economic Research to supervise the investigations of the graduate students.

As the research arm of the Faculty of Economics, the Institute of Economic Research is a leading center for investigations of economic problems important to Chile and Latin America. Research done in the institute has produced reports and monographs on topics ranging from the economic history of eighteenth-century Chile to current unemployment in the country. Among the investigations now under way is a study of the effects of government control of agricultural prices and marketing.

During 1959 the Faculty of Economics at the University of Chile received a total of \$170,000 from The Rockefeller Foundation. One grant of \$80,000 will be used for scholarships, library development, and operating expenses of the Graduate School of Economics. The other provides \$90,000 for the studies of the Institute of Economic Research.

#### GETULIO VARGAS FOUNDATION

##### STUDY OF BRAZIL'S AGRICULTURAL ECONOMY

Established in 1945 as an autonomous unit of the Getulio Vargas Foundation, the Brazilian Institute of Economics compiles and analyzes the economic data from which estimates are made of the Brazilian national income and serves as well as a training center for Brazilian economists.



To improve the accuracy of its estimates the institute recently began gathering data on agricultural income to supplement that obtained from the Social Security Administration and the Internal Revenue Department, which derive their statistics from the urban sector of the economy. The first step in obtaining information about the rural economy was a pilot study, made in 1957 with some financial assistance from The Rockefeller Foundation, to determine the feasibility of a study of agricultural income and the size of the sampling necessary to elicit accurate and representative data.

On the basis of the conclusions suggested by the pilot study, the institute now intends to make a larger sampling, which is expected to afford reliable generalizations about income creation on farms responsible for about 60 per cent of the total value of Brazilian agricultural production. In partial payment of its costs, the Foundation will contribute a two-year grant of 7,080,000 Brazilian cruzeiros (about \$64,300).

UNIVERSITY OF NUEVO LEÓN

FACULTY OF ECONOMICS

To train graduate economists aware of the social issues relevant to economic policy and experienced in research and field techniques, the University of Nuevo León, Monterrey, Mexico, has instituted a new pattern of instruction in its Faculty of Economics. Under the new curriculum a limited number of full-time students will be selected on a competitive basis and instructed by a staff of full-time teachers, lectures will be supplemented by discussions and field practice in research techniques, and completion of a two-year course in contemporary civilization will be required of all students.

To help the university establish a Center of Economic

and Social Research in connection with the pilot program, The Rockefeller Foundation has appropriated \$28,000 for use through August, 1962. Under its program in the humanities, the Foundation made \$36,500 available for the course in contemporary civilization.

As an integral part of the new program, the Center of Economic and Social Research will undertake studies of regional problems in the Monterrey area and their relation to national economic problems. The center will give both students and faculty members the opportunity for research and research training.

#### UNIVERSITY OF ANKARA

#### INSTITUTE OF PUBLIC FINANCE

From World War I to the present, Turkey's economic development has taken place against successive backgrounds: the period of ferment in the founding of a nation, the depression, the internationally experienced increase in government intervention, the war, the postwar era of economic cooperation among nations, and finally, inflation. During those years the Turkish economy has followed neither the American pattern of minimum government intervention nor the Soviet scheme of centralized planning.

A group of economists in the Institute of Public Finance at the University of Ankara is planning to study these factors in the economic history of Turkey by gathering and analyzing production and consumption trends since 1923. The project will be under the general supervision of Professor Fadil Hakki Sur, head of the institute, and the immediate direction of Professor Sadun Aren. It will be partially financed by a three-year appropriation of \$25,000 from The Rockefeller Foundation.

## CATHOLIC UNIVERSITY OF CHILE

## ECONOMIC RESEARCH CENTER

In the three years since its establishment, the Economic Research Center at the Catholic University of Chile in Santiago has done much valuable research on Chile's economic problems and has trained young Chilean economists to carry forward this important work. A group of professors from the University of Chicago has assisted the program of the center during its formative years, giving some 20 students expert training in research on Chilean economics and agricultural economics. Several of the students have been awarded scholarships for advanced courses at the University of Chicago preparatory to accepting full-time research appointments at the center.

Professors from the Catholic University and their North American colleagues have made a number of studies of inflationary problems, consumer budgets, and agricultural productivity, emphasizing the element of capital allocation in the Chilean economy. Parts of one study have already been used in planning a national agricultural credit program.

A Foundation grant of \$17,000 in 1957 enabled a larger number of Chilean professors and students to participate in the program than would otherwise have been possible. A grant of \$24,000 in 1959 will continue Foundation support over the next two years.

## OTHER GRANTS

Center for Latin American Monetary Studies, Mexico City, Mexico: to conduct and publish an annual survey of monetary developments in Latin America; \$18,000 for a two-year period;

University of Istanbul, Turkey:

Research in the Institute of Economic History on the economic and

social history of the Ottoman Empire, by Professor Omer Lütfi Barkan; \$17,000 during the period ending October 31, 1961;

Completion of a three-volume work on the interpretation of the Koran by the Sultan's Religious Council, by Professor Ismet Sun-gurbey, Faculty of Law; \$3,700;

Dr. Afife Sayin, Institute of Business Administration; to conduct research in the United States on problems of collective bargaining; \$1,900;

University of Pennsylvania, Philadelphia:

Completion of studies of population redistribution and economic growth in the United States; \$13,000 for an 18-month period;

Wharton School of Finance and Commerce; to meet some of the expenses of joint Japanese-American editing of an international economic journal; \$5,000;

Austrian Institute for Economic Research, Vienna: research on the relationship between economic growth and the industrial structure of an economy, under the direction of Dr. Josef Steindl; \$10,000;

University College of the West Indies, Mona, Jamaica: to invite Professor Kenneth Boulding, University of Michigan, Ann Arbor, to serve as visiting professor of economics; \$10,000;

Vanderbilt University, Nashville, Tennessee: study of the relationship between Protestantism and economic development in selected Latin American countries, by Professor Emilio Willems; \$10,000;

Harvard University, Cambridge, Massachusetts: research at the Russian Research Center on agrarian policy in the Soviet Union, under the direction of Dr. Lazar Volin; \$9,500;

Professor Kazushi Ohkawa, director, Economic Research Institute, Economic Planning Agency, Government of Japan, Tokyo, and Mrs. Ohkawa: to visit centers of economic research and planning and to consult with professional colleagues in Western Europe and the United States; \$7,300;

University of Rio Grande do Sul, Pôrto Alegre, Brazil: specialized

training in South America for three members of the Faculty of Economics; \$7,060;

University of Calcutta, India: research in economic history in the Department of History; 30,000 rupees (about \$6,400);

Joaquim Nabuco Institute, Recife, Brazil: research on the consequences of population shifts in northeast Brazil, and expenses of visiting lecturers in the social sciences; \$6,000;

University of the Andes, Bogotá, Colombia: social science library materials and research equipment; \$5,500;

Korea University, Seoul: books and journals in the social sciences for the library; \$5,000;

Robert College, Istanbul, Turkey: completion of a volume on Turkish economic development; \$4,650;

University of Valle, Faculty of Economic Sciences, Cali, Colombia: to conduct an agricultural census of the Department of Valle del Cauca; \$4,000;

Miss Elvira Gregorio, librarian, College of Business Administration, University of the Philippines, Quezon City: to visit and study the organization and procedures of similar libraries in the United States; \$3,900;

Dr. Earl O. Heady, professor of economics and C. F. Curtiss Distinguished Professor of Agriculture, Iowa State University, Ames: to advise the Ministry of Food and Agriculture of India on problems of agricultural economics, and to explore the possibilities of strengthening research and teaching in agricultural economics at Indian universities; \$3,500;

Nuno F. de Figueiredo, economist, United Nations Economic Commission for Latin America, São Paulo, Brazil: to visit economic research centers in Europe and the United States; \$3,150;

School of Sociology and Politics of São Paulo, Brazil: completion of a comparative study of communities in the São Francisco Valley of Brazil, by Dr. Donald Pierson; \$3,000;

University of Khartoum, Sudan: social science library materials for the Faculty of Economic and Social Studies; \$2,730;

University of Oxford, England:

Miss Peter Ady, teaching fellow, St. Anne's College, and university lecturer in economics; to conduct economic research in Ghana; £825 (about \$2,355);

Dr. Thomas Balogh, fellow, Balliol College, and lecturer in economics; to visit Asia in connection with the completion of a study of economic development problems; \$2,300;

International Bank for Reconstruction and Development, Washington, D.C.: Economic Development Institute; to plan a basic library on economic development problems to be furnished to agencies or institutions in member countries of the bank in which former institute Fellows are employed; \$2,200;

Columbia University, New York:

Research at the Hoover Institution and Library on War, Revolution, and Peace, Palo Alto, California, by Dr. Aydin Yalcin, visiting associate professor of economics; \$1,650;

Dr. Kemal H. Karpat, assistant professor of political science, Montana State University, Missoula; to purchase and photostat, for eventual deposit in the Columbia University Library, Turkish research materials for a study of Turkish modernization reforms; \$500;

Dr. Nurul Islam, reader in economics, University of Dacca, Pakistan: to visit the Netherlands Economics Institute, Rotterdam; \$1,465;

Hiroshima University, Japan: books in international politics and international law for the library; \$1,075;

Osaka University, Japan: a working symposium on quantitative economics, held during the summer, 1959; \$1,000;

Tohoku University, Sendai, Japan: books in the social sciences for the library; \$1,000;

Miss Giok-Lan Tan, Indonesian sociologist: additional expenses of study in the United States; \$350;

Institute of Statistical Mathematics, Tokyo, Japan: additional expenses of study in the United States by Kameo Matusita, professor of statistical mathematics; \$270.

## Problems of Contemporary Western Society

### BROOKINGS INSTITUTION

#### CENTER FOR ADVANCED STUDY

For more than a generation the Brookings Institution, in Washington, D.C., has been a leader in bringing together scholars and experienced officials for the study of public problems. Now Brookings plans to create in Washington a Center for Advanced Study through which scholars, public officials, and leaders in various fields concerned with present-day public issues can collaborate in study and discussion of national problems.

To house the center the Brookings Institution is constructing a group of buildings which will provide space and facilities for its own growing research, conference, and educational programs, for scholars working temporarily in Washington, and for a few other nonprofit, research and educational organizations with related interests. Present plans call for a main building to be occupied by the institution, an adjacent annex-office building for other groups, and, nearby, a residence-conference building for the use of visiting conference groups, scholars, and fellows. A number of other organizations, such as the Twentieth Century Fund, the National Planning Association, and the Governmental Affairs Institute, are located in the same area, and their close cooperation will strengthen the center's role as a national headquarters for scholarly activities in Washington.

In connection with the development of the Center for Advanced Study, Brookings is enlarging its research programs on emerging economic and governmental problems; assisting institutions of higher education by providing opportunities for the participation of mature scholars in research and conferences on public problems, by offering supplemental training to graduate students, and by developing materials and methods for the study of public issues; and offering an educational program of advanced study in public affairs for political leaders, government officers, scholars, and leaders in business, agriculture, labor, and other fields.

The Rockefeller Foundation is helping the Brookings Institution realize its plans for the Center for Advanced Study with a grant of \$500,000, available through December 31, 1961. Part of the grant, \$100,000, may be used for the main building when Brookings has secured the remainder of the funds needed for completion. The balance will be used for the annex-office building and is payable when Brookings is ready to start construction.

#### HARVARD UNIVERSITY

#### SCIENCE AND PUBLIC POLICY

In recent years American scientists have become more dependent upon government support than ever before; at the same time, public officials are leaning more heavily on scientists. Although the trend is generally recognized and has been widely discussed, it has not yet been subjected to any full-scale scholarly analysis.

In the next four years several members of the faculty of the Graduate School of Public Administration of Harvard University will undertake a four-year research and training program in the field of science and public policy. They are specialists in different disciplines, but share a common interest in the growth of the reciprocal impact of science and



government in recent years and will cooperate in studies of a group of closely related problems.

The four men who will direct the program are Don K. Price, dean of the Graduate School of Public Administration and professor of government; Carl Kaysen, professor of economics; Jerome S. Bruner, professor of psychology in the Department of Social Relations; and I. Bernard Cohen, associate professor of the history of science. Each member of the group will assume responsibility for a different phase of the investigation.

Though interrelated, the problems to be studied are diverse. For example, what principles and criteria should determine the allocation of government funds for research? Congress and its committees, professional administrators, and scientific advisors from the institutions receiving the funds all share in the responsibility, but what is the nature and extent of the responsibility of any one individual or agency? What types of decisions should be made by the different groups involved in the apportionment of funds? What criteria should determine the degree of centralization of research and educational facilities? On what types of policy issues can science or scientists help government officials reach wise decisions? To what extent does the scientist's role as scientific advisor conflict with his stand on moral and political issues, and how can any such conflict be resolved in a responsible institutional framework?

During the first year of the Harvard program, the project leaders and their associates will collect and organize materials for use in a teaching and research seminar which is to begin in the second year. The seminar will be open primarily to government and business scientific officials on training leave.

In support of the program, The Rockefeller Foundation has made a four-year grant of \$285,000 to Harvard University, Cambridge, Massachusetts.

## UNIVERSITY OF NORTH CAROLINA

## INSTITUTE FOR RESEARCH IN SOCIAL SCIENCE

The Institute for Research in Social Science of the University of North Carolina is embarking on a major study of the changing position of the Negro within the framework of a Southern society undergoing urbanization and industrialization. The North Carolina project is designed to develop over the next few years a body of sound, factual knowledge concerning the accelerating pace at which the Negro's position is changing in the South that will be useful to citizens and policy makers alike, and also contribute to understanding of the complex processes of social change.

Primary attention will be given to population growth and migration of Negro and white citizens from rural to urban areas; changing occupational patterns—an index of changing economic and social status; educational achievement and aspiration, particularly at the college and professional level; and political behavior. Institute staff members will also gather data on comparative white and Negro patterns of health, communication with one another, leisure activities, attitudes toward segregation, and criminality and court sentences.

The broad study will be carried on under the supervision of Professor Daniel O. Price, director of the Institute for Research in Social Science. Participating in the work will be professors of the sociology and political science departments of the university, and visiting or cooperating researchers from other institutions, including the North Carolina College at Durham. The institute's growing interest in the changing position of the Negro in the South has already found expression in a number of preliminary studies on white and Negro migration and Negro political activities in several Southern cities.

Long known for its distinguished researches on the

Southern region, the Institute for Research in Social Science was founded at the University of North Carolina in 1924 with the help of a grant from the former Laura Spelman Rockefeller Memorial. A Rockefeller Foundation grant of \$190,500 for the support of the institute's newest study brings to over \$800,000 the amount contributed to the institute by the Memorial and the Foundation.

GENEVA GRADUATE INSTITUTE OF  
INTERNATIONAL STUDIES

BASIC RESEARCH AND ADVANCED TRAINING

In the next four years, the Geneva Graduate Institute of International Studies, Switzerland, will develop two new programs, one devoted to research and advanced training in international organization, and a second to advanced training in international relations for graduate students from the newer nations of Africa and Asia. Both projects will be financed in part by The Rockefeller Foundation, which has appropriated 336,000 Swiss francs (approximately \$79,000) for the first, and 496,000 francs (approximately \$116,600) for the second.

Among the fundamental problems of international organization which scholars at Geneva will explore are: the practices and procedures of international conferences and assemblies; the functioning of national delegations, including their relations to foreign offices, to governments, and to other delegations, and the nature of their decision-making process; power and responsibility in the League of Nations and in the United Nations; and the methods governments use to instruct their delegations, together with the implications of these methods. Two senior professors on the institute staff will participate in this research, concentrating on the historical aspects of multilateral diplomacy; a visiting professor will be invited to Geneva to work with them. The

visitor will devote his attention to contemporary problems and offer seminars based on his findings.

The institute's second program is designed to help alleviate the shortage of highly trained specialists in international relations in some of the newer nations. Under the program, the institute will offer up to ten scholarships a year to African and Asian scholars, giving preference to those who seem likely to contribute to the development of universities and other key institutions on their return home. Since instruction at the institute is conducted in both French and English, students speaking either language will be eligible.

The Geneva Institute is one of the major centers in Western Europe for the study of international relations. In recent years its development has been furthered by special contributions totaling about \$450,000 from the Swiss government and by substantial general support from the Ford Foundation. The institute has received assistance from the former Laura Spelman Rockefeller Memorial and from The Rockefeller Foundation since 1927.

#### UNIVERSITY OF NOTRE DAME

#### COMMITTEE ON INTERNATIONAL RELATIONS

Over the past decade the Committee on International Relations at the University of Notre Dame, Indiana, has centered its attention on the major ideological and political forces influencing international relations, publishing 22 major works in this broad area. In the past five years members of the committee have concentrated primarily on the problems of liberal democratic governments in formulating and executing foreign policy.

The committee intends during the next five years to study the development of contemporary diplomacy and its relation to underlying political and intellectual movements.

Among its topics for research by individual scholars, the committee lists the approaches and methods that have served the cause of peace, and the changes and diversification in diplomatic techniques brought about in response to technological and political trends. Committee members and visiting scholars will also look for points of similarity and difference in the diplomacy of bilateral and multilateral negotiations, *ad hoc* conferences, and regional and international consultative, parliamentary, economic, and cultural organizations.

To assist the new program in international relations at Notre Dame, The Rockefeller Foundation has appropriated \$75,000 for a five-year period. It has already appropriated \$238,000 for the work of the committee.

#### TUFTS UNIVERSITY

#### FLETCHER SCHOOL OF LAW AND DIPLOMACY

In the past few decades the Fletcher School of Law and Diplomacy at Tufts University, Medford, Massachusetts, has trained substantial numbers of American and foreign diplomats, a corps of specialists who become constantly more vital to survival in this nuclear age. The school is particularly noted for its teaching of international law and diplomatic history, and it is one of the very few American institutions which from its founding was intended to provide opportunities for research and training in diplomacy. The appointment of a senior professor in international politics and diplomacy will give further strength to a most important phase of the school's curriculum.

The new professorship, like the Clayton professorship established quite recently in the field of international economics, is open to an outstanding scholar who will be able to devote a considerable part of his time to fundamental research.

An outright grant of \$60,000 made by the Foundation

in 1959 will be used to provide a salary for the new position until this expense can be borne entirely by the regular budget of the university.

#### CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

##### DIPLOMATIC TRAINING PROGRAM

Since the end of World War II, many new nations have come into being in Asia, Africa, and the Middle East. For these countries there has been, as yet, little time for the development of a corps of younger officers trained in the techniques of diplomacy and experienced in coping with the complexities of foreign relations.

Largely as a result of the interest expressed by the leaders of some of these newer nations in sending their young diplomats abroad for advanced study, the Carnegie Endowment for International Peace is assessing the possibilities for a diplomatic training program in the United States. Endowment staff members are visiting foreign ministries to ascertain the special interests of their personnel, and are discussing with a number of American universities the possible form and content of a diplomatic training program tailored to the requirements of young foreign service officers from non-Western countries.

To help the Carnegie Endowment for International Peace, New York, carry out the study, The Rockefeller Foundation has appropriated \$25,000 for use over an 18-month period.

#### WOODROW WILSON FOUNDATION

##### STUDY OF FOREIGN POLICY

Under the sponsorship of the Woodrow Wilson Foundation, New York, Professor William Y. Elliott of Harvard University is undertaking a study of the effect of executive-

legislative relations on the conduct of United States foreign policy.

In examining the history of executive-congressional relations during the past ten years, Professor Elliott will give attention to the liaison between Congress and various executive agencies, the party composition of Congress following midterm elections and the problems created by loss of presidential control, and various proposals for constitutional reform. The study will be concerned especially with the different roles assigned to the two branches under the theory of separation of powers. Besides attempting to clarify where the responsibilities of each branch begin and end and where they necessarily overlap, Professor Elliott hopes to discover how the government can better secure a common direction of both national security and foreign policies.

One of the country's foremost political scientists, Professor Elliott has served as consultant to the President's Committee on Administration Management and as staff director of the House Select Committee on Foreign Aid, and has been a member of the National Security Council. His present study is being supported in part by a three-year grant of \$25,000 from The Rockefeller Foundation.

#### OTHER GRANTS

American Council of Learned Societies, New York: continued publication of the *Current Digest of the Soviet Press*, under the supervision of the Joint Committee on Slavic Studies of the American Council of Learned Societies and the Social Science Research Council; \$25,000;

University of London, London School of Economics and Political Science, England: fellowships, junior fellowships, and studentships in international relations; £6,000 (about \$17,100) during the period ending September 30, 1963;

Additional books for the foreign ministries of newer nations; \$10,000;

American University, Washington, D.C.:

Research on social reform and nationalism in India, by Dr. Charles H. Heimsath, assistant professor of South Asian studies, School of International Service; \$10,000;

Research on the process of foreign policy formation in Sweden, by Dr. Karl E. Birnbaum, docent, University of Stockholm, Sweden; \$8,000;

Research on the process of foreign policy formation in Canada, by Professor James Eayrs, Department of Political Economy, University of Toronto, Canada; \$6,000;

Colegio de México, Mexico City:

A basic library in international relations for the Center of International Studies; \$10,000;

Study of multilateral diplomacy in the United Nations from the Latin American point of view, under the direction of Professor Jorge Castaneda; \$7,300;

Massachusetts Institute of Technology, Cambridge: research at the Center for International Studies on the international control and common use of outer space, under the direction of Professor Lincoln Bloomfield; \$10,000;

University of Denver, Colorado:

Research in Europe and Africa on international politics in the post-colonial era, by Dr. Robert C. Good, assistant professor of international relations; \$9,200;

Social Science Foundation; research on problems of coalition diplomacy in the Baghdad Pact, by Professor E. Raymond Platig, associate professor of international relations; \$8,000;

Cornell University, Ithaca, New York: a study of the International Law Commission of the United Nations, by Professor Herbert W. Briggs, Department of Government; \$8,500;

University of California:



**At Los Angeles:**

Research on ideological justifications of contemporary policies and institutions in the United Arab Republic, by Dr. Leonard Binder; \$7,500;

**At Riverside:**

Study, in England, of British theories of nationality and citizenship, by Dr. Arthur C. Turner, professor of political science; \$2,000;

**Yale University, New Haven, Connecticut:**

Research on the legal problems of outer space, under the direction of Professor Myres S. McDougal, Law School; \$7,000;

To invite Herbert G. Nicholas, fellow, New College, and Ronald B. McCallum, master, Pembroke College, University of Oxford, England, to consult with the president and faculty members of the Departments of History and Philosophy concerning the preparation of a volume on the history and development of American political institutions and ideas; \$2,300;

**Harvard University, Cambridge, Massachusetts:**

A visiting fellowship in the Center for International Affairs for Abdur Razzaq, lecturer in international relations, University of Dacca, Pakistan; \$6,700;

A visiting fellowship in the Center for International Affairs for Rudy Pirngadie, chief, Army Information Service, Army of the Republic of Indonesia, Djakarta; \$6,000;

A visiting fellowship in the Center for International Affairs for Lallan Prasad Singh, officer on special duty with the Indian government, New Delhi; \$6,000;

A visiting fellowship in the Center for International Affairs for Tadao Kato, member of the Japanese foreign service, Tokyo; \$4,500;

Completion of research, at the Law School, for an advanced degree in international law, by Woonsang Choi, Seoul, Korea; \$3,600;

Completion of the requirements for the law degree, at the Law School, by Zoltan Mihaly, former Rockefeller Foundation Hungarian Refugee Program Fellow; \$2,000;

Carnegie Endowment for International Peace, New York: research on theories of international politics, by Dr. Stephan Bernard, associate professor, Solvay Institute, University of Brussels, Belgium; \$6,500;

Fordham University, New York: research in Europe on the sociological approach to international law as developed by Max Huber and Dietrich Schindler, by Peter P. Remec, assistant professor of international relations; \$6,200;

Institute of Race Relations, London, England: completion of a study of the development of race relations in the Belgian Congo; £2,100 (about \$6,000);

Purchase and shipment of a collection of basic books in international relations to the Ministry of Foreign Affairs, Addis Ababa, Ethiopia; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of External Affairs, Accra, Ghana; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of Foreign Affairs, Tel Aviv, Israel; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of Foreign Affairs, Vientiane, Laos; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of Foreign Affairs, Tripoli, Libya; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of Foreign Affairs and Commonwealth Relations, Karachi, Pakistan; \$5,000;

Purchase and shipment of a collection of basic books in international relations to the Ministry of External Affairs, Salisbury, Federation of Rhodesia and Nyasaland; \$5,000;

Purchase and shipment of a collection of basic books in international

relations to the Department of Foreign Affairs, Tunis, Tunisia; \$5,000;

Pomona College, Claremont, California: research on the theory of democratic control of foreign policy in Great Britain, by Dr. William C. Olson, associate professor of government; \$5,000;

Princeton University, New Jersey: to annotate and organize the papers of the late John Foster Dulles; \$4,500;

Johns Hopkins University, Baltimore, Maryland: research on the moral principles underlying Americans' response to the problem of force in a nuclear age, by Dr. Robert W. Tucker, associate professor of political science; \$4,250;

New York University, New York: research on the theoretical conflict between "realism" and "idealism" in world politics at critical moments in the history of five cultural areas, by Dr. Richard N. Swift, associate professor of government; \$4,000;

University of Cambridge, Peterhouse, England: research and conferences under the auspices of the British Committee on the Theory of International Politics; \$4,000;

Indiana University, Bloomington: research on contemporary Arab politics, by Dr. Panayiotis J. Vatikiotis, assistant professor of government; \$3,740;

Tulane University of Louisiana, New Orleans: research on the problems of Uruguayan politics, by Dr. Philip B. Taylor, Jr., associate professor of political science, Newcomb College; \$3,000;

Haverford College, Pennsylvania: research on the role of interest groups and political parties in the formation of West German foreign policy, by Dr. Gerald Freund, assistant professor of political science; \$2,750;

Princeton University Press, New Jersey: to help meet publication costs of a study of the government, politics, and foreign policy of Ceylon by Dr. W. Howard Wriggins; \$2,000;

Wesleyan University, Middletown, Connecticut: an exploratory study of the non-legislative activities of American congressmen on behalf of

their constituents, by Dr. E. E. Schattschneider, chairman, John E. Andrus Center for Public Affairs; \$1,500;

Additional publications in international law and related fields for the Library of the Permanent Secretariat, Asian-African Legal Consultative Committee, New Delhi, India; \$350.

## Legal and Political Philosophy

### WOODROW WILSON FOUNDATION

#### COLLECTION OF THE LATE PRESIDENT'S PAPERS

The papers of the late President Woodrow Wilson are of especial interest to American historians and students of government, revealing as they do an approach to international organization and foreign policy that came at the beginning of a new era in world affairs. Through the efforts of the Woodrow Wilson Foundation in New York a complete collection of these papers is now being prepared for the first time. Correspondence, speeches, and lecture notes, some of them in Wilson's own shorthand, are quite widely scattered and a preliminary survey indicates that their location, collection, and photoduplication prior to final editing and publication will take about three years.

The editorial staff chosen to direct the project includes Dr. Arthur S. Link, of the History Department of Northwestern University, who is the author of a comprehensive multi-volume study of Woodrow Wilson; Dr. John Wells Davidson, formerly with the Manuscripts Division of the Library of Congress and editor of a critical edition of Wilson's 1912 speeches; and Dr. David Hirst of the University of Maryland. This team of scholars will be under the general supervision of a distinguished Publications Committee, and it is expected that many of Wilson's contemporaries will lend valuable assistance.

By undertaking the collection of the Wilson papers at this time the Woodrow Wilson Foundation hopes to record them before many are lost or destroyed. The assembling and main processing of the papers will be accomplished with the help of a Foundation grant of \$150,000 available through August, 1963.

#### OTHER GRANTS

University of Chicago, Illinois:

Research on the character and the role of party politics in a democratic order, by Dr. Marvin Meyers, assistant professor of social sciences; \$7,400;

Research on the theoretical bases for the study of public administration, by Dr. Herbert J. Storing, assistant professor of political science; \$5,250;

Columbia University, New York: study of the legal and political philosophy of Justice John Marshall Harlan, member of the Supreme Court from 1877 to 1911, by Dr. Alan F. Westin, associate professor, Department of Public Law and Government; \$7,000;

Yale University, New Haven, Connecticut:

Research in the United States and England on the use of value standards in the social choice of policies, by Dr. David Braybrooke, assistant professor of philosophy; \$7,000;

Research on the relationship between the legal and the moral experience, by Graham B. J. Hughes, senior fellow, Law School; \$4,500;

College of St. Thomas, St. Paul, Minnesota: study in Germany and the United States of German Ordo-Liberalism, by Dr. Edward N. Megay, assistant professor of political science; \$6,600;

American University, Washington, D.C.: study of the concept of legality in the theory and practice of communist regimes, by Dr. Samuel L. Sharp, professor of international relations; \$6,500;

Brandeis University, Waltham, Massachusetts: research on cultural changes in contemporary industrial society and their interrelationship with political trends, by Dr. Herbert Marcuse, professor of politics and philosophy; \$6,250;

Alfred University, New York: study, in Europe and the United States, of the relation of stability to democracy in the Austrian political coalition since 1945, by Dr. Frederick C. Engelmann, associate professor of political science; \$6,000;

New School for Social Research, New York:

Completion of research on Gnosticism and its relation to the history of political thought, by Dr. Hans Jonas, professor of philosophy; \$5,000;

Completion of a study of the problems of political justice in totalitarian and democratic countries, by Dr. Otto Kirchheimer, professor of comparative political theory; \$4,650;

University of Minnesota, Minneapolis: research on conscience in morals, politics, and law, by Dr. Mulford Q. Sibley, professor of political science; \$4,600;

Ohio State University, Columbus: completion of "The Pathos of Political Man," a philosophical inquiry into the problems of the political environment of contemporary man, by Dr. David Spitz, professor of political science; \$3,725;

University College of Swansea, Wales: completion of research on John Stuart Mill and the idea of liberty, by Professor John C. Rees, Department of Political Theory and Government; £1,200 (about \$3,420);

Park College, Parkville, Missouri: research in the United Kingdom and the United States on English social-imperialism, by Dr. Bernard Semmel, assistant professor of history; \$3,350.

## **Agricultural Sciences**

AGRICULTURAL SCIENCES

*Major Interests, 1959*

Aid to Research and Teaching .....	\$2,373,592
Grants with Long-Range Relation to the World's Food Supply .....	361,125
Operating Programs .....	3,150,535
Fellowship and Scholarship Fund .....	950,000



# AGRICULTURAL SCIENCES

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**T**HE CHALLENGE OF meeting the food and nutrition requirements of peoples in many parts of the world is a guiding force in the agricultural sciences program of The Rockefeller Foundation. The achievement of self-sufficiency in food production is essential for the economic and social progress to which all new or less well-developed nations aspire.

The Foundation has found that cooperative efforts with selected countries are an effective means for advancing agricultural technology. The cooperation includes the location of trained scientists in the country concerned, the provision of training opportunities for local personnel, and a joint concentration of effort to improve research and teaching in order to furnish a firm base for agricultural improvement.

Continued over a sufficient period to ensure the soundness and value of recommended changes in agricultural practices, this type of cooperation has shown itself to be successful. In Mexico, where the agricultural program was initiated 16 years ago, improved varieties, new fertilizer and irrigation practices, more effective disease and insect control, and other technological advances now permit national self-sufficiency in the production of maize, wheat, and other food crops. The more recent cooperative programs in Colombia, Chile, and India are moving toward similar developments.

This pattern for the effective organization of research projects is well established in these countries. More and more local personnel are gaining experience by participation

in the programs and through training on fellowships and scholarships supplied by the Foundation. The young men and women who have had this training are now taking charge of major aspects of the research in their own countries. To achieve this goal is one of the prime objectives of the cooperative effort.

The materials and experience gained through the years of cooperative research in the countries where projects are located are being extended to new areas. The inter-American food crop improvement projects being initiated with corn and wheat should be effective in diffusing the improved materials and new knowledge to other areas of the world. Inbred lines of corn from the Colombian Agricultural Program, for example, have proved to be well suited for use in creating new hybrids in India. This interchange of tested lines should speed up the release of new hybrids in India by three or four years.

The inter-American crop improvement projects will also provide opportunities for the further training of young scientists in the participating countries, for the exchange of germ plasm, and for the development of more background or basic information on crop improvement that can be utilized widely for potential practical benefit. Fundamental studies will be designed to explore the genetics, disease resistance, insect tolerance, quality, and other properties of the germ plasm that has been accumulated by the Foundation's operating programs as well as by cooperating agencies in many parts of the world. Leading scientists in other organizations will also be offered opportunities to participate in planning and conducting studies to expand basic knowledge in the many disciplines related to the agricultural sciences.

The International Rice Research Institute, described in an earlier section, represents another significant new endeavor. Here will be combined researches in various disci-

plines for the solution of the wide range of problems that confront the producers of the grain which must meet the food demands of over 50 per cent of the world's population.

The Foundation is giving increased attention to ways of assisting the emerging nations of Africa through support for research and education. The resources of the Foundation limit its assistance to only a small portion of the many needs for agricultural advancement throughout the world. The Foundation is working closely, therefore, with other private and public organizations to ensure that the combined efforts will be of maximum benefit in improving the food supplies and general well-being of peoples in the less well-developed areas.

## Aid to Research and Teaching

UNIVERSITY OF THE PHILIPPINES

COLLEGE OF AGRICULTURE

When World War II ended, the College of Agriculture of the University of the Philippines and the Central Experiment Station found their physical plant virtually destroyed. Only three buildings remained, and almost no equipment or supplies. Since then, the college has been making every effort not only to recoup its losses, but to provide for a rapidly expanding student population, which comes from nine countries throughout Southeast Asia as well as from the Philippine Islands. The college now has more than 100 buildings, and enrollment has risen from a prewar 600 to 2,581. At present the most important agricultural institution in the Philippines, the college with its experiment station is rapidly being recognized as a foremost training center for all Southeast Asia.

In its reconstruction and expansion the college has been

aided by grants from The Rockefeller Foundation which include \$40,000 for laboratory equipment and teaching materials, \$120,000 for four-year scholarships for undergraduates from Indonesia, \$280,000 for constructing a dormitory for foreign students, and \$20,000 for books and library materials.

The Foundation has now made two further appropriations to the College of Agriculture of the University of the Philippines. To make effective use of the additional facilities and to conduct its expanded teaching and research programs, the college has received \$230,000 for a three-year period which began May 1, 1959; and to supplement the Indonesian scholarship program with a similar one for students from various Southeast Asian countries, such as Viet Nam, Cambodia, Laos, and Burma, the college has received \$100,000 to be available during the period ending May 31, 1964.

MINISTRY OF AGRICULTURE AND THE NATIONAL  
UNIVERSITY OF COLOMBIA

ANIMAL DISEASE LABORATORIES

In 1956 The Rockefeller Foundation supported a three-man survey team from Purdue and Iowa universities which reviewed Colombia's problems in production and improvement of livestock, its chief source of income. In all areas of the country the animal scientists visited, they found veterinarians as well as livestock men concerned about the prevalence of animal diseases and parasites. An essential first step toward cutting down animal losses, it was concluded, was more research on animal diseases and pests.

Since then, the Ministry of Agriculture and the Faculty of Veterinary Medicine of the National University in Bogotá have organized a cooperative program for research and training in veterinary science. Under the plan the uni-

versity will establish a central diagnostic and research laboratory on its grounds in Bogotá which will work in collaboration with two regional diagnostic laboratories, to be developed by the Ministry's research department at its Palmira Experiment Station in the Cauca Valley and at Montería in the tropical region along the Atlantic coast.

The Rockefeller Foundation will support the new laboratory system with appropriations of \$150,000 to the National University of Colombia, Faculty of Veterinary Medicine, for the Bogotá laboratory and \$50,000 to the Ministry of Agriculture of Colombia for the regional laboratories. This assistance is in addition to that which will be provided through The Rockefeller Foundation Colombian Agricultural Program. The members of the program, who are assigned to the Ministry's research department, will participate in the operation of the regional laboratories, and the Foundation's animal pathologist will make the Bogotá laboratory his headquarters.

#### MINISTRY OF AGRICULTURE AND FORESTRY, JAPAN

With essentially all land in Japan suitable for growing lowland rice already utilized and giving high yields, the country is looking to other kinds of land and other crops to increase its agricultural productivity. Only about 17 per cent of the country's total land area is now cultivated and many thousands of acres of fertile upland soils have been left untouched. Little has yet been done to change the attitude of the rice-eating Japanese toward the production and consumption of fruits, vegetables, meat, and dairy products — foods that can be produced on the well-drained higher slopes.

Faced with economic and population pressures, the Japanese government is now embarking on a million-dollar research program designed to determine the best methods of growing fruits, vegetables, and pasture for livestock on

these upland soils. Four regional research stations will experiment with the rotation and combination of different crops, with the introduction of simple farm machinery, and with the development of new methods for transporting and marketing the perishable produce. The stations will also serve as demonstration and information centers for local farmers.

Through the development of new land practices and more effective ways of using her agricultural resources, Japan is striving to grow more food for her people; to increase the protein, mineral, and vitamin content of their diet; to add to the national agricultural income; and to save foreign exchange now being spent in large amounts to import food.

To assist the Japanese Ministry of Agriculture and Forestry in getting its research program under way, the Foundation in 1959 appropriated \$130,000, available over a four-year period, for needed scientific and agricultural equipment.

MINISTRY OF AGRICULTURE, ANIMAL HUSBANDRY,  
AND WATER RESOURCES, KENYA

SIRIBA TRAINING COLLEGE

Under the Swynnerton Plan for land resettlement, Kenya is engaged in strengthening its rural economy by stabilizing agriculture and improving the standard of living of its farming population. To prepare Africans for increased responsibility in implementing this plan, the government is converting the Siriba Vocational School of Agriculture into an agricultural college.

Graduates of the new Siriba Training College will have a diploma in agriculture qualifying them for many of the technical and supervisory positions to be filled in the government's extension service, in soil conservation and irrigation

projects, in marketing and inspection services, in research laboratories, and in private enterprise.

The development of the college, the first of its kind in East Africa, will be accomplished by adding to the buildings and equipment of the present school, by enlarging the faculty, and by introducing a more advanced curriculum.

The expense of establishing the college will be met by the Ministry of Agriculture of the Government of Kenya and will be partly offset by a contribution of £60,000 (about \$171,000) made available by the Foundation for use over a four-year period.

#### COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

#### DIVISIONS OF PLANT INDUSTRY, ENTOMOLOGY, AND TROPICAL PASTURES

The Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia has over 40 divisions and laboratories, many of them carrying on research of world-wide significance. Of particular interest to agriculturists are the studies of nitrogen fixation and insect behavior conducted by the Divisions of Plant Industry and Entomology in Canberra, and by the Division of Tropical Pastures at Brisbane. These investigations are already well advanced and new laboratory equipment soon to be installed will permit their expansion and greater refinement.

One group of researchers at the Division of Plant Industry is working on the biochemical aspects of nitrogen fixation in legumes and has made considerable progress in determining the biological basis for the varied effectiveness of different nitrogen-fixing nodules. A second group of plant scientists in this division is using techniques of radiation biology to extend the range of nodulation among legumes,

and to induce nodulation in nonleguminous plants. The major portion of a two-year \$100,000 Foundation grant made to CSIRO in 1959 will provide equipment needed by these two groups of investigators.

The rest of the \$100,000 grant is for the purchase of instruments to be used by the Division of Entomology in its work on insect physiology, ecology, and biochemistry. The program of the division includes fundamental research on the action of insecticides, on the enzymes which enable the clothes moth to digest wool, and on the transportation of plant virus diseases by insects.

A separate grant of \$30,000 was made by the Foundation in 1959 to assist in procuring equipment not available in Australia which can further the work of the CSIRO Division of Tropical Pastures at Brisbane. For 25 years this division has been experimenting with new legumes suitable for growth in the torrid zone and has been developing systems of management to improve low-protein native pastures. Field tests made under a wide variety of tropical and subtropical climatic conditions existing in the State of Queensland are combined with laboratory experiments on nitrogen fixation, kinetics of fixed-nitrogen loss, amino acid metabolism, and absorption of radioactive phosphorus.

#### NATIONAL SCHOOL OF AGRICULTURE

#### POSTGRADUATE EDUCATION

Convinced that Mexico's steadily growing need for professional agriculturists could be met only by the development of graduate training centers within the country, alumni of the National School of Agriculture, Chapingo, began several years ago to plan the establishment at the school of a postgraduate curriculum. With the support of the alumni and of the Mexican Ministry of Agriculture, the school's administration made good progress in formulating the pro-



gram, and in the fall of 1958 opened the graduate college with 12 students and 6 professors. Since then the staff of full-time professors has increased to 13, and the student body to 29.

At present, the National School offers work leading to the master's degree in genetics, soils, plant pathology, and entomology. Similar programs in the other agricultural sciences will be introduced as rapidly as is compatible with the sound growth of the graduate school. Rockefeller Foundation scientists stationed in Mexico are cooperating in the formulation of course work and research activities.

The Foundation has enjoyed a close association with the National School of Agriculture since 1943 when it joined with the Mexican government in the establishment of an agricultural research and demonstration program in Mexico. The central experiment station of the joint program is located near the school's campus at Chapingo, and many alumni of the school have received further training in its laboratories. As part of its interest in the development of agriculture in Mexico, the Foundation has regularly conducted fellowship and scholarship programs under which young Mexican agriculturists have taken work leading to the master's and doctoral degrees in the United States. A number of these former Foundation fellows and scholars are now on the graduate faculty of the National School.

To help the National School of Agriculture continue the development of the graduate college, The Rockefeller Foundation has made \$100,000 available through the end of 1960.

#### UNIVERSITY OF HAWAII

#### SCHOLARSHIPS IN AGRICULTURE

In the last few years the College of Agriculture of the University of Hawaii has grown and developed to such an

extent that it has become a center of advanced training for young agriculturists from all over the Pacific area. Its academic standards compare well with those of other American agricultural colleges, and its location at a natural meeting place of East and West has many advantages for Southeast Asians studying abroad. A scholarship program that is being set up by the university with Foundation funds will make it possible for an increased number of well-qualified students from Asian and Pacific Basin countries to attend the college. The scholarships are intended primarily for graduates working toward M.S. or Ph.D. degrees, but some will be available to undergraduates from countries with no degree-granting agricultural school.

The College of Agriculture offers graduate programs in botany, chemistry, entomology, soil science, zoology, tropical crop production, animal science, plant pathology, agricultural chemistry, plant physiology, and nutrition. These courses are particularly well adapted to the needs of students from Southeast Asia where climatic conditions and agricultural problems are often similar to those found in Hawaii.

The highly qualified graduate faculty, besides its full-time staff of specialists, includes scientists from Hawaiian sugar and pineapple research organizations; and the physical plant of the college, to which a new agricultural science building and another experimental farm have recently been added, is spacious and well equipped.

The Foundation has appropriated \$100,000 for the use of the university in meeting transportation, living, and all educational expenses of scholarship students. This grant, together with one for \$10,000 made in 1958, will be available for commitment through June, 1964.

## CATHOLIC UNIVERSITY OF CHILE

## FACULTY OF AGRONOMY

One of four schools of agriculture in Chile, the Catholic University Faculty of Agronomy has played an important role in training the professional personnel needed in the country's agricultural economy. It currently receives applications from twice as many students as it can accommodate with its present facilities, and its graduates are in great demand in Chilean agriculture.

Within the past few years the university has acquired and equipped a 740-acre experimental station and demonstration farm in a rich agricultural region on the outskirts of Santiago, revised the curriculum of the Faculty of Agronomy, and instituted full-time staff appointments. Work in the basic agricultural sciences has been strengthened, and course work initiated in farm management and in agricultural economics.

Besides maintaining agricultural research and demonstration programs in cooperation with the Government of Chile, The Rockefeller Foundation has assisted Chilean agriculture by granting funds for the development of the Faculty of Agronomy at the Catholic University of Chile since 1954. The new appropriation of \$100,000 made by the Foundation in 1959 will be used for the continuation and expansion of the agricultural program offered at the Catholic University of Chile.

## UNIVERSITY OF RIO GRANDE DO SUL

## SCHOOL OF AGRONOMY AND VETERINARY MEDICINE

The School of Agronomy and Veterinary Medicine of the University of Rio Grande do Sul in Pôrto Alegre is one of Brazil's leading agricultural colleges. It is continuing to add facilities for undergraduate training and is building up

research activities in preparation for a graduate program. Recently the school has received increased federal and state support, has appointed additional faculty members, and has made extensive improvements in the physical plant. A construction program now under way is providing new laboratories, an auditorium, a student dormitory, and an addition to the Hospital of Veterinary Clinics.

Food crops such as corn, wheat, and rice grow well in the temperate climate of Rio Grande do Sul and are among those being intensively studied at the school. A forage crops research institute established in 1956 with the help of The Rockefeller Foundation is contributing to the development of a livestock industry in the region.

Eleven departments of the school needing special foreign-made equipment for their science and agricultural technology programs will benefit from a Foundation grant of \$94,400 made in 1959.

#### INSTITUTE OF AGRONOMY

##### PLANT SCIENCE

The strong support of the state government is helping the Institute of Agronomy of the State of São Paulo, Campinas, Brazil, maintain its position as one of the most effective agricultural experiment stations in Latin America. Recently the government raised the salaries of research workers, created 50 new posts on the staff for junior personnel, and authorized the establishment of a research fund from income derived from its operations.

A substantial portion of the institute's research program deals with the coffee plant and is being financed in part by Brazilian coffee organizations. Institute scientists are not concerned with coffee alone, however, but are working extensively in such fields as plant pathology (virus research), botany, entomology, genetics, statistics, and soil science. The

program in these and related fields includes investigations of leaf transpiration as it is affected by environmental conditions, of leaf analysis as a method of detecting soil deficiencies, of corn breeding, and of potato seed improvement and certification.

Dr. Alvaro Santos Costa, who directs plant virus research at the institute, is a former Rockefeller and Guggenheim Fellow. He and his colleagues are part of a growing group of skilled investigators in their field in Brazil.

To help pay the costs of additional field and laboratory research equipment, including an electron microscope to be used primarily for studies of the viruses that attack agricultural crops, The Rockefeller Foundation has made a two-year grant of \$68,000 to the institute. The new appropriation brings the total of Foundation assistance to the institute since 1949 to nearly \$200,000.

#### MINISTRY OF AGRICULTURE OF WEST BENGAL

#### STATE COLLEGE OF AGRICULTURE AND AGRICULTURAL RESEARCH INSTITUTE

The first buildings of a new rural university in West Bengal are nearing completion and will soon be occupied by the West Bengal State College of Agriculture and Agricultural Research Institute. These buildings, and another designed to accommodate the Veterinary College, are being constructed at a cost of \$500,000 on a site recommended by the Joint Indo-American Team on Agricultural Research and Education, at Harringhata, 35 miles from Calcutta.

Before the partition of India and Pakistan, East and West Bengal shared an agricultural college and research institute at Dacca. In 1947 West Bengal had to withdraw its agricultural research and teaching operations from this city, and transferred them to Calcutta where they have been carried on ever since in temporary, inadequate quarters.

The establishment of the new institution is the realization of plans developed with great care over a number of years by the West Bengal Ministry of Agriculture. A University of Missouri-International Cooperation Administration Team has assisted in the project and financial support has come from federal, state, and private organizations which share the belief that rural universities will play an increasingly important role in the development of agricultural production in India.

A Foundation grant of \$65,000 made to the Ministry of Agriculture of West Bengal will provide for some of the library books and laboratory equipment needed initially at the new university.

#### KASETSART UNIVERSITY

#### COLLEGE OF VETERINARY SCIENCE

Thailand, with a water buffalo and cattle population of about 10,000,000 head, needs veterinarians but has never had enough facilities to train as many as it requires. There is just one degree-granting school of veterinary medicine in the country, at Kasetsart University in Bangkok. The school is well staffed by 15 full-time faculty members, but in the past the size of its physical plant has limited student enrollment.

To enable the college to expand, the Thai government recently allocated funds for the construction of two new laboratory buildings, one for the study of anatomy and another for teaching and research in bacteriology and animal pathology. With the new facilities, the Faculty of Veterinary Science will be able to increase student enrollment from a little more than 100 to about 240, and it will be able to embark on a more extensive program of instruction.

To provide some of the equipment and supplies needed in the new laboratories, the Foundation has made a three-

year grant of \$50,000 to Kasetsart University. Counting this appropriation, the Foundation has now contributed a total of \$245,000 to the university in support of various aspects of its teaching and research programs.

#### MINDANAO AGRICULTURAL COLLEGE

##### SCIENCE COURSES

The Mindanao Agricultural College, Musuan, Philippines, which was founded as an agricultural high school in 1946, has been making marked progress in growth and development since it became a national degree-granting institution in 1953. Its staff and the size of its physical plant have been greatly enlarged and its student body now numbers 950. Present emphasis is on equipping new laboratories for a comprehensive science curriculum which includes zoology, botany, chemistry, entomology, plant pathology, soil science, and genetics.

The college offers an agricultural education at nominal cost to young Filipinos on the country's second largest island, Mindanao. It is playing an impressive role in training professional agriculturists and scientific farmers who contribute to food production in the area.

To help provide laboratory equipment which must be purchased with foreign currencies, the Foundation in 1959 appropriated \$50,000 to the college for use over a three-year period.

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

##### AGRICULTURAL BOARD

In planning agricultural research programs for the future, the United States is increasingly taking into account the needs not only of its own people, but also of those in

foreign countries. The Agricultural Board, an activity of the National Research Council in Washington, D.C., is making a broad study of these needs so that it can prepare to meet them by promoting research in selected fields.

To obtain factual information on which to base its recommendations, the board has set up a special study group to investigate such questions as population trends, kinds and amounts of food needed for human nutrition, dynamics of land use, labor and land resources available for food and fiber production at home and abroad, storage requirements, decontamination of food and water in case of atomic or biological warfare, and the role of agriculture in United States foreign policy.

The board receives support for meetings and the publication of reports mainly from the Agricultural Research Institute. This is a voluntary organization of academic, industrial, and government scientists, over 200 of whom serve on the 14 regular committees of the board.

Expenses connected with the special study now being started will be met partly by a Rockefeller Foundation grant of \$50,000 for use by the National Academy of Sciences—National Research Council over a three-year period.

#### UNIVERSITY OF ILLINOIS

#### RESEARCH ON THE BIOCHEMISTRY OF INSECTS

During the last nine years entomologists at the University of Illinois have isolated an enzyme in the body of the housefly which renders the insecticide DDT harmless to it and have demonstrated the laws governing inheritance of the enzyme. The entomologists have made, among others, the further discovery that insects do not protect themselves against chlorinated cyclodienes (insecticides like aldrin and dieldrin) as they do against DDT.

In the next three years the Illinois group, which is di-



rected by Professor Clyde W. Kearns, will conduct further research on the problems of insect biochemistry which their previous studies have brought to light. For example, Dr. Kearns and his associates will attempt to determine the normal function of the enzyme that counteracts DDT, since they have found that the substance is present in minute quantities even in those strains susceptible to DDT, and probably occurred in them long before DDT was used. In addition, they will be looking for the biochemical explanation of insect resistance to insecticides other than DDT. Dr. Kearns' group will also continue their investigation of toxic agents in the blood of insects which affect nervous function.

In their efforts to clarify the nature of the housefly's resistance to DDT, the Illinois entomologists have been assisted by appropriations totaling \$115,000 from The Rockefeller Foundation. The Foundation has appropriated an additional \$45,000 for the next three years.

#### TAIWAN AGRICULTURAL RESEARCH INSTITUTE

##### STUDIES OF RICE

Rice yields are low throughout the humid tropics, a problem which becomes more urgent every year as the population in these areas continues to increase. The *Indica* rice varieties appear to have considerable tolerance to low soil fertility and high temperatures, but only a limited capacity to respond to fertilizers. The *Japonica* types, on the other hand, are strong stemmed, resistant to shedding, and responsive to fertilizers, but yield well only in temperate and subtropical climates.

On Taiwan, where both types of rice can be grown, yields have increased considerably over the past 30 years as a result of the development of a number of varieties of the *Japonica* type that grow well. However, the improvement has not been consistent. Yields during the second grow-

ing season (July to October) invariably drop below the levels obtained in the first (January to June). It is supposed that the higher temperatures that prevail in the second period account for the reduced productivity, but little research has been done on the problem, and not enough information is available to bear the hypothesis out.

In the next three years, scientists at the Taiwan Agricultural Research Institute, Taipei, will intensify their efforts to learn the causes of the low yields of both *Japonica* and *Indica* rice varieties in the tropics. In support of the program, The Rockefeller Foundation has made a three-year grant of \$45,000 to the institute.

#### NATIONAL TAIWAN UNIVERSITY

#### COLLEGE OF AGRICULTURE

The College of Agriculture of the National Taiwan University, Taipei, is one of the most effective centers of agricultural education in the Far East. It offers a four-year course leading to the B.S. degree, with specialization possible in any of its departments, and an M.S. degree program in the fields of agronomy, agricultural chemistry, plant pathology, and entomology.

The college is organized into eight departments and three research institutes. It has about 240 faculty members and 900 students. Graduates are distributed throughout the country and are helping greatly to raise the level of food production in the National Republic of China.

In support of the teaching and research program of the College of Agriculture, the Foundation has made a three-year grant of \$40,000 to the National Taiwan University. The funds will be used for equipment and supplies for laboratories of plant nutrition, biometry, and plant breeding and cytogenetics.

**IMPERIAL ETHIOPIAN COLLEGE OF AGRICULTURAL  
AND MECHANICAL ARTS****LIBRARY DEVELOPMENT**

Four years ago the Government of Ethiopia founded the Imperial Ethiopian College of Agricultural and Mechanical Arts to offer an integrated teaching, research, and extension program in the art and science of agriculture. Although the college has restricted enrollment to avoid graduating more students than can be absorbed into the economy of the country, the student body numbered about 200 during the 1959-1960 academic year, and is expected to rise to 400 within the next few years. Because the college is receiving an increasing number of applications from other African countries, it is in a position to contribute importantly to the advance of agricultural education throughout the continent.

The Imperial College has a modern physical plant consisting of classroom, farm, and laboratory buildings, dormitories, a clinic, and staff houses on its campus at Dire Dawa. An experiment station of approximately 1,000 acres adjoins the campus. A library to serve both staff and students will be constructed by the Ethiopian government, which has also agreed to add a professional librarian to the staff.

To provide the Imperial Ethiopian College with books, agricultural journals, and library materials and supplies, The Rockefeller Foundation has appropriated \$40,000 for use over a three-year period.

**UNIVERSITY OF WISCONSIN****VII INTERNATIONAL SOIL SCIENCE CONGRESS**

In the summer of 1960 a number of foreign soil scientists will come to the United States to attend the VII International Soil Science Congress, to be held at the Uni-

versity of Wisconsin from August 15 to 23. Upon their arrival in New York, their hosts, the members of the Soil Science Society of America, will take them on a tour of the Northeast to review the agricultural research programs of representative land-grant institutions. After the formal meetings in Madison, where more than 400 scientific papers are expected to be read, optional agricultural tours in the South and West will be available.

Travel grants for a number of the visiting scientists will be provided through a Rockefeller Foundation appropriation of \$25,000 to the University of Wisconsin. The appropriation will be used primarily to bring soil scientists from countries where agricultural assistance is most urgently needed.

#### ROWETT RESEARCH INSTITUTE

#### VETERINARY SCIENCE

The Rowett Research Institute, Bucksburn, Scotland, conducts studies of the physiology and nutrition of agriculturally important animals. It is one of the major installations of its kind in the United Kingdom, and receives substantial support from the Department of Agriculture for Scotland and from the Agricultural Research Council.

For the purchase of equipment, The Rockefeller Foundation has appropriated \$20,200 to the institute. The grant is expected to benefit a variety of current investigations, including, among others, studies of bacteria extracted from rumen, and research on internal pressure changes in animals.

#### UNIVERSITY OF MINNESOTA

#### DEPARTMENTS OF PLANT PATHOLOGY AND BOTANY, AND OF AGRONOMY AND PLANT GENETICS

In the last six years plant pathologists and geneticists

at the University of Minnesota have laid the groundwork for an intensive study of host-parasite relationships in wheat. Working with the three wheat varieties Marquis, Mida, and Kenya Farmer, the researchers have developed 60 different chromosome substitution lines of wheat. They have also progressed in the genetic study of the wheat stem rust fungus.

The way is now clear for the investigators, as a further step in their research on the genetic basis for stem rust resistance, to make detailed studies of individual chromosomes, of gene action, and of interchromosomal gene distribution.

Continuing its support of the research, the Foundation in 1959 appropriated an additional \$20,000 for the use of the Departments of Plant Pathology and Botany, and of Agronomy and Plant Genetics of the University of Minnesota.

#### OTHER GRANTS

##### *United States*

##### *New England*

Connecticut Agricultural Experiment Station, New Haven: research on the genetics of growth in plants, under the direction of Dr. Donald F. Jones; \$6,400;

##### *Middle Atlantic*

Conservation Foundation, New York: a preliminary conference concerning the use of chemical pesticides and their effect upon people and wildlife; \$4,000;

Cornell University, Ithaca, New York:

Dr. Leon J. Tyler, professor of plant pathology, College of Agriculture; to visit centers of research in plant pathology in Europe; \$4,600;

David B. Williams, director, Foreign Student Office; to visit educational institutions in Latin America; \$3,000;

Dr. Damon Boynton, professor of pomology; to consult with horticulturists in Costa Rica and Mexico; \$1,365;

Dr. Kenneth L. Turk, head, Department of Animal Husbandry, and member, The Rockefeller Foundation's Board of Consultants for Agricultural Sciences; to participate in the XV International Dairy Congress in London, England; \$1,300;

Entomological Society of America, Washington, D.C.: to invite an internationally recognized insect pathologist to participate in the Symposium on Biological Alternatives to Chemical Control; \$1,340;

Fifth World Forestry Congress, Washington, D.C.: travel funds for participants in the Congress; \$10,000;

National Academy of Sciences—National Research Council, Washington, D.C.: Committee on Agricultural Pests of the Agricultural Board; study of agricultural losses caused by pests; \$9,500;

Research Foundation of the State University of New York, Albany: State University College of Forestry, Syracuse University, New York; research on the white pine blister rust pathogen; \$5,000;

Fund for grants of amounts not exceeding \$500, for allocation under the supervision of the Foundation's Deputy Director for Agricultural Sciences; \$5,000;

### *South*

Clemson Agricultural College, South Carolina: weather-recording equipment for the Department of Entomology and Zoology; \$3,500;

### *Central West*

University of Illinois, Urbana:

Dr. R. H. Hageman, associate professor of plant physiology, Department of Agronomy, College of Agriculture; to conduct research in England during a sabbatical leave; \$5,000;

Michael Piechowski, assistant, Institute of Plant Breeding, Poz-

nan, Poland; to study for the doctoral degree at the University of Illinois; \$1,000;

University of Minnesota, Minneapolis: genetic studies of Ethiopian hard wheats, at the Institute of Agriculture, St. Paul; \$10,000;

Missouri Botanical Garden, St. Louis: laboratory equipment and supplies for research in plant physiology; \$5,600;

Dr. John H. Lonquist, professor of agronomy, College of Agriculture, University of Nebraska, Lincoln: to visit the Institute of Genetics, Luiz de Queiroz College of Agriculture, Piracicaba, Brazil; \$1,300;

Ohio Agricultural Experiment Station, Wooster: laboratory equipment and supplies and research expenses; \$9,500;

Purdue University, Lafayette, Indiana:

Study of senescence in plants, under the direction of Dr. A. C. Leopold; \$18,000 for a three-year period;

Dr. C. L. Dhawan, Department of Agronomy; to accept a post with the cooperative sorghum improvement research program in New Delhi, India, supported jointly by the Ministry of Agriculture of India and The Rockefeller Foundation; \$1,325;

Dr. Etlar L. Nielsen, research agronomist, Agricultural Research Service, United States Department of Agriculture, Madison, Wisconsin: to visit centers of research in plant genetics in Europe; \$2,460;

### *West*

Dr. William B. Hewitt, professor of plant pathology, College of Agriculture, University of California, Davis: to visit centers of research in plant pathology in Europe; \$2,937;

Dr. Morton M. Rosenberg, dean, College of Agriculture, University of Hawaii, Honolulu: to visit agricultural colleges in Asia; \$4,200;

### *Latin America*

National University of Cuyo, Mendoza, Argentina: chemicals and equipment for the Faculty of Agrarian Sciences; \$8,000;

University of Ceará, Fortaleza, Brazil: an ultracentrifuge for the School of Agronomy; \$10,000;

Ministry of Agriculture, National Service of Agronomic Research, Rio de Janeiro, Brazil: research on animal diseases caused by toxic plants and mineral deficiencies, at the Institute of Animal Biology; \$6,000;

Professor Outubrino Corrêa, director, School of Agronomy and Veterinary Medicine, University of Rio Grande do Sul, Pôrto Alegre, Brazil: to visit centers of veterinary research in the United States; \$2,945;

Ministry of Agriculture, Santiago, Chile: equipment for the Laboratory of Soil Research; \$10,000;

Ing. Agr. Humberto Gutiérrez, dean, School of Agronomy, University of Caldas, Manizales, Colombia: to visit leading agricultural colleges and experiment stations in the United States; \$1,575;

Ministry of Agriculture, Bogotá, Colombia:

Dr. Canuto Cardona, director, Department of Agricultural Investigations; to visit leading agricultural colleges and experiment stations in the United States; \$1,575;

Ing. Agr. Enrique Llano, director, Palmira Experiment Station; to visit leading agricultural colleges and experiment stations in the United States; \$1,575;

University of the Andes, Bogotá, Colombia: research on the deterioration of stored grain by fungi; \$5,000;

Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica: cooperative research in horticulture by the institute and The Rockefeller Foundation Mexican Agricultural Program; \$13,360;

Ing. Quirino Orta, General Agricultural Division of the State of Coahuila, Saltillo, Mexico: to attend a course in photogrammetry in Munich, Germany; \$1,595;

Ing. Hugo Alejo Velasco, head, Department of Soils, Antonio Narro College of Agriculture, University of Coahuila, Saltillo, Mexico: to



visit the United States Salinity Laboratory, Riverside, California; \$1,265;

Ing. Jesús Fernández Barrera, extension specialist, General Agricultural Division, Ministry of Agriculture, Mexico City, Mexico: to visit centers of potato production in the United States and research centers in Canada, and to attend the IX International Botanical Congress in Montreal; \$2,280;

Ing. Emilio Gutiérrez Roldán, director, National Corn Commission, Mexico City, Mexico: to visit corn research and production centers in Latin America; \$2,400;

National School of Agriculture, Chapingo, Mexico:

Miss Evangelina Villegas, cereal chemist; to visit milling and baking laboratories in the United States and Canada; \$1,900;

Ing. Mario E. Ríos González, botanist; to visit the Missouri Botanical Garden, St. Louis; \$740;

Ing. Jesús Muñoz Vásquez, director; to visit the University of California at Davis; \$550;

University of San Marcos, School of Veterinary Medicine, Lima, Peru: to invite Dr. Donald D. Delahanty, professor of surgery, New York State Veterinary College, Cornell University, Ithaca, New York, to assist in the organization and development of the new clinic for large animals; \$9,975;

Norman W. Simmonds, senior cytogeneticist, Regional Research Centre, Imperial College of Tropical Agriculture, St. Augustine, Trinidad: to visit The Rockefeller Foundation Mexican Agricultural Program; \$700;

### *Europe*

Catholic University of the Sacred Heart, Milan, Italy: laboratory equipment and field and research expenses for the Plant Genetics Institute, Piacenza; 2,560,606 Italian lire (about \$4,225);

Agricultural College, Cracow, Poland:

Dr. Wladyslaw Bielanski, chair of animal hygiene; to visit animal breeding centers in the United States and Europe; \$3,225;

Dr. Adam Markowski, professor of plant physiology; to visit plant physiology centers in the United States and Europe; \$3,150;

Dr. Zygmunt Tomaszewski, Department of Plant Breeding, Agricultural College, Olsztyn, Poland: to visit plant breeding centers in Sweden, Denmark, and West Germany; \$1,800;

Dr. Stefan Guminski, Department of Plant Physiology, Agricultural College, Wroclaw, Poland: to visit plant physiology centers in Europe; \$1,950;

Central Agricultural Library, Warsaw, Poland: books and equipment; \$10,000;

Institute of Technology of Animal Products, Gdansk-Wrzeszcz, Poland: research equipment; \$5,750;

Dr. Henryk Sandner, Institute of Ecology, Polish Academy of Sciences, Warsaw: to visit nematology centers in Europe; \$1,675;

National Institute of Agricultural Investigations, Madrid, Spain: research on corn breeding at the Center for Corn Improvement; \$10,000;

Dr. Axel Nygren, Institute of Genetics, Uppsala, Sweden: to consult with scientists in the United States and Canada; \$1,750;

Dr. Daniel Lihnell, head, Department of Botany, Swedish State Plant Protection Institute, Solna: to consult with plant pathologists in the United States, Canada, and Mexico; \$2,650;

John Innes Horticultural Institution, Bayfordbury, England:

Dr. Kenneth S. Dodds, director; to study indigenous cultivated potatoes in South America; \$3,130;

Dr. Graham J. Paxman, plant scientist; to study indigenous cultivated potatoes in South America; \$3,130;

Professor Dunstan Skilbeck, Wye College, University of London, England: to visit agricultural research and education centers while in the United States; \$900;

National Vegetable Research Station, Wellesbourne, England: an ultracentrifuge for research in plant pathology; \$6,900;

Sir John Cockcroft, member for scientific research, United Kingdom Atomic Energy Authority, Harwell, England: to attend the Federal Science Congress in Salisbury, Southern Rhodesia; \$1,600;

### *Africa*

Jimma Agricultural Technical School, Ethiopia: books and periodicals for the library; \$10,000;

East Africa High Commission, Nairobi, Kenya: equipment for research in nematology and microbiology at the East African Agriculture and Forestry Research Organization, Kikuyu; £3,000 (about \$8,600);

J. F. Griffiths, officer in charge, Research Section, East African Meteorological Department, Nairobi, Kenya: to visit meteorological and climatological laboratories in the United States; \$5,000;

East African Veterinary Research Organization, Muguga, Kenya:

Walter Plowright, senior veterinary pathologist; to visit centers of veterinary research in the United States and Canada; \$3,960;

Dr. H. R. Binns, director, and Mrs. Binns; to visit veterinary research and education centers while in the United States; \$1,900;

Ministry of Agriculture, Animal Husbandry, and Water Resources, Kenya:

H. C. Thorpe, senior plant breeder, Department of Agriculture, Njoro; to study wheat improvement research programs in Latin America; \$6,220;

Michael N. Harrison, plant breeder, Department of Agriculture, Kitale; to visit the Mexican and Colombian Agricultural Programs of The Rockefeller Foundation while in the Americas; \$825;

Professor G. E. Udom, farm manager, Faculty of Agriculture, University College, Ibadan, Nigeria: to observe farm practices in the United States; \$4,750;

Domboshawa Government School, Causeway, Southern Rhodesia: books for the library; \$2,500;

Dr. Hugh Doggett, sorghum breeder, East African Agriculture and Forestry Research Organization, Soroti, Uganda: to visit centers of sorghum research in the United States and Mexico; \$4,400;

Dr. A. Joffe, plant physiologist, Plant Physiological Research Institute, University of Pretoria, Union of South Africa: to attend the IX International Botanical Congress in Montreal, Canada, and to visit centers of plant physiology research in Europe, Canada, and the United States; \$3,500;

#### *South Asia*

Dr. Kapil Deo Singh, librarian, Balwant Rajput College, Agra, India: to visit centers of library science in the United States; \$5,060;

Department of Agriculture, State of Bihar, India:

Dr. Amalendu Ganguly, pathologist, Sugarcane Research Institute, Pusa; to review plant virus disease research at centers in Europe, the United States, and the Far East, and to attend the IX International Botanical Congress in Montreal, Canada; \$5,300;

S. D. Sinha, soil survey officer, Sabour, Bhagalpur; to study at Cornell University, Ithaca, New York, and to observe soil survey programs at institutions in the United States; \$5,100;

Dr. Narendra Lal Dhawan, associate coordinator, Maize Improvement Scheme, Indian Council of Agricultural Research, New Delhi: to study maize breeding and improvement programs in Mexico, Colombia, and the United States, and to attend meetings of the American Society of Agronomy; \$4,000;

Indian Society of Genetics and Plant Breeding, New Delhi: to publish the proceedings of a special Symposium on Genetics and Plant Breeding in South Asia held in New Delhi during January, 1957; \$3,000;

Dr. J. K. Basu, senior soil conservation director, Ministry of Agriculture, New Delhi, India: to participate in the United Nations Food and Agriculture Organization Watershed Management Seminar and group study tour in the United States; \$3,300;

N. C. Ray, joint director of agricultural marketing for West Bengal, Calcutta, India: to study agricultural marketing problems at universities and research institutions in the United States, Europe, and Asia; \$5,200;

Central Institute for Natural Research, Bogor, Indonesia: library materials for the Central Library of Science; \$10,000;

University of Indonesia, Bogor:

Dr. A. J. Darman, Faculty of Veterinary Science; to consult with scientists in the United States and Argentina; \$5,150;

Dr. Moh Mansjoer, professor of veterinary science; to visit universities and research institutes in the United States; \$4,500;

Chi Wen Chang, United Nations Food and Agriculture Organization agricultural advisor in Thailand, Bangkok: to visit land-grant institutions in the United States and agricultural institutions in England and the Netherlands to study and observe agricultural extension programs; \$4,025;

Ministry of Agriculture, Saigon, Viet Nam: equipment, supplies, and books for the Laboratory of Soil Science; \$3,600;

### *Far East*

University of Adelaide, Australia:

To construct and equip an insectary; \$10,000;

Dr. Rupert J. Best, reader in virology; to consult with biochemists and plant pathologists in Canada and the United States; \$2,550;

William B. McGlasson, research horticulturist, Department of Agriculture, Adelaide, Australia: to accept an appointment as research assistant at the University of California, Davis; \$1,600;

Glenorchy McBride, lecturer in animal genetics, University of Queensland, Brisbane, Australia: to visit universities and research institutes in the United States; \$2,000;

Hokkaido National Agricultural Experiment Station, Sapporo, Japan:

Scientific periodicals for the library; \$10,000;

Takaichi Nishikata, head, Department of Agricultural Chemistry; to visit agricultural colleges and experiment stations in the United States and Europe; \$3,800;

Hokkaido University, Sapporo, Japan:

Scientific equipment for the research program of the Faculty of Agriculture; \$18,000;

Dr. Daiki Murayama, professor of plant pathology; to visit laboratories of plant pathology in Europe, Canada, and the United States; \$4,150;

Kanazawa University, Japan: equipment and supplies for research on photosynthesis in the rice plant, by Dr. Kojiro Nishida; \$10,000;

Iwao Nikki, Kanto-Tosan National Agricultural Experiment Station, Konosu, Japan: to visit forage crop and grassland management research centers in the United States and Europe; \$5,050;

Kyushu National Agricultural Experiment Station, Chikugo, Japan: scientific equipment for use in the agricultural research program; \$15,000 for a two-year period;

Dr. Hisayoshi Iwata, professor of animal nutrition, Kyushu University, Fukuoka, Japan: to visit centers of research in animal nutrition in Europe and the United States; \$4,175;

Heihachiro Miyayama, Science Research Aid Section, Ministry of Education, Tokyo, Japan: to visit science organizations and universities in the United States; \$3,200;

**National Institute of Agricultural Sciences, Tokyo, Japan:**

**Dr. Koichi Sato**, head, Pomology Section, Hiratsuka; to visit research centers in the United States and Canada; \$3,850;

**Takeshi Hayashi**, head, Department of Plant Physiology and Genetics; to consult with plant scientists in the United States, Canada, and Europe; \$2,710;

**Masatada Oyama**, chief, Division of Soil Survey; supplement to an earlier grant in aid for additional expenses of visits to agricultural research centers in the United States; \$300;

**Dr. Motoyoshi Umezu**, professor of animal physiology, Tohoku University, Sendai, Japan: to visit laboratories of animal physiology in the United States and Europe; \$4,850;

**Dr. Hiroshi Tamiya**, director, Tokugawa Institute for Biological Research, Tokyo, Japan: to visit research centers in the United States and Europe; \$2,330;

**Seoul National University, Korea:** research in forest-tree breeding and propagation at the College of Agriculture, Suwon; \$7,600;

**Department of Scientific and Industrial Research, New Zealand:**

An analytical ultracentrifuge for the research program of the Plant Diseases Division, Auckland; \$10,000;

**Dr. A. T. Johns**, director, Palmerston North; to visit plant biochemistry laboratories while in the United States; \$775;

**Professor Victoriano A. Gaborno**, Central Luzon Agricultural College, Nueva Ecija, Philippines: to consult with scientists in the United States; \$3,600;

**Professor Andres T. Lucas**, Mindanao Agricultural College, Musuan, Philippines: to visit rice research centers in Asia; \$3,125;

**Cledualdo B. Perez, Jr.**, assistant instructor, Department of Animal Husbandry, College of Agriculture, University of the Philippines, Los Baños, Laguna: to undertake graduate study and research in animal nutrition in the United States; \$1,800.

## Operating Programs

In 1959 The Rockefeller Foundation appropriated a total of \$2,998,710 for the support of its agricultural operating programs in Chile, Colombia, Mexico, and India, for the Inter-American Food Crop Improvement Program, and for scholarships to its Latin American programs. An additional \$185,000 was appropriated for the initial operating expenses of the International Rice Research Institute in Los Baños, the Philippines. Descriptions of these activities follow pages 21 and 25.

## Grants with Long-Range Relation to the World's Food Supply

HEBREW UNIVERSITY OF JERUSALEM

WATER CONSERVATION IN THE NEGEV DESERT

In the harsh and inhospitable region of the Negev Desert, which covers 60 per cent of Israel's total land area, scientists and scholars from the Hebrew University of Jerusalem have discovered many indications that the Negev's ancient farmers displayed an outstanding technical skill in the conservation and use of water. These ancient farmers supplied the water needs of settlements which included six large cities whose total population, at their maximum development, has been estimated at 100,000 inhabitants.

Since the climatic conditions in the Negev are essentially the same today as they were centuries ago, the investigations made by the Hebrew University scientists and scholars lead them to believe that the ancient methods could be applied and relied upon to be of practical value today.



By means of large-scale experiments suggested by the legacy of the past, they hope to make possible the establishment of agriculture in desert regions without bringing in water from outside areas. If these methods prove successful, large areas of the desert, now undeveloped, can be settled.

Partly supported by the Hebrew University and the Israeli Agricultural Ministry, the project will receive \$110,000 from The Rockefeller Foundation during a three-year period beginning July 1, 1959. Director of the research is Professor Michael Evenari of the Department of Botany, Hebrew University.

#### HARVARD UNIVERSITY

#### GRADUATE SCHOOL OF PUBLIC ADMINISTRATION

The world's water supply is diminishing while the demand for water for food production and industry is fast increasing. This problem becomes daily more critical. The most generalized and objective approach to a solution is being made by a faculty seminar organized by the Graduate School of Public Administration at Harvard University. Over the past four years, this group has been analyzing water resource data and seeking to improve methods for planning and designing water resource systems for the future.

Members of the physical and social sciences faculties at Harvard have been working together to formulate objectives and conduct research on optimum river system design. The most advanced computers have been used to test basic theories on a prototype system; models simulating internal flow hydrology and time pattern flows have been developed; a quasi-linear programming model has permitted approximate solutions to optimum system design; and a new synthetic hydrology has been worked out and already adopted by the U.S. Geological Survey. In addition to research, the

seminar has given training to 23 fellows from water resource agencies.

The Foundation has appropriated \$163,600 to support the program since its inception in 1955. A further grant of \$106,000 made in 1959 will be used over an 18-month period to complete program objectives.

#### AGRICULTURAL RESEARCH STATION, ISRAEL

#### EVALUATION OF IRRIGATION REQUIREMENTS

Irrigation has been a part of agricultural practice in many areas of the world since the first cultivation of plants by man. But conventional methods of measuring irrigation requirements, coupled with the real difficulty of evaluating and relating all the factors involved, generally combine to produce either overirrigation or underirrigation. Dr. Jacob Rubin, head of the Division of Irrigation and Soil Technology at the Rehovot Station in Israel, has developed new methods for the analysis of experimental irrigation data. By combining these procedures with other proven analytical methods, Dr. Rubin has developed a quantitative summary of soil-water-plant relations under Israeli conditions.

To continue his irrigation studies, Dr. Rubin has received a grant of \$70,000 from The Rockefeller Foundation, available during a three-year period beginning February 1, 1959. With this amount Dr. Rubin and his associates will complete their theoretical analysis, initiate studies on secondary factors in critical soil moisture levels, and combine these studies with research on the effect of soil moisture conditions on plant development. An additional problem which will be studied is the dependence of evapo-transpiration rates upon soil and crop cover conditions. Dr. Rubin and his associates also plan a related research program in the greenhouse to study the influence of soil moisture upon plant growth under controlled conditions.

## UNIVERSITY OF WISCONSIN

## SOLAR ENERGY DEVICES IN UNDERDEVELOPED AREAS

The efforts of scientists to achieve inexpensive, effective means of utilizing solar energy as a substitute for conventional energy sources have already yielded prototypes of reflective cookers, solar water heaters, space coolers, and refrigeration units. Yet to date little effort has been concentrated on the problems involved in the consumer's acceptance and use of solar devices. These products are designed principally for people who live in underdeveloped communities, where climatic and economic conditions favor the use of such devices. Since these people are usually unfamiliar with technological innovations, it seems essential to combine field studies of acceptance with product development.

The Rockefeller Foundation has already made two appropriations of \$250,000 each to the University of Wisconsin for research on the utilization of solar energy, especially in underdeveloped areas. A portion of these funds, \$16,000, was made available for a preliminary field program of the Department of Anthropology, directed by Dr. M. L. Barnett. In 1959 the Foundation appropriated \$45,000 for a three-year period to enable Dr. Barnett's group to continue its work.

The group hopes to obtain conclusive field data on structural design of solar devices produced by the Solar Energy Laboratory, investigate cultural factors affecting their acceptance, discover reasons for any resistance or refusal to accept solar devices, and ways to solve such problems, and stimulate new solar energy developments. Major research sites have been selected in Mexico not only on the basis of differences in radiation, poverty of natural fuel resources, and general meagerness of land potentials, but also in the light of selected cultural factors considered crucial to the experiments.

## OTHER GRANTS

University of Arizona, Tucson: a program of interuniversity cooperation with the University of Sonora, Hermosillo, Mexico; \$10,000;

Texas Research Foundation, Renner: evaluation of the ancient agriculture of the lowland Mayan area of Guatemala, by Dr. C. L. Lundell; \$9,600;

Polytechnic Institute of Brooklyn, New York: study of ion-selective membrane evaluation; \$7,500;

Dr. Masayoshi A. Hatanaka, associate professor of fisheries biology, Faculty of Agriculture, Tohoku University, Sendai, Japan: to visit scientific institutions in the United States and Canada; \$3,025.

## Other Appropriations



## OTHER APPROPRIATIONS

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**G**RANTS WHICH FALL somewhat outside the specific programs, or which include elements relating to more than one aspect of the Foundation's work, are taken from general funds. In 1959 ten appropriations and 29 smaller grants were of this character.

### INDIA INTERNATIONAL CENTRE

Particularly since the end of the second World War, New Delhi has become the center of communications as well as of government in India, and a major crossroads in Asia for international exchange. To provide a center for the neighboring cities of Delhi and New Delhi which can become a headquarters for both Indian and foreign scholars, scientists, writers, and men of affairs, a group of Indian cultural leaders have organized the India International Centre, incorporated in March, 1959.

The International Centre will provide a forum for cultural and intellectual exchange, and conference facilities and residential quarters for visiting Indian and foreign scholars and leaders in many fields. Among its activities will be lectures, discussions, and symposia on significant problems, the support of important educational and scholarly programs, and a modest publication program. It will give advice and assistance to enable visiting cultural leaders to reap the greatest benefit from their stay in India, and sponsor trips abroad by Indian leaders and visits to India

by foreign cultural and intellectual leaders. The center will work closely with such other institutions in New Delhi as the University of Delhi and the Indian Council of World Affairs.

On land made available by the Government of India a main building containing residential and dining accommodations, a library, lecture hall, large and small conference rooms, a lounge, and offices for staff members, will be constructed. Nearby houses will be built for the director and for a visiting fellow, who will on annual rotation serve as an assistant to the director. Present plans call for the completion of all construction during 1961.

Dr. C. D. Deshmukh, chairman of the University Grants Commission and a former Minister of Finance, is president of the International Centre's Board of Trustees, which includes distinguished Indian educators, government officials, and businessmen. Nearly all of India's 38 universities have enthusiastically endorsed the plans and purposes of the center, and have joined it as institutional members pledged to give recurrent financial support.

During 1959 The Rockefeller Foundation made two grants totaling \$834,135 as a contribution to the development of the India International Centre. The first grant provided \$120,000 to meet some of the preliminary expenses of acquiring a site and beginning the construction and operations of the center. The second grant made \$590,200 available through December 31, 1965, for capital costs, and \$123,935 during the same period for the operating expenses of the center.

#### HUNGARIAN REFUGEE AID PROGRAM

In the third year of The Rockefeller Foundation's program of aid for Hungarian refugees, the chief continuing task is helping some hundreds of young refugees who are



hoping to complete their education in 13 institutions of higher learning in Austria. The Foundation has therefore appropriated \$300,000, most of which will be used to provide scholarships for an estimated 547 who will be studying in Austria during 1959-1960.

This appropriation brings to a total of \$2,250,000 the amount provided by the Foundation since December, 1956, for a special program of assistance to refugee Hungarian students in the arts and sciences. In addition, a number of specific grants for Hungarian refugees have been approved, among them grants for the Philharmonia Hungarica.

Listed below are the allocations to support programs in Austrian institutions for Hungarian refugee students made with funds appropriated in 1959 and with those remaining from the 1958 appropriation:

University of Vienna, Austria: 1,460,000 Austrian schillings (about \$58,400);

Technical Institute, Vienna, Austria: 1,620,000 Austrian schillings (about \$64,800);

Academy for Music and Dramatic Arts, Vienna, Austria: 468,000 Austrian schillings (about \$18,720);

Academy for Plastic Arts, Vienna, Austria: 496,000 Austrian schillings (about \$19,840);

Academy of Applied Art, Vienna, Austria: 193,000 Austrian schillings (about \$7,720);

Institute for World Trade, Vienna, Austria: 370,000 Austrian schillings (about \$14,800);

Institute for Agriculture, Vienna, Austria: 171,000 Austrian schillings (about \$6,840);

Institute of Veterinary Science, Vienna, Austria: 122,000 Austrian schillings (about \$4,880);

University of Innsbruck, Austria: 1,273,000 Austrian schillings (about \$50,920);

University of Graz, Austria: 694,000 Austrian schillings (about \$27,760);

Technical Institute, Graz, Austria: 686,000 Austrian schillings (about \$27,460);

Mining Institute, Leoben, Austria: 203,000 Austrian schillings (about \$8,120);

Mozart Academy for Music and Dramatic Arts, Salzburg, Austria: 305,000 Austrian schillings (about \$12,200).

In addition to allocations for students in Austria, the 1959 appropriation of \$300,000 will provide these funds for Hungarian refugee scholars in the United States:

American Council for Emigrés in the Professions, Inc., New York: toward the administrative expenses of its program for the selection and placement of Hungarian refugees in the professions; \$10,000;

To enable Dr. Istvan Ring, Rockefeller Foundation Fellow, to take a United States Public Health Service training course; \$450.

UNIVERSITY OF CAMBRIDGE  
AND THE UNIVERSITY OF OXFORD

CHURCHILL COLLEGE AND ST. CATHERINE'S COLLEGE

Several years ago both the University of Cambridge and the University of Oxford began planning the establishment of new colleges in which the emphasis would be primarily on work in the natural sciences and mathematics. Like other institutions in England and elsewhere, the two universities have been increasing their teaching and research facilities in these fields, but have found further enlargement of the student body impossible with their present number of colleges. The two new schools, Churchill College at the

University of Cambridge and St. Catherine's College at the University of Oxford, will together make possible the enrollment of about 1,000 additional students at the two universities.

Cambridge's Churchill College will accommodate about 500 students, 70 per cent of whom will be concentrating on the natural sciences and mathematics. Sir John Cockcroft, head of research for the British Atomic Energy Authority, has been appointed Master of the college. St. Catherine's College at Oxford will have a student body of about 400, half of whom will be reading the sciences and mathematics. Sir Cyril Hinshelwood and Sir Hans Adolf Krebs, two of Britain's most distinguished scientists, are on the committee planning the development of the college. Construction at both universities is expected to get under way in 1960.

The British University Grants Committee and British and American foundations and business groups are contributing generously to the funds needed for the new colleges. To enable both Churchill College and St. Catherine's College to invite visiting fellows and distinguished scholars as part of their regular program, The Rockefeller Foundation in 1959 appropriated \$100,000 to each university. Both grants are available over five-year periods.

#### COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION

##### RADIO ASTRONOMY

The science of radio astronomy has developed rapidly since the war through the use of the radio telescope, an instrument which brings the part of the universe which extends beyond the range of optical instruments into the ken of astronomers. Whereas an optical telescope receives the light waves emitted or reflected from celestial bodies, the antenna

of a radio telescope allows the much longer radio waves produced by these bodies to be studied for such information as their distance from the earth, chemical composition, and physical state.

Some of the most extensive work in the field of radio astronomy has been done in Australia by the Commonwealth Scientific and Industrial Research Organization. A 36-foot diameter parabolic dish, which serves as the antenna of a radio telescope, has been erected there as part of the apparatus used for the reception of radio waves. In 1955, with the help of a Rockefeller Foundation grant, the organization began plans for the construction of a much larger radio telescope, to be the only one of its kind located in the southern hemisphere. Although its 210-foot parabolic dish will be 40 feet less in diameter than that of the largest radio telescope in the world, advanced design will render the instrument extremely accurate. In 1959 the contract for the building of the radio telescope in Australia was given to a West German firm; completion is expected in about two years.

Because of the large difference between cost estimates made in 1955 and the actual amount now required for the building of the instrument, further funds were sought for construction in 1959. The Rockefeller Foundation appropriated \$107,000 to the Commonwealth Scientific and Industrial Research Organization to help cover the increased cost of building the radio telescope.

#### UNION THEOLOGICAL SEMINARY

#### ADVANCED RELIGIOUS STUDIES

Five years ago Union Theological Seminary, New York, established a program to enable younger religious leaders from various parts of the world to gather at the seminary for study of moral and intellectual questions in

the world today. It was the intent of the program that through individual study and the mutual exchange of insights, these individuals might attain a deeper understanding of the problems and of how they might be approached in terms of religious beliefs and experiences.

During the first four years ending in June, 1959, 99 fellows from 45 countries were enrolled in the program, and in the current academic year 23 additional fellows from 20 countries are participating. They have included representatives of various Christian churches, as well as one member of the Muslim faith.

The program has been assisted by The Rockefeller Foundation through a \$525,000 appropriation made in 1954. For an additional year's support the Foundation has appropriated \$75,000 to Union Theological Seminary.

#### PHELPS-STOKES FUND

##### PLACEMENT SERVICE FOR NEGROES

A number of years ago the Phelps-Stokes Fund, New York, initiated a program designed to acquaint professionally trained Negroes with career opportunities of which they might not otherwise be aware. The director of the program has toured colleges and universities to inform students and placement officers of the opportunities for Negro college graduates in this country and abroad, and has also visited governmental and industrial agencies with overseas programs. As a result, over 75 Negroes with special skills and experience have been placed in responsible positions, and hundreds of interviews have been held with persons needing help in finding appropriate positions.

In the next few years emphasis will be placed on encouraging qualified Negroes to take the Department of State foreign service examination, on informing placement officers and college students of the possibilities for employ-

ment with the International Cooperation Administration, and on discussions with officials of some of the newer African nations of their need for trained personnel. The Fund plans, among other activities, to explore opportunities for women college graduates, and to arrange workshops at which placement officers can learn of positions in various fields.

To help support the Phelps-Stokes Fund placement service during the next three years, The Rockefeller Foundation appropriated \$70,000 in 1959. The Rockefeller-endowed General Education Board in 1954 provided some of the funds needed to begin the program.

#### COUNCIL FOR FINANCIAL AID TO EDUCATION, INC.

The role of the Council for Financial Aid to Education, Inc., New York, founded in 1952 by business leaders and educators, is to promote a better understanding of the needs of higher education and to aid indirectly in securing more adequate financial support for it from American business concerns.

The council has conducted regional seminars to acquaint presidents of junior and senior colleges with the methods and organization of fund-raising programs. Because these seminars have proved very helpful to heads of smaller institutions or those presidents without previous experience in fund-raising, they will be continued on an expanded basis in the future. As a result of suggestions made by heads of larger institutions, the council is also planning a series of seminars which will stress trustee leadership, management problems involved in administering a large development staff, budget and internal relationship problems, and other matters. Five such seminars with about 16 to 20 presidents participating in each will be held in New York, Chicago, Atlanta, Kansas City, and San Francisco.

The Rockefeller Foundation appropriated \$37,500 to

the Council for Financial Aid to Education in 1959 for the continuation and expansion of their seminar program during the next year and a half.

UNITED STATES COMMITTEE FOR THE  
ATLANTIC CONGRESS, INC.

The member countries and organizations of NATO commemorated the tenth anniversary of the North Atlantic Treaty by holding an Atlantic Congress in London in June, 1959, to consider the growth of "The Atlantic Community in the Next Ten Years." The congress was opened by Queen Elizabeth II in impressive ceremonies in Westminster Hall and had the distinguished patronage of 12 heads of government.

In the interest of maintaining peace and security in the North Atlantic area, European and North American countries sent 650 of their leading citizens to the week-long meetings to discuss ways of promoting closer cooperation among their countries and with the rest of the world in the economic, political, and cultural fields, and in the military sphere. The delegates represented industry, commerce, finance, labor, politics, education, and the mass media on both sides of the Atlantic.

The expense of the congress was divided among the participating countries with national committees undertaking to collect funds from nongovernmental sources to allow delegations complete freedom of discussion and recommendation. A Foundation grant of \$25,000 to the United States Committee for the Atlantic Congress, Inc., contributed to the preparation of background and study material and to the publication of the proceedings.

## SPECIAL PURPOSE APPROPRIATIONS

In 1959 the Foundation made a number of appropriations to meet certain special expenses. A total of \$306,000, including a grant in aid of \$10,000, was made available for conferences, consultations, and administrative expenses relating to the Villa Serbelloni. To fund annuity and termination allowance obligations connected with the retirement of staff members, the Foundation appropriated \$311,198. Grants totaling \$129,100 were made to cover the salary, travel, and other expenses of Foundation staff members seconded to other organizations.

## OTHER GRANTS

Expenses of a preliminary study, by a national commission, of the national voluntary health and welfare agencies; \$25,000;

American Friends Service Committee, Philadelphia, Pennsylvania: to invite Jayaprakash Narayan, Indian social philosopher, and Mrs. Narayan to visit North America; \$10,000;

Greater New York Coordinating Committee of the American Red Cross, New York: general support; \$10,000;

Asia Society, New York: travel in Asia by staff members in connection with the development of the society's Cultural Exchange Program; \$10,000;

Columbia University, New York: toward expenses involved in implementing the cultural exchange agreement between the United States and the Soviet Union; \$10,000;

Golden Anniversary White House Conference on Children and Youth, Washington, D.C.: expenses of foreign participants in the 1960 conference; \$10,000;

Harvard University, Cambridge, Massachusetts: toward expenses involved in implementing the cultural exchange agreement between the United States and the Soviet Union; \$10,000;



Hunter College of the City of New York: to be used by the Faculty Fellowship Fund for grants for research expenses; \$10,000;

International Schools Foundation, Inc., Washington, D.C.: to survey and analyze overseas schools enrolling American children as a preliminary step in planning a program of general and educational services to these schools; \$10,000;

Charles K. Brightbill, head, Recreational Department, College of Physical Education, University of Illinois, Urbana: to observe recreational therapy programs at hospitals and rehabilitation centers in the United States and Europe; \$9,000;

Swedish Academy of Sciences, Stockholm: expenses of radiation experts and special consultants attending the meeting of the International Commission on Radiological Protection in Munich, Germany, during July, 1959; \$8,000;

Dallas Council on World Affairs, Texas: to invite Asian statesmen to attend the World Conference on Religion and Freedom in Dallas and to visit universities in the United States; \$7,500;

New York University, New York:

Dr. Frederick L. Redefers, professor of education; to visit schools in Europe, Asia, and the Near East in connection with a study of education for international living and of the problems involved in the education of children whose parents are stationed in foreign countries; \$6,000;

Dr. Victor Ribera, New York University-Bellevue Medical Center; to visit Laos to study its rehabilitation programs; \$3,500;

Jesuit Educational Association, New York: The Reverend Edward B. Rooney, S. J., president; to visit Jesuit educational institutions in the Far East, the Near East, and Australia; \$5,300;

India International Centre, New Delhi: to send consultants to Japan to observe the functioning of the International House in Tokyo; \$5,000;

Institute of International Education, New York: to conduct a series of seminars on the Soviet Union; \$5,000;

National Academy of Sciences—National Research Council, Washington, D.C.: to review the academy's personnel security and insurance coverage programs; \$5,000;

David A. McCandless, director, Southern Police Institute, University of Louisville, Kentucky: to accept an invitation to lecture and consult with police officials in South Africa under the auspices of the United States—South Africa Leader Exchange Program; \$3,900;

Academy of the Rumanian People's Republic, Bucharest: equipment for use in the Institute of Linguistics; \$3,200;

Mount Holyoke College, South Hadley, Massachusetts: study of library development in Africa, by Miss Flora B. Ludington, librarian; \$3,000;

International House of Japan, Tokyo: to invite Dr. C. D. Deshmukh, chairman, University Grants Commission of India, New Delhi, and Mrs. Deshmukh to visit Japan under its Distinguished Visitors Program; \$2,250;

Asoka Mehta, member of the Indian Parliament, New Delhi: to make a study tour of North America; \$2,000;

Hodding Carter, editor and publisher, *Delta Democrat-Times*, Greenville, Mississippi, and Mrs. Carter: supplement to an earlier grant in aid for additional expenses of a visit to Africa under the auspices of the United States—South Africa Leader Exchange Program; \$1,800;

Herald Tribune Fresh Air Fund, New York: to provide an educational film with a Russian-language commentary; \$1,150;

American College of Radiology, Chicago, Illinois: to help meet the costs of planning the possible reorganization of the National Committee on Radiation Protection and Measurements; \$1,000;

A fund to provide dollars for visa fees and similar charges in connection with the travel of Polish Rockefeller Foundation fellows and grantees, to be administered by the Disbursing Officer, United States Embassy, Warsaw; \$1,000;

Fund for grants of amounts not exceeding \$500, for allocation under the supervision of the President, Executive Vice-President, Vice-President for Natural and Medical Sciences, and the Secretary; \$5,000.

## Fellowships



# FELLOWSHIPS AND OTHER STUDY AWARDS

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**T**HE FOUNDATION's fellowship appointments are integrated with the interests of its several programs. Through fellowships, chiefly for postdoctoral study, the Foundation seeks to advance knowledge in a wide variety of fields in the medical and natural sciences, the agricultural sciences, the social sciences, and the humanities. Fellowships are awarded on an international basis to outstanding men and women who have completed their specialized training, and who have shown promise of making important contributions to their fields of study in their native countries.

During 1959 a total of 630 persons held Foundation fellowships; 339 fellowships that began in previous years continued active into 1959, and 291 new awards became active during the year. Their distribution by program is as follows:

	Fellowships from previous years continued into 1959	New awards in 1959	Number of fellows active in 1959
Agricultural Sciences	58	53	111
Humanities	36	24	60
Hungarian Refugee Program	3	—	3
Medical and Natural Sciences	149	136	285
Polish Science Program	49	43	92
Social Sciences	44	35	79
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
	339	291	630

The fellows during 1959 came from 49 different countries and two international organizations. Countries represented by three or more fellows were:

Argentina	9	Jamaica	3
Australia	10	Japan	89
Austria	3	Korea	4
Belgium	3	Lebanon	5
Brazil	43	Mexico	26
Chile	24	Netherlands	4
Colombia	38	Norway	6
Denmark	4	Pakistan	4
El Salvador	3	Philippines	25
Finland	5	Poland	124
France	4	Portugal	3
Germany	8	Sweden	4
Great Britain	18	Switzerland	3
Hungary	4	Thailand	8
India	54	Turkey	29
Indonesia	9	United States	13
Italy	11		

Fellowships were also held during 1959 by individuals from the following countries: Bolivia, 1; Canada, 2; Ceylon, 2; Costa Rica, 1; Egypt, 1; Ghana, 1; Greece, 1; Guatemala, 1; Iran, 2; New Zealand, 1; Nigeria, 1; Peru, 1; National Republic of China, 1; Union of South Africa, 2; United Arab Republic, 2; and Uruguay, 1. Eight fellows during 1959 were appointed from the World Health Organization, and 1 from the United Nations Relief and Works Agency.

The Rockefeller Foundation made available a total of \$1,375,000 for its regular fellowship activities during 1959, allocated for use by the various programs. To support the fellowship program during 1960 the Foundation has appropriated \$1,525,000.

In 1959 the Foundation also appropriated \$1,325,000 for its special expanded program of fellowships, scholarships, and training awards for men and women from Asia, Latin America, the Middle East, and Africa. With these funds additional awards were made to candidates from the four geographical areas mentioned above, of whom 74 received fellowships, 54, scholarships, and five, training awards. In support of the supplementary program during 1960, the Foundation has appropriated \$1,375,000.

To continue a Polish Science Program initiated in 1957, the Foundation made available a total of \$300,000 in two separate allocations during the year. In 1959 92 Polish fellows and 6 Polish scholars held appointments, 36 in the agricultural sciences and 62 in the medical and natural sciences. Within a program made possible by grants for emergency aid in the arts and sciences for refugee Hungarians, 3 fellows held awards during the year.

The Foundation in 1959 continued to appropriate funds for allocation to institutions where Foundation fellows are engaged in study and research. Recognizing that the disparity between universities' expenses and their income from tuition and fees is most apparent at the advanced level of fellowship study, the Foundation made available \$500,000, to be disbursed in units of \$1,000 for each full year a fellow spends at a university and \$500 for each half-year. The grants are unrestricted, and are in addition to tuition and other fees also paid by the Foundation through its fellowship awards. Under this program in 1959, the Foundation sent funds amounting to \$327,500 to 110 institutions in the United States and foreign countries.

In addition to the fellowships awarded and administered directly by The Rockefeller Foundation, national agencies have awarded fellowships with funds contributed in 1959 and previous years by the Foundation. These agencies administered a total of 117 fellowships during 1959:

Association for Asian Studies	9
British Medical Research Council	12
National Research Council	
Medical Sciences	9
Social Science Research Council	
Predoctoral and Postdoctoral	72
Political Theory and Legal	
Philosophy	15
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Below is a listing of individuals whose fellowships, awarded under the regular and special programs of The Rockefeller Foundation, became active in 1959, and 6 fellows appointed in the same year by the Medical Research Council of Great Britain. The fellowships awarded by the British Council have been included in this listing because the fellows received guidance and supervisory assistance from Foundation fellowship advisors.

The following information is included for each individual: name; country of origin; date of birth; highest degree; major field of interest; fellowship-awarding agency or program; institution with which fellow was affiliated when appointed; principal countries of fellowship study; and date of fellowship.

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|---|---|
| ABELLA Y AGUILAR, PEDRO ( <i>Philippines</i> ) b. 1922. M.A., Univ. of Florida 1956. Plant Science—Agronomy (A). Appointed from Central Luzon Agric. Coll., Nueva Ecija. <i>Place of Study</i> : U.S.A., 1959-. | from Univ. of Uppsala. <i>Place of Study</i> : England, 1959-.  |
| ABRAHAMSSON, SIXTEN ( <i>Sweden</i> ) b. 1930. Ph.D., Univ. of Uppsala 1959. Biophysics—X-Ray Crystallography (MNS). Appointed  | AGOSTINI, DANILO ( <i>Italy</i> ) b. 1926. Laur., Univ. of Padua 1952. Agricultural Economics (SS). Appointed from Univ. of Padua. <i>Place of Study</i> : U.S.A., 1959-. |
|   | AGUILERA AMEZCUA, AUGUSTO ( <i>Mexico</i> ) b. 1933. M.S., Pennsylvania State Univ. 1959. Soil Science (LAS); Animal Science  |



- (A). Appointed from Mexican Agric. Program. *Place of Study*: U.S.A., 1957-1959; 1959-.
- ALEXIEWICZ, ANDRZEJ (*Poland*) *b.* 1917. Ph.D., Poznan Univ. 1945. Mathematics (MNS). Appointed from Poznan Univ. *Place of Study*: U.S.A., 1959-.
- ALFONSO, PABLO J. (*Philippines*) *b.* 1926. M.S., Univ. of Wisconsin 1956. Animal Science—Zoology (A). Appointed from Univ. of the Philippines, Los Baños, Laguna. *Place of Study*: U.S.A., 1959-.
- ALZAMORA, FERNANDO (*Brazil*) *b.* 1929. M.D., Univ. of Minas Gerais, Belo Horizonte, 1956. Basic Medical Sciences (MNS). Appointed from Univ. of Minas Gerais. *Place of Study*: U.S.A., 1959-.
- AMARAL, RENATO LUIZ (*Brazil*) *b.* 1930. M.D., Univ. of Rio Grande do Sul, Pôrto Alegre, 1953. Surgery (MNS). Appointed from Univ. of Rio Grande do Sul. *Place of Study*: U.S.A., 1959-.
- ANNAMUNTHODO, HARRY (*Jamaica*) *b.* 1920. F.R.C.S., London School of Hygiene and Trop. Med. 1950. Thoracic - Cardiac Surgery (MNS). Appointed from Univ. Coll. of the West Indies, Mona. *Place of Study*: U.S.A., 1959-.
- APPLEBY, CYRIL A. (*Australia*) *b.* 1928. Ph.D., Univ. of Melbourne 1958. Biochemistry (A). Appointed from Commonwealth Scien. and Indust. Research Org., Canberra. *Place of Study*: U.S.A., 1959-.
- ARAKI, TATSUNOSUKE (*Japan*) *b.* 1926. M.D., Kyoto Univ. 1949. Neurophysiology (MNS). Appointed while a Fulbright fellow at Univ. of California Med. Center. *Place of Study*: Australia, 1959-.
- ARAS, KAZIM (*Turkey*) *b.* 1908. M.D., Univ. of Istanbul 1933. Biochemistry (DMPH); Preventive Medicine (MNS). Appointed twice from Univ. of Ankara. *Places of Study*: Canada, 1954, U.S.A., 1955; U.S.A., 1959-.
- AREL, BULENT (*Turkey*) *b.* 1918. Grad., Natl. Conservatory of Ankara. Music (H). Appointed from Radio Ankara. *Place of Study*: U.S.A., 1959-.
- ARIYOSHI, SAWAKO (*Japan*) *b.* 1931. B.A., Tokyo Women's Christian Coll. 1952. Drama (H). *Place of Study*: U.S.A., 1959-.
- ARMAOGLU, FAHIR H. (*Turkey*) *b.* 1924. Ph.D., Univ. of Ankara 1953. Political Science (SS). Appointed from Univ. of Ankara. *Place of Study*: U.S.A., 1959-.
- ASHIBE, NOBUYOSHI (*Japan*) *b.* 1923. Hogakushi, Tokyo Univ. 1949. Comparative Law (SS). Appointed from Tokyo Univ. *Place of Study*: U.S.A., 1959-.
- ASHIDA, KIYOSHI (*Japan*) *b.* 1914. D.Sc., Tokyo Univ. 1949. Animal Science — Nutrition (A). Appointed from Nagoya Univ. *Place of Study*: U.S.A., 1959-.
- ASTEY VAZQUEZ, LUIS (*Mexico*) *b.* 1921. Lic. (Law), Univ. of Guadalajara 1944. Special Projects (H). Appointed from Technol. Inst. and School of Advanced Studies of Monterrey. *Place of Study*: U.S.A., 1959-.

- AYRES, DORALICE REGINA (*Brazil*)  
b. 1923. B.A., Inst. of Education,  
Amazonas, 1950. Nursing Educa-  
tion (MNS). Appointed from  
Univ. of Brazil, Rio de Janeiro.  
*Place of Study*: U.S.A., 1959-.
- BADÍA CATALÁ, WALDEMAR (*Chile*)  
b. 1922. M.D., Univ. of Chile,  
Santiago, 1949. Basic Medical  
Sciences — Physiology (MNS).  
Appointed from Catholic Univ.  
of Chile, Santiago. *Place of*  
*Study*: U.S.A., 1959-.
- BANAAG, PURIFICACION S. (*Philip-  
pines*) b. 1926. B.S.E., Natl.  
Teachers Coll., Manila, 1949.  
Drama (H). Appointed from  
Philippine Normal Coll., Manila.  
*Place of Study*: U.S.A., 1959-.
- BARRERA TORRES, CECILIA  
(*WHO*) b. 1927. R.N., Natl.  
Coll. of Nursing, Bogotá, 1947.  
Nursing Education (I.H.D.;  
MNS). Appointed from 1) Dept.  
of Child Welfare, Bogotá; 2)  
World Health Org. *Places of*  
*Study*: Canada, 1948-1949;  
U.S.A., 1959-.
- BARTNIK, JAN MARIAN (*Poland*)  
b. 1924. Ph.D., Med. Acad.,  
Warsaw, 1959. Biochemistry —  
Nutrition (A). Appointed from  
State Inst. of Hygiene, Warsaw.  
*Place of Study*: U.S.A., 1959-.
- BATI, Aysel EMINE (*Turkey*) b.  
1928. Ph.D., Univ. of Istanbul  
1958. Economics (SS). Appointed  
from Univ. of Istanbul. *Place of*  
*Study*: U.S.A., 1959-.
- BELL, CORAL MARY (*United King-  
dom*) b. 1923. M.S. (Econ.),  
London School of Economics and  
Political Science 1954. Interna-  
tional Relations (SS). Appointed  
from Victoria Univ. of Man-  
chester. *Place of Study*: U.S.A.,  
1959-.
- BENGUL, NECLA (*Turkey*) b. 1932.  
Ph.D., Univ. of Ankara 1958.  
Literature (H). Appointed from  
Univ. of Ankara. *Place of Study*:  
U.S.A., 1959-.
- BERKOL, BEKIR SIDDIK (*Turkey*)  
b. 1913. M.D., Univ. of Istanbul  
1938. Hematology (MNS). Ap-  
pointed from Univ. of Ankara.  
*Place of Study*: U.S.A., 1959-.
- BERNACKI, HENRYK (*Poland*) b.  
1923. Docent, Warsaw Polytech-  
nic Inst. of Mechanization and  
Electrification of Agric. 1959. Ag-  
ricultural Engineering (A). Ap-  
pointed from Warsaw Polytech-  
nic Inst. of Mechanization and  
Electrification of Agric. *Place of*  
*Study*: West Germany, 1959-.
- BERRIOS, JUAN HECTOR (*El Sal-  
vador*) b. 1928. M.D., Univ. of  
El Salvador, San Salvador, 1956.  
Anatomy (MNS). Appointed  
from Univ. of El Salvador. *Place*  
*of Study*: U.S.A., 1959-.
- BHATNAGAR, PARMANAND SWARUP  
(*India*) b. 1920. M.S., Univ. of  
Lucknow 1941. Plant Science —  
Genetics and Plant Breeding  
(A). Appointed while grad. stu-  
dent at Univ. of Illinois. *Place*  
*of Study*: U.S.A., 1959-.
- BICKEL, HORST (*Germany*) b. 1918.  
Ph.D., Univ. of Birmingham  
1952. Biochemistry — Amino  
Acids, Human Biochemical Ge-  
netics (MNS). Appointed from  
Univ. of Marburg. *Place of*  
*Study*: U.S.A., 1959-.
- BIBLICKI, TADEUSZ (*Poland*) b.  
1932. Magis., Univ. of Wroclaw  
1956. Biology—General (MNS).

- Appointed from Polish Acad. of Sciences, Wroclaw. *Place of Study*: U.S.A., 1959-.
- BLACK, WILLIAM** (*United Kingdom*) *b.* 1927. Ph.D., Queen's Univ. of Belfast 1955. Economics (SS). Appointed from Queen's Univ. of Belfast. *Place of Study*: U.S.A., 1959-.
- BLAIM, ALICE** (*Poland*) *b.* 1922. M.D., Univ. of Warsaw 1952. Pediatric Endocrinology (MNS). Appointed from Med. Acad., Warsaw. *Place of Study*: U.S.A., 1959-.
- BLAIM, KAZIMIERZ** (*Poland*) *b.* 1924. Dr., Agric. Coll., Lublin, 1956. Biochemistry (A). Appointed from Inst. of Plant Breeding and Acclimatization, Pulawy. *Place of Study*: Switzerland, 1959-.
- BLICHARSKI, JULIAN** (*Poland*) *b.* 1919. M.D., Jagiellonian Univ. of Cracow 1950. Biology—Experimental Medicine (MNS). Appointed from Med. Acad., Cracow. *Place of Study*: U.S.A., 1959-.
- BRAHMS, JERZY** (*Poland*) *b.* 1920. Ph.D., Univ. of Leningrad 1954. Biochemistry—Proteins (MNS). Appointed from The Nencki Inst. of Exper. Biology, Warsaw. *Place of Study*: U.S.A., 1959-.
- BUKOWCZYK, ADAM** (*Poland*) *b.* 1923. M.B., Med. Acad. and Univ. of Lodz 1951. Psychiatry (MNS). Appointed from Med. Acad. *Place of Study*: Switzerland, 1959-.
- BURGERS, ANTON CORNELIS JACOBUS** (*Netherlands*) *b.* 1925. Ph.D., Univ. of Utrecht 1956. Biology—Endocrinology (MNS). Appointed from Univ. of Utrecht. *Place of Study*: U.S.A., 1959-.
- CALORA, FELICIANO BANAAG** (*Philippines*) *b.* 1933. M.S., Cornell Univ. 1957. Plant Science—Entomology (A). Appointed from Univ. of the Philippines, Los Baños, Laguna. *Place of Study*: U.S.A., 1959-.
- CAMACHO, LUIS H.** (*Colombia*) *b.* 1928. M.S., Cornell Univ. 1958. Plant Science—Genetics and Plant Breeding (A). Appointed from Tulio Ospina Exper. Station, Medellin. *Place of Study*: U.S.A., 1959-.
- CAMARGO, LENITA CORREA** (*Brazil*) *b.* 1920. Ph.D., Univ. of São Paulo 1958. Economics (SS). Appointed from Univ. of São Paulo. *Place of Study*: U.S.A., 1959-.
- CARBALLO QUIROS, ALFREDO** (*Costa Rica*) *b.* 1919. M.S., Iowa State Coll. 1957. Plant Science—Genetics and Plant Breeding (A). Appointed from Inter-American Inst. of Agric. Sciences, Turrialba. *Place of Study*: U.S.A., 1959-.
- CARNEIRO LEAO, JOSE** (*Brazil*) *b.* 1929. M.D., Univ. of Recife 1952. Basic Medical Sciences (MNS). Appointed from Univ. of Recife. *Place of Study*: U.S.A., 1959-.
- CARVALHO DA SILVA, ALBERTO** (*Brazil*) *b.* 1916. M.D., Univ. of São Paulo 1940. Chemistry (MS); Physiology (MNS). Appointed twice from Univ. of São Paulo. *Place of Study*: U.S.A., 1946-1947; 1959-.
- CASTILLO, FABIO** (*El Salvador*) *b.* 1921. M.D., Univ. of El Salva-

- dor, San Salvador, 1947. Physiology (MNS). Appointed from Univ. of El Salvador. *Place of Study*: U.S.A., 1959-.
- CEDILLOS, RAFAEL ANTONIO (*El Salvador*) b. 1927. M.D., Univ. of El Salvador, San Salvador, 1959. Parasitology (MNS). Appointed from Univ. of El Salvador. *Place of Study*: U.S.A., 1959-.
- CHARLES, MARCELLE (*Belgium*) b. 1921. Edith Cavell—Marie Depage Inst., Brussels, 1941. Nursing Education (MNS). Appointed from Edith Cavell—Marie Depage Inst. *Place of Study*: U.S.A., 1959-.
- CHAVES, GRACIELA (*Colombia*) b. 1935. R.N., Univ. of Valle, Cali, 1955. Nursing Education (MNS). Appointed from Univ. of Valle. *Place of Study*: Puerto Rico, 1959-.
- CHORAZY, MIECZYSLAW RAJMUND (*Poland*) b. 1925. M.D., Inst. of Oncology, Warsaw, 1958. Biochemistry (MNS). Appointed from Inst. of Oncology, Gliwice. *Place of Study*: U.S.A., 1959-.
- CHUTIMA, KRISNA (*Thailand*) b. 1927. M.S., Univ. of California 1953. Biochemistry (A). Appointed from Kasetsart Univ., Bangkok. *Place of Study*: U.S.A., 1959-.
- CIESLAK, JERZY JAN (*Poland*) b. 1920. Ph.D., Univ. of Warsaw 1954. Biochemistry—Organic (MNS). Appointed from Univ. of Warsaw. *Place of Study*: Switzerland, 1959-.
- COBO, EDGARD (*Colombia*) b. 1932. M.D., Natl. Univ. of Colombia, Bogotá, 1955. Physiology—Biochemistry (MNS). Appointed from Univ. of Valle, Cali. *Place of Study*: Colombia, 1959-.
- CORRADO, ALEXANDRE PINTO (*Brazil*) b. 1930. M.D., Univ. of São Paulo, Ribeirão Preto, 1957. Pharmacology (MNS). Appointed from Univ. of São Paulo. *Place of Study*: Italy, 1959-.
- CORTAZAR AGARMINAGA, RENE (*Chile*) b. 1917. M.S., Univ. of Minnesota 1943. Plant Science—Genetics and Plant Breeding (A). Appointed from Ministry of Agric., Santiago. *Place of Study*: U.S.A., 1959-.
- CUTILLI, BRUNO (*Italy*) b. 1931. Ph.D., Univ. of Rome 1957. Economics (SS). Appointed from Univ. of Rome. *Place of Study*: Switzerland, 1959-.
- CZUCZWAR, STANISLAW (*Poland*) b. 1922. Dipl., Med. Acad., Lublin, 1951. Pathological Anatomy (MNS). Appointed from Med. Acad. *Place of Study*: England, 1959-.
- DA CUNHA, CELINA MENDES (*Brazil*) b. 1920. R.N., Herman-tina Beraldo School of Nursing, Juiz de Fora, 1950. Nursing Education (MNS). Appointed from Univ. of Rio Grande do Sul, Pôrto Alegre. *Place of Study*: U.S.A., 1959-.
- DAS GUPTA, ARUN KUMAR (*India*) b. 1925. M.A., Univ. of Calcutta 1947. History (H). Appointed while a Fulbright fellow at Cornell Univ. *Place of Study*: U.S.A., 1959-.
- DASANAYAJA, AMBHAN (*Thailand*) b. 1922. M.P.H., Johns Hopkins Univ. 1955. Biology—

- Virology (MNS). Appointed from Univ. of Med. Sciences, Bangkok. *Place of Study*: U.S.A., 1959-.
- DE ALBUQUERQUE, ALDA MORAES (Brazil) b. 1928. B.A., Univ. of Recife 1956. Nursing Education (MNS). Appointed from Univ. of Recife. *Place of Study*: U.S.A., 1959-.
- DE LA LASTRA B., MANUEL (Chile) b. 1923. M.D., Univ. of Chile, Santiago, 1948. Physiology (MNS). Appointed from Catholic Univ. of Chile, Santiago. *Place of Study*: U.S.A., 1959-.
- DE MARTINO, RICHARD JOSEPH (United States) b. 1922. B.S., Coll. of the City of New York 1942. Philosophy and Religion (H). Appointed while a Rockefeller Foundation Travel Grantee. *Place of Study*: Japan, 1959-.
- DELON, PIERRE JULES (WHO) b. 1920. M.D., Univ. of Lyon 1945. Public Health (MNS). Appointed from World Health Org. *Place of Study*: U.S.A., 1959-.
- DESAI, KAMLAKAR DIGAMBAR (India) b. 1918. M.S. (Med.), Seth Gordhandas Sunderdas Med. Coll., Bombay, 1954. Anatomy (MNS). Appointed from Seth Gordhandas Sunderdas Med. Coll. *Place of Study*: U.S.A., 1959-.
- DŁUZEWSKI, MIECZYSLAW (Poland) b. 1922. Dr., Central Coll. of Agric., Warsaw, 1959. Microbiology—Bacteriology (A). Appointed from Central Coll. of Agric. *Place of Study*: Switzerland, 1959-.
- DOMINGUES, VERA VELOZO (Brazil) b. 1927. R.N., Univ. of São Paulo 1956. Pediatric Nursing (MNS). Appointed from Univ. of São Paulo. *Place of Study*: U.S.A., 1959-.
- DONTAS, DOMNA (Greece) b. 1929. M.A., Univ. of London 1957. History (H). Appointed while grad. student at Univ. of London. *Place of Study*: U.S.A., 1959-.
- DUBERT, JEAN-MARIE (France) b. 1927. M.D., Univ. of Paris 1952. Biochemistry—Microbiology (MNS). Appointed from Pasteur Inst., Paris. *Place of Study*: U.S.A., 1959-.
- DUTHIE, HERBERT LIVINGSTON (United Kingdom) b. 1929. F.R.C.S., London, 1957. Experimental Medicine (BMRC). Appointed from Univ. of Glasgow. *Place of Study*: U.S.A., 1959-.
- EZEKIEL, HANNAN (India) b. 1927. Ph.D., Univ. of Bombay 1957. Economics (SS). Appointed from Univ. of Bombay. *Place of Study*: U.S.A., 1959-.
- FAVARGER, MARGUERITE ROSINE (Switzerland) b. 1923. Dipl., School of Nursing, Geneva, 1952. Nursing Education (MNS). Appointed from Le Bon Secours School of Nursing, Geneva. *Place of Study*: U.S.A., 1959-.
- FAVRET, EWALD ALFREDO (Argentina) b. 1921. Ing.Agr., Univ. of Buenos Aires 1944. Plant Science—Genetics and Plant Breeding (A). Appointed from Inst. of Phytotechnology, Castelar. *Place of Study*: Sweden, 1959-.
- FERREIRA, RICARDO DE CARVALHO (Brazil) b. 1928. B.S., Univ. of

- São Paulo 1950. Special Project—Inorganic Chemistry (MNS). Appointed from Univ. of Recife. *Place of Study*: U.S.A., 1959-.
- FERULLO, CARMINE AMABILE (*WHO*) b. 1923. Civil Eng., Univ. of Padua 1946. Sanitary Engineering (MNS). Appointed from World Health Org. *Place of Study*: U.S.A., 1959-.
- FIGUBIRA, FERNANDO JORGE SIMAO DOS SANTOS (*Brazil*) b. 1919. M.D., Univ. of Recife 1940. Pediatrics (MNS). Appointed from Univ. of Recife. *Place of Study*: U.S.A., 1959-.
- FIGULA, KAZIMIERZ (*Poland*) b. 1919. Dr., Jagiellonian Univ. of Cracow 1950. Soil Science (A). Appointed from Agric. Coll., Cracow. *Place of Study*: Switzerland, 1959-.
- FONBERG-OSTROWSKA, ELZBIETA (*Poland*) b. 1920. Med. Dipl., Univ. of Warsaw 1947. Biology—Neurophysiology (MNS). Appointed from The Nencki Inst. of Exper. Biology, Warsaw. *Place of Study*: U.S.A., 1959-.
- FRANKLIN, SAMUEL HARVEY (*New Zealand*) b. 1928. M.A., Univ. of Birmingham 1952. Geography (SS). Appointed from Victoria Univ. of Wellington. *Place of Study*: England, 1959-.
- FROEHLICH, CLAUDIO GILBERTO (*Brazil*) b. 1927. Ph.D., Univ. of São Paulo 1954. Experimental Biology—Insect Ecology (MNS). Appointed from Univ. of São Paulo. *Place of Study*: Sweden, 1959-.
- GABRYEL, PRZEMYSŁAW (*Poland*) b. 1919. Phys., Univ. of Poznan 1949. Neuropathology (MNS). Appointed from Acad. of Med., Poznan. *Place of Study*: Germany, 1959-.
- GALVAO, MARIA DO CARMO CORREA (*Brazil*) b. 1925. Lic., Univ. of Brazil, Rio de Janeiro, 1952. Exception to program—Geography (MNS). Appointed from Univ. of Brazil. *Place of Study*: Germany, 1959-.
- GARCIA, LOURDES TORRES (*Brazil*) b. 1929. R.N., Univ. of São Paulo 1956. Pediatric Nursing (MNS). Appointed from Univ. of São Paulo. *Place of Study*: U.S.A., 1959-.
- GARCIA BRAND, JOSÉ (*Colombia*) b. 1927. Ing. Agr., Coll. of Agric., Palmira, 1954. Agricultural Extension (A). Appointed from Ministry of Agric., Bogotá. *Place of Study*: U.S.A., 1959-.
- GEHRIG, GERHARD (*Germany*) b. 1929. Ph.D., Univ. of Heidelberg 1957. Economics (SS). Appointed from IFO—Inst. for Economic Research, Munich. *Place of Study*: U.S.A., 1959-.
- GEYER-DUSZYNSKA, IRENE (*Poland*) b. 1924. Ph.D., Univ. of Warsaw 1959. Biology—Genetics (MNS). Appointed from Univ. of Warsaw. *Place of Study*: U.S.A., 1959-.
- GIETKO, MARIAN (*Poland*) b. 1929. Phys. Dipl., Med. Acad., Warsaw, 1951. Pediatrics (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959-.
- GLUCHOWSKI, WITOLD (*Poland*) b. 1920. M.S. (Agr. Sci.), Marie Curie-Sklodowska Univ., Lublin, 1949. Animal Science—Poultry (A). Appointed from High

- School of Agric., Lublin. *Place of Study*: Switzerland, 1959-.
- GOLANKIEWICZ, KRZYSZTOF (Poland) *b.* 1931. Ph.D., Univ. of Poznan 1958. Biochemistry—Organic Chemistry (MNS). Appointed from Univ. of Poznan. *Place of Study*: U.S.A., 1959-.
- GOLBIEWSKI, ALOJZY (Poland) *b.* 1927. Ph.D., Jagiellonian Univ. of Cracow 1959. Quantum Chemistry (MNS). Appointed from Jagiellonian Univ. of Cracow. *Place of Study*: England, 1959-.
- GOMEZ ARANGO, SILVIO (Colombia) *b.* 1931. M.D., Natl. Univ. of Colombia, Bogotá, 1954. Public Health (MNS). Appointed from Univ. of Caldas, Manizales. *Place of Study*: U.S.A., 1959-.
- GOODWIN, GEOFFREY LAWRENCE (United Kingdom) *b.* 1916. B.S., London School of Economics and Political Science 1945. International Relations (SS). Appointed from London School of Economics and Political Science. *Place of Study*: U.S.A., 1959-.
- GOREN, LEYLA M. (Turkey) *b.* 1926. M.A., Columbia Univ. 1959. Literature (H). Appointed while a Fulbright fellow at Columbia Univ. *Place of Study*: U.S.A., 1959-.
- GRABOWSKI, ZBIGNIEW RYSZARD (Poland) *b.* 1927. Ph.D., Univ. of Warsaw 1955. Biochemistry—Photosynthesis (MNS). Appointed from Univ. of Warsaw. *Place of Study*: Germany, 1959-.
- GRELA, TADEUSZ BOLESŁAW (Poland) *b.* 1923. M.S., Jagiellonian Univ. of Cracow 1947. Plant Science—Pathology (A). Appointed from Plant Protection Inst., Poznan. *Place of Study*: U.S.A., 1959-.
- GRUNDBOECK, MARIAN (Poland) *b.* 1923. D.V.M., Agric. Coll., Lublin, 1959. Veterinary Science (A). Appointed from State Veterinary Inst., Pulawy. *Place of Study*: U.S.A., 1959-.
- GUEVARA GONZALEZ, LUIS (Mexico) *b.* 1929. M.S., Natl. Univ. of Mexico, Mexico City, 1959. Gastroenterology (MNS). Appointed from Hosp. for Nutritional Diseases, Mexico City. *Place of Study*: England, 1959-.
- GÜNDAS, ASLAN (Turkey) *b.* 1914. Dipl., U.S. Army Infantry School, Georgia, 1954. Hospital Administration (MNS). Appointed from Univ. of Ankara. *Place of Study*: U.S.A., 1959-.
- GÜRGEN, TURAN (Turkey) *b.* 1924. M.D., Univ. of Istanbul 1947. Cardiology—Vascular Surgery (MNS). Appointed from Univ. of Istanbul. *Place of Study*: U.S.A., 1959-.
- HALL, DOROTHY CATHERINE (WHO) *b.* 1924. B.S., Univ. of Western Ontario, London, 1952. Nursing Education and Administration (MNS). Appointed from World Health Org. *Place of Study*: U.S.A., 1959-.
- HAMPTON, JOHN WINNALL FRANKLIN (Union of South Africa) *b.* 1919. M.A., Univ. of Cambridge 1946. Virology (MNS). Appointed from Poliomyelitis Research Foundation, Johannesburg. *Place of Study*: U.S.A., 1959-.
- HARPER, JOHN LANDER (United Kingdom) *b.* 1925. Ph.D., Univ.

- of Oxford 1950. Experimental Ecology and Genetics (MNS). Appointed from Univ. Coll. of North Wales, Bangor. *Place of Study*: U.S.A., 1959-.
- HASEGAWA, EIICHI (*Japan*) b. 1926. M.D., Kyoto Prefectural Univ. of Med. 1955. Biochemistry—Enzymes (MNS). Appointed from Kyoto Prefectural Univ. of Med. *Place of Study*: U.S.A., 1959-.
- HIEM, HENRICUS TJAN GWAN (*Indonesia*) b. 1926. Dr., Univ. of Indonesia, Bandung, 1955. Biochemistry—Nutrition (A). Appointed from Univ. of Indonesia, Bogor. *Place of Study*: U.S.A., 1959-.
- HILL, DESMOND HAYWARD (*Nigeria*) b. 1917. D.V.M., Univ. of Toronto 1950. Animal Science—Physiology and Breeding (A). Appointed from Univ. Coll., Ibadan, Nigeria. *Place of Study*: U.S.A., 1959-.
- HIROSE, YOSHITSUNE (*Japan*) b. 1916. Ph.D., Hokkaido Univ., Sapporo, 1951. Animal Science—Nutrition (A). Appointed from Hokkaido Univ. *Place of Study*: U.S.A., 1959-.
- HORIO, TAKEKAZU (*Japan*) b. 1930. D.Sc., Osaka Univ. 1958. Biochemistry—Enzymes (MNS). Appointed from Osaka Univ. *Place of Study*: U.S.A., 1959-.
- HOSOKAWA, SADAJI (*Japan*) b. 1913. D.Agr., Hokkaido Univ., Sapporo, 1958. Plant Science—Genetics and Plant Breeding (A). Appointed from Hokkaido Univ. *Place of Study*: U.S.A., 1959-.
- HURLIMANN, URSULA B. (*Switzerland*) b. 1933. Dipl., Le Bon Secours School of Nursing, Geneva, 1956. Pediatric Nursing (MNS). Appointed from Univ. of Geneva. *Place of Study*: U.S.A., 1959-.
- IBISH, YUSUF KAMAL HUSSEIN (*United Arab Republic*) b. 1926. M.A., American Univ. of Beirut, Lebanon, 1950. History (H). Appointed while grad. student and teaching fellow at Harvard Univ. *Place of Study*: U.S.A., 1959-.
- IGLESIAS, FLAVIO (*Colombia*) b. 1925. M.D., Natl. Univ. of Colombia, Bogotá, 1953. Biochemistry—Surgery—Pathology (MNS). Appointed from Univ. of Valle, Cali. *Place of Study*: U.S.A., 1959-.
- IMAIZUMI, YURIKO (*Japan*) b. 1934. B.A., Tokyo Univ. 1957. Nursing Education (MNS). Appointed from Tokyo Univ. *Place of Study*: U.S.A., 1959-.
- JAKUBCZYK, TADEUSZ (*Poland*) b. 1926. Ph.D., Central Coll. of Agric., Warsaw, 1958. Food Technology (A). Appointed from Central Coll. of Agric. *Place of Study*: U.S.A., 1959-.
- JANER RUIZ, HUMBERTO (*Colombia*) b. 1929. M.D., Natl. Univ. of Colombia, Bogotá, 1954. Histology (MNS). Appointed from Xavier Univ., Bogotá. *Place of Study*: U.S.A., 1959-.
- JARANOWSKI, JULIAN KAZIMIERZ (*Poland*) b. 1922. Dr., Coll. of Agric., Poznan, 1955. Plant Science—Genetics and Plant Breeding (A). Appointed from Inst.



- of Plant Breeding, Poznan. *Place of Study*: U.S.A., 1959-.
- JARRETT, FRANCIS GEORGE (*Australia*) b. 1923. Ph.D., Iowa State Coll. 1952. Agricultural Economics (SS). Appointed from Univ. of Adelaide. *Place of Study*: U.S.A., 1959-.
- JASSEM, MAREK AVRELIAN (*Poland*) b. 1926. Dr., High School of Agric., Olsztyn, 1959. Plant Science — Genetics and Plant Breeding (A). Appointed from Plant Breeding Inst., Bydgoszcz. *Place of Study*: U.S.A., 1959-.
- JHA, KALI KANT (*India*) b. 1927. Assoc., Indian Agric. Research Inst., New Delhi, 1952. Microbiology — Bacteriology (A). Appointed from Agric. Research Inst., Bhagalpur. *Place of Study*: U.S.A., 1959-.
- JULIANO, JORGE PATRIARCA (*Philippines*) b. 1930. M.S., Pennsylvania State Univ. 1954. Plant Science—Pathology (A). Appointed from Central Luzon Agric. Coll., Nueva Ecija. *Place of Study*: U.S.A., 1959-.
- JULIANO, ROGELIO OCHOA (*Philippines*) b. 1934. M.A., Stanford Univ. 1957. Marine Resources (A). Appointed from Univ. of the Philippines, Diliman. *Place of Study*: U.S.A., 1959-.
- KAMAL, AHMED MOHAMED (*WHO*) b. 1923. Dipl., Higher Inst. of Social Work, Cairo, 1954. Business Administration (MNS). Appointed from World Health Org. *Place of Study*: U.S.A., 1959-.
- KAMINER, BENJAMIN (*Union of So. Africa*) b. 1924. M.B.B.Ch., Univ. of the Witwatersrand, Johannesburg, 1946. Biology — Physiology (MNS). Appointed from Univ. of the Witwatersrand. *Place of Study*: U.S.A., 1959-.
- KAMPANART-SANYAKORN, CHAIYAN (*Thailand*) b. 1928. M.P.H., School of Public Health, Bangkok, 1954. Epidemiology (MNS). Appointed while a Fulbright fellow at Tulane Univ. of Louisiana. *Place of Study*: U.S.A., 1959-.
- KARAN, DOGAN (*Turkey*) b. 1923. M.D., Univ. of Ankara 1947. Psychiatry (MNS). Appointed from Univ. of Ankara. *Place of Study*: U.S.A., 1959-.
- KERNBERG FRIEDMANN, OTTO (*Chile*) b. 1928. M.D., Univ. of Chile, Santiago, 1953. Psychiatry (MNS). Appointed from Univ. of Chile. *Place of Study*: U.S.A., 1959-.
- KHATIKARN, BUNJIRD (*Thailand*) b. 1926. M.S., Utah State Univ. 1954. Plant Science — Horticulture (A). Appointed from Kasetsart Univ., Bangkok. *Place of Study*: U.S.A., 1959-.
- KIISKINEN, AUVO JOOSE ANTERO (*Finland*) b. 1925. D.Pol.Sc., Helsinki Univ. 1958. Economics (SS). Appointed from Economic Research Inst. of Finnish Industry, Helsinki. *Place of Study*: U.S.A., 1959-.
- KILICBAY, AHMET (*Turkey*) b. 1924. Ph.D., Univ. of Istanbul 1952. Economics (SS). Appointed from Univ. of Istanbul. *Place of Study*: U.S.A., 1959-.
- KISHIMOTO, UICHIRO (*Japan*) b. 1922. B.S., Osaka Univ. 1945. Bi-

- ology — Cytology (MNS). Appointed from Osaka Univ. *Place of Study*: U.S.A., 1959-.
- KOBAYASHI, YUZUYU (*Japan*) b. 1926. D.M.S., Kyushu Univ., Fukuoka, 1956. Biochemistry—Viruses (MNS). Appointed from Kyushu Univ. *Place of Study*: U.S.A., 1959-.
- KORNAS, ANNA MARIA (*Poland*) b. 1923. D.Sc., Jagiellonian Univ. of Cracow 1950. Biology—Ecology and Botany (MNS). Appointed from Jagiellonian Univ. of Cracow. *Place of Study*: Canada, 1959-.
- KORTTILA, KALEVA (*Finland*) b. 1913. Dr. Med. and Surg., Univ. of Turku 1951. Pediatric Surgery (MNS). Appointed from Univ. of Turku. *Place of Study*: U.S.A., 1959-.
- KOTELKO, KRYSZYNA (*Poland*) b. 1920. Ph.D., Univ. of Lodz 1951. Biochemistry — Microbiology (MNS). Appointed from Univ. of Lodz. *Place of Study*: France, 1959-.
- KOZAK, WŁODZIMIERZ (*Poland*) b. 1927. Magis., Univ. of Lodz 1951. Biology — Physiology (MNS). Appointed from The Nencki Inst. of Exper. Biology, Warsaw. *Place of Study*: Australia, 1959-.
- KRAEMER, ALCYR (*Brazil*) b. 1931. M.D., Univ. of Rio Grande do Sul, Pôrto Alegre, 1957. Basic Medical Sciences (MNS). Appointed from Univ. of Rio Grande do Sul. *Place of Study*: U.S.A., 1959-.
- KRUS, STEFAN (*Poland*) b. 1926. Phys., Med. Acad., Warsaw, 1951. Experimental Medicine—Pathology (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959-.
- LATALLO, ZBIGNIEW STANISLAW (*Poland*) b. 1924. M.D., Med. Acad., Warsaw, 1951. Hematology (MNS). Appointed from Inst. of Hematology, Warsaw. *Place of Study*: U.S.A., 1959-.
- LE GAL, YVON (*France*) b. 1921. M.D., Univ. of Strasbourg 1951. Pathology (MNS). Appointed from Univ. of Strasbourg. *Place of Study*: U.S.A., 1959-.
- LEE, ROBERT CHUNG TAO (*National Republic of China*) b. 1923. B.S., Natl. Kwangsi Univ., Kweilin, 1946. Veterinary Science (A). Appointed while a Cornell Grad. Fellow at Cornell Univ. *Place of Study*: U.S.A., 1959-.
- LENINGTON, BEATRICE LOUISE (*Brazil*) b. 1910. B.A., Occidental Coll. 1935. Nursing Service Administration (MNS). Appointed while on leave from the International Cooperation Administration. *Place of Study*: U.S.A., 1959-.
- LEWGOY, FLAVIO (*Brazil*) b. 1926. Chem. Deg., Univ. of Rio Grande do Sul, Pôrto Alegre, 1948. Experimental Biology—Biochemistry, Genetics (MNS). Appointed from State Police Lab., Pôrto Alegre. *Place of Study*: U.S.A., 1959-.
- LIDTKE, WŁODZIMIERZ (*Poland*) b. 1917. Docent, Agric. Acad., Wroclaw, 1955. Plant Science — Agronomy (A). Appointed from Agric. Acad. *Place of Study*: Canada, 1959-.
- LISOWSKI, JOZEF-BRONISLAW (*Poland*) b. 1926. M.D., Med. Acad., Warsaw, 1951. Experimental Medicine—Pathology (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959-.

- land*) b. 1928. Dr., Polish Acad. of Sciences, Wrocław, 1956. Biochemistry—Proteins (MNS). Appointed from Polish Acad. of Sciences. *Place of Study*: U.S.A., 1959—.
- LITWIN, JERZY FRANCISZEK (*Poland*) b. 1927. Ph.D., Med. Acad., Warsaw, 1957. Biology—Physiology (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959—.
- LORKIEWICZ, ZBIGNIEW KONSTANTY (*Poland*) b. 1923. Dr., Univ. of Lublin 1950. Genetics (A). Appointed from Marie Curie-Skłodowska Univ., Lublin. *Place of Study*: U.S.A., 1959—.
- LOURIDO CACERES, EDUARDO (*Colombia*) b. 1932. M.D., Univ. of Valle, Cali, 1958. Preventive Medicine and Public Health (MNS). Appointed from Univ. of Valle. *Place of Study*: Puerto Rico, 1959—.
- MACDOWELL, MARIA DE NAZARETH AMAZONAS (*Brazil*) b. 1935. R.N., School of Nursing of Recife 1958. Nursing Education (MNS). Appointed from School of Nursing of Recife. *Place of Study*: U.S.A., 1959—.
- MAGALHAES, LUIZ EDMUNDO DE (*Brazil*) b. 1927. Bachelor, Univ. of São Paulo 1952. Experimental Biology—*Drosophila* Genetics (MNS). Appointed from Univ. of São Paulo. *Place of Study*: U.S.A., 1959—.
- MAGNI, FRANCO (*Italy*) b. 1930. M.D., Univ. of Pisa 1954. Biology—Neurophysiology (MNS). Appointed from Univ. of Pisa. *Place of Study*: Australia, 1959—.
- MAJKOWSKI, JERZY (*Poland*) b. 1928. Phys., Univ. of Warsaw 1952. Neurophysiology (MNS). Appointed from Med. Acad., Warsaw. *Place of Study*: Canada, 1959—.
- MALAVOLTA, EURIPEDES (*Brazil*) b. 1926. Livre Docente, Univ. of São Paulo 1951. Chemistry (NSA); Biochemistry (A). Appointed twice from Univ. of São Paulo. *Place of Study*: U.S.A., 1952—1953; 1959—.
- MANUS, SAM AUGUST (*Indonesia*) b. 1925. D.Geol. (M.S.), Univ. of Leiden, Netherlands, 1955. Soil Science (A). Appointed from Univ. of Indonesia, Bogor. *Place of Study*: U.S.A., 1959—.
- MARCINIAK, ROMAN (*Poland*) b. 1929. M.D., Med. Acad., Wrocław, 1958. Gastrointestinal Radiology (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959—.
- MASUMI, JUNNOSUKE (*Japan*) b. 1926. Hogakushi, Tokyo Univ. 1948. Political Science (SS). Appointed from Tokyo Metropolitan Univ. *Place of Study*: U.S.A., 1959—.
- MAURIN, KRZYSZTOF (*Poland*) b. 1923. Ph.D., Univ. of Warsaw 1951. Mathematics (MNS). Appointed from Univ. of Warsaw. *Place of Study*: Sweden, 1959—.
- MEJIA, RUBEN (*Colombia*) b. 1924. M.D., Univ. of Madrid, 1949. Physiology (MNS). Appointed from Xavier Univ., Bogotá. *Place of Study*: Colombia, 1959—.
- METZGER, MIECZYSLAW (*Poland*) b. 1920. Ph.D., Med. Acad., Wrocław, 1958. Biology (MNS). Ap-

- pointed from Med. Acad. *Place of Study*: U.S.A., 1959-.
- MICHEJDA, JAN (*Poland*) *b.* 1927. Ph.D., Poznan Univ. 1951. Biology—Biochemistry (MNS). Appointed from Poznan Univ. *Place of Study*: U.S.A., 1959-.
- MICZYNSKI, KAZIMIERZ (*Poland*) *b.* 1926. Cand. Deg., Agric. Coll., Cracow, 1956. Plant Science—Physiology (A). Appointed from Agric. Coll. *Places of Study*: England, U.S.A., 1959-.
- MIGLIORINI, RENATO HELIOS (*Brazil*) *b.* 1926. M.D., Univ. of São Paulo 1949. Experimental Biology—Physiology (MNS). Appointed from Univ. of São Paulo, Ribeirão Preto. *Place of Study*: U.S.A., 1959-.
- MILLER, FRITZ (*Germany*) *b.* 1913. M.D., Univ. of Vienna 1938. Biology—Cytology (MNS). Appointed from Univ. of Munich. *Place of Study*: U.S.A., 1959-.
- MOLINARI, RUBENS (*Brazil*) *b.* 1927. D. (Chem. Eng.), Univ. of São Paulo 1958. Experimental Biology—Biochemistry (MNS). Appointed from Univ. of São Paulo, Ribeirão Preto. *Place of Study*: U.S.A., 1959-.
- MOLL, JAN WITOLD (*Poland*) *b.* 1912. M.D., Poznan Univ. 1945. Cardiac Surgery (MNS). Appointed from Med. Acad., Lodz. *Place of Study*: U.S.A., 1959-.
- MOORE, GEOFFREY HERBERT (*United Kingdom*) *b.* 1920. M.A., Univ. of Cambridge 1951. Literature (H). Appointed from 1) Univ. of Kansas; 2) Victoria Univ. of Manchester. *Place of Study*: U.S.A., 1955; 1959-.
- MORA CELIS, JAIME (*Mexico*) *b.* 1934. M.D., Natl. Univ. of Mexico, Mexico City, 1958. Biochemistry (MNS). Appointed from Natl. Univ. of Mexico. *Place of Study*: U.S.A., 1959-.
- MORALES AGUILERA, ANTONIO (*Mexico*) *b.* 1928. Natl. Univ. of Mexico, Mexico City. Pharmacology (MNS). Appointed from Univ. of San Luis Potosí. *Place of Study*: U.S.A., 1959-.
- MORRIS, JOHN GARETH (*United Kingdom*) *b.* 1932. Ph.D., Univ. of Oxford 1958. Chemical Microbiology (MNS). Appointed from Univ. of Oxford. *Place of Study*: U.S.A., 1959-.
- MOSKAL, STANISŁAW ANDRZEJ (*Poland*) *b.* 1921. M.S., Central Coll. of Agric., Warsaw, 1950. Soil Science (A). Appointed from Central Coll. of Agric. *Place of Study*: U.S.A., 1959-.
- MURRAY, IAN PROVAN CATHCART (*United Kingdom*) *b.* 1929. M.R.C.P., Univ. of Glasgow 1955. Experimental Medicine (BMRC). Appointed from Royal Infirmary, Glasgow. *Place of Study*: U.S.A., 1959-.
- MURTHY, DODBALLAPUR PUTANNA NARASIMHA (*India*) *b.* 1924. M.B.B.S., Med. Coll., Mysore, 1952. Public Health (MNS). Appointed from Dept. of Public Health, Sagar, Mysore. *Place of Study*: U.S.A., 1959-.
- NAKAYAMA, SHIDAI (*Japan*) *b.* 1917. M.S., Tohoku Univ., Sendai, 1941. Plant Science—Physiology (A). Appointed from Miyazaki Univ. *Place of Study*: U.S.A., 1959-.
- NISHIMURA, CHIAKI (*Japan*) *b.*

1928. Ph.D., Kyoto Univ. 1959. Biochemistry—Viruses (MNS). Appointed from Natl. Inst. of Health, Tokyo. *Place of Study: U.S.A., 1959-*.
- NISHITAKATSUJI, NOBUSADA (*Japan*) b. 1920. Gakushi, Kyushu Univ., Fukuoka, 1944. Intercultural Understanding (H). Appointed from Dazaifu-Temman-gu Shrine, Kyushu. *Place of Study: U.S.A., 1959-*.
- NISHIURA, MITSUGU (*Japan*) b. 1920. B.S., Kyoto Univ. 1946. Biology — Bacteriology (MNS). Appointed from Kyoto Univ. *Place of Study: India, 1959-*.
- ODA, TAKUZO (*Japan*) b. 1923. M.D., Okayama Univ. 1947. Pathology—Cytochemistry (MNS). Appointed from Okayama Univ. *Place of Study: U.S.A., 1959-*.
- OHARA, HIROMICHI (*Japan*) b. 1924. M.D., Sapporo Med. Coll. 1954. Internal Medicine (MNS). Appointed from Sapporo Med. Coll. *Place of Study: U.S.A., 1959-*.
- OKA, YOSHISATO (*Japan*) b. 1921. B.A., Tokyo Univ. 1946. Political Science (SS). Appointed from Hitotsubashi Univ., Tokyo. *Place of Study: England, 1959-*.
- OKRUSZKO, HENRYK (*Poland*) b. 1925. Cand. D.Sc., Central Coll. of Agric., Warsaw, 1958. Soil Science (A). Appointed from Inst. of Grasslands Improvement, Warsaw. *Place of Study: U.S.A., 1959-*.
- OKTABA, WIKTOR (*Poland*) b. 1920. D. (Math.), Marie Curie-Skłodowska Univ., Lublin, 1957. Agriculture (A). Appointed from Agric. Coll., Lublin. *Place of Study: U.S.A., 1959-*.
- OKUHARA, EIJI (*Japan*) b. 1926. D.M.S., Hokkaido Univ., Sapporo, 1957. Biochemistry—Lipids (MNS). Appointed from Hokkaido Univ. *Place of Study: U.S.A., 1959-*.
- OLSZEWSKA, MARIA JOANNA (*Poland*) b. 1929. Dr., Univ. of Lodz 1956. Biology—Cytology (MNS). Appointed from Univ. of Lodz. *Place of Study: Belgium, 1959-*.
- ORLOWSKI, TADEUSZ (*Poland*) b. 1917. Docent, Univ. of Warsaw 1952. Pathophysiology (MNS). Appointed from Warsaw Postgrad. Med. Inst. *Place of Study: U.S.A., 1959-*.
- OSTROWSKI, WŁODZIMIERZ (*Poland*) b. 1925. Ph.D., Med. Acad., Cracow, 1959. Biochemistry — Proteins (MNS). Appointed from Med. Acad. *Place of Study: U.S.A., 1959-*.
- OZAND, PINAR TEVFIK (*Turkey*) b. 1933. M.D., Univ. of Ankara 1956. Biochemistry — Enzymes (MNS). Appointed while a Fulbright fellow at Washington Univ., St. Louis. *Place of Study: U.S.A., 1959-*.
- PARTELIDES, IRIS (*United Arab Republic*) b. 1922. Cert., Royal Coll. of Nursing, London, 1950. Nursing Service Administration (MNS). Appointed from Alexandria Univ. *Place of Study: U.S.A., 1959-*.
- PEDERSEN, KNUD JØRGEN (*Denmark*) b. 1930. M.S., Univ. of Copenhagen 1956. Biology—Cytology (MNS). Appointed from Univ. of Copenhagen. *Place of Study: U.S.A., 1959-*.

- PETRUCCI, DELIO (*Italy*) b. 1921. Libera Docenza, Univ. of Perugia 1956. Biology—Embryology (MNS). Appointed from Univ. of Rome. *Place of Study*: Belgium, 1959—.
- PFRIFFER, WILLIAM R. (*Philippines*) b. 1907. B.A., Hastings Coll., Nebraska, 1939. Music (H). Appointed from Silliman Univ., Dumaguete City. *Place of Study*: U.S.A., 1959—.
- PIGON, HALINA (*Poland*) b. 1922. Dr., Higher School of Agric., Cracow, 1956. Animal Science—Physiology (A). Appointed from Higher School of Agric. *Place of Study*: U.S.A., 1959—.
- PINKIEWICZ, EDWARD (*Poland*) b. 1918. D.V.M., Marie Curie-Skłodowska Univ., Lublin, 1951. Veterinary Science (A). Appointed from Agric. Coll., Lublin. *Place of Study*: Austria, 1959—.
- PLATTS, MARGARET MACHON (*United Kingdom*) b. 1924. M.D., Univ. of Sheffield 1957. Experimental Medicine (BMRC). Appointed from Univ. of Sheffield. *Place of Study*: U.S.A., 1959—.
- POCZOPKO, PIOTR (*Poland*) b. 1927. Dr., Nicholas Copernicus Univ. of Torun 1959. Animal Science—Physiology (A). Appointed from Polish Acad. of Sciences, Warsaw. *Place of Study*: U.S.A., 1959—.
- POLLITT, JOHN DERYK (*United Kingdom*) b. 1926. D.P.M., Univ. of London 1955. Behavior (BMRC). Appointed from Univ. of London. *Place of Study*: U.S.A., 1959—.
- POZNANSKA, STEFANIA (*Poland*) b. 1923. Univ. School for Nurses and Midwives, Cracow. Nursing Education (MNS). Appointed from State Nursing School, Cracow. *Place of Study*: U.S.A., 1959—.
- PRASAD-SINGH, SHEO (*India*) b. 1925. M.S., Univ. of Lucknow 1948. Plant Science—Entomology (A). Appointed from Balwant Rajput Coll., Agra. *Place of Study*: U.S.A., 1959—.
- PROST, EDMUND (*Poland*) b. 1921. Docent, Agric. Coll., Lublin, 1957. Veterinary Science (A). Appointed from Agric. Coll. *Place of Study*: Germany, 1959—.
- QUIROLGICO, DELFIN G. (*Philippines*) b. 1919. M.S., Univ. of Tennessee 1956. Education (A). Appointed from Bureau of Public Schools, Manila. *Place of Study*: U.S.A., 1959—.
- RAJALAKSHMAN, DEVARAKONDA VENKATA (*India*) b. 1919. Ph.D., Victoria Univ. of Manchester 1952. Statistics (SS). Appointed from Univ. of Madras. *Place of Study*: U.S.A., 1959—.
- RAKOWSKA, MARIA GREKOWICZ (*Poland*) b. 1923. Ph.D., Central Coll. of Agric., Warsaw, 1956. Animal Science—Nutrition (A). Appointed from State Inst. of Hygiene, Warsaw. *Place of Study*: U.S.A., 1959—.
- RALHA, NILZA DOS SANTOS (*Portugal*) b. 1935. Dipl., Technical School for Nurses, Lisbon, 1956. Nursing Education (MNS). Appointed from Technical School for Nurses. *Place of Study*: U.S.A., 1959—.
- RAMAKRISHNAN, K. (*India*) b. 1920.

- Ph.D., Univ. of Madras 1953. Plant Science — Pathology (A). Appointed from Agric. Coll. and Research Inst., Coimbatore. *Place of Study: U.S.A., 1959-*.
- RAMSØY, ODD (*Norway*) b. 1924. Magis., Univ. of Oslo 1952. Sociology (SS). Appointed from Univ. of Oslo. *Place of Study: U.S.A., 1959-*.
- RAO, KONERU RAMAKRISHNA (*India*) b. 1932. M.A. (Hons.), Andhra Univ., Waltair, 1955. Philosophy (H). Appointed while grad. student at Univ. of Chicago. *Place of Study: U.S.A., 1959-*.
- RAY, RATHINDRA NATH (*India*) b. 1927. M.D., Univ. of Calcutta 1957. Biology — Hematology (MNS). Appointed from School of Trop. Med., Calcutta. *Place of Study: U.S.A., 1959-*.
- REDL, FRANZ (*Austria*) b. 1927. Ph.D., Univ. of Vienna 1953. Economics (SS). Appointed from Austrian Inst. for Economic Research, Vienna. *Place of Study: U.S.A., 1959-*.
- RESTREPO ANGEL, JAIME (*Colombia*) b. 1928. M.D., Univ. of Caldas, Manizales, 1958. Physiology (MNS). Appointed from Univ. of Caldas. *Place of Study: Colombia, 1959-*.
- REYES CASTANEDA, PEDRO (*Mexico*) b. 1923. M.S., Iowa State Coll. 1957. Plant Science—Plant Breeding (LAS); Plant Science — Genetics and Plant Breeding (A). Appointed twice from Mexican Agric. Program. *Place of Study: U.S.A., 1956-1957; 1959-*.
- RIBEIRO, CIRCE DE MELO (*Brazil*) b. 1926. R.N., Univ. of São Paulo 1953. Nursing Education and Administration (MNS). Appointed from Univ. of São Paulo, Ribeirão Preto. *Place of Study: U.S.A., 1959-*.
- RICABARRA, RODOLFO ALFREDO (*Argentina*) b. 1925. Dr. (Math.), Univ. of La Plata 1948. Special Projects—Mathematics (MNS). Appointed from Univ. of La Plata. *Place of Study: U.S.A., 1959-*.
- RITTER, MARIO (*Brazil*) b. 1926. M.D., Paulista School of Med., São Paulo, 1952. Hematology (MNS). Appointed from Paulista School of Med. *Place of Study: U.S.A., 1959-*.
- ROIG, ENRIQUE (*Lebanon*) b. 1910. M.D., Univ. of Havana, Cuba, 1938. Public Health (MNS). Appointed from U. N. Relief and Works Agency, Beirut. *Place of Study: U.S.A., 1959-*.
- ROSSI, PIETRO LUIGI GIOVANNI (*Italy*) b. 1930. Ph.D., Univ. of Turin 1952. History (H). Appointed from Univ. of Cagliari. *Place of Study: France, 1959-*.
- RUBIN, REVA (*United States*) b. 1919. M.S., Yale Univ. 1953. Nursing Education (MNS). Appointed from Univ. of Chicago. *Place of Study: U.S.A., 1959-*.
- RUSZKOWSKI, MAREK (*Poland*) b. 1925. Dr., Marie Curie-Skłodowska Univ., Lublin, 1957. Plant Science — Genetics and Plant Breeding (A). Appointed from Inst. of Plant Breeding and Acclimatization, Pulawy. *Place of Study: U.S.A., 1959-*.
- SADER, ALBERT AMIN (*Brazil*) b. 1930. M.D., Univ. of São Paulo

1953. Cardiovascular Surgery (MNS). Appointed from Univ. of São Paulo, Ribeirão Preto. *Place of Study*: U.S.A., 1959-.
- SAKAI, HIROSHI (*Japan*) b. 1920. M.S., Hokkaido Univ., Sapporo, 1946. Soil Science (A). Appointed from Hokkaido Natl. Agric. Exper. Station, Koton, Sapporo. *Place of Study*: U.S.A., 1959-.
- SANCHEZ-ALBORNOZ, NICOLAS (*Argentina*) b. 1926. Professor, Univ. of Buenos Aires 1954. History (H). Appointed from Univ. of the Littoral, Rosario. *Place of Study*: France, 1959-.
- SANIEL, JOSEFA M. (*Philippines*) b. 1925. M.A., Univ. of Chicago 1953. History (H). Appointed while grad. student at Univ. of Michigan. *Place of Study*: Japan, 1959-.
- SANTOS FILHO, DIRCEU VIEIRA DOS (*Brazil*) b. 1930. M.D., Paulista School of Med., São Paulo, 1954. Basic Medical Sciences (MNS). Appointed from Paulista School of Med. *Place of Study*: U.S.A., 1959-.
- SARATHY, PREMA (*India*) b. 1935. B.S., Univ. of Delhi 1955. Nursing Education (MNS). Appointed from Coll. of Nursing, New Delhi. *Place of Study*: U.S.A., 1959-.
- SARGENT, JOHN RICHARD (*United Kingdom*) b. 1925. B.A., Univ. of Oxford 1948. Economics (SS). Appointed from Univ. of Oxford. *Place of Study*: U.S.A., 1959-.
- SASAKI, TAKAO (*Japan*) b. 1923. Gakushi (Econ.), Tokyo Univ. 1949. Economics (SS). Appointed from Economic Planning Agency, Tokyo. *Place of Study*: U.S.A., 1959-.
- SAUL, SAMUEL BERRICK (*United Kingdom*) b. 1924. Ph.D., Univ. of Birmingham 1953. Economics (SS). Appointed from Univ. of Liverpool. *Places of Study*: U.S.A., Canada, 1959-.
- SCHUCH, ERWIN K. (*Germany*) b. 1928. Dr.rer.pol., Univ. of Cologne 1956. Sociology (SS). Appointed from Univ. of Cologne. *Place of Study*: U.S.A., 1959-.
- SCOFFONE, ERNESTO (*Italy*) b. 1923. Ph.D., Univ. of Padua 1950. Biochemistry — Proteins (MNS). Appointed from Univ. of Padua. *Place of Study*: U.S.A., 1959-.
- SHETH, UTTAMCHAND KHEMCHAND (*India*) b. 1920. M.B.B.S., Seth Gordhandas Sunderdas Med. Coll., Bombay, 1949. Pharmacology (MNS). Appointed from Seth Gordhandas Sunderdas Med. Coll. *Place of Study*: U.S.A., 1959-.
- SHOCKLEY, THOMAS EDWARD (*United States*) b. 1929. Ph.D., Ohio State Univ. 1954. Microbiology (MNS). Appointed from Meharry Med. Coll. *Place of Study*: U.S.A., 1959-.
- SIBAYAN, BONIFACIO P. (*Philippines*) b. 1916. M.A., Univ. of Michigan 1959. Linguistics (H). Appointed while grad. student at Univ. of Michigan. *Place of Study*: U.S.A., 1959-.
- SILBERSTON, ZARGWILL AUBREY (*United Kingdom*) b. 1922. M.A., Univ. of Cambridge 1950. Economics (SS). Appointed from Univ. of Cambridge. *Place of Study*: U.S.A., 1959-.
- SINGH, AMIR (*India*) b. 1923. M.S.



- (Agr.), Punjab Agric. Coll., Lyallpur, 1948. Plant Science—Genetics and Plant Breeding (A). Appointed from Indian Agric. Research Inst., New Delhi. *Place of Study*: U.S.A., 1959—.
- SIPAHI, MUSTAFA LÜTFI (*Turkey*) b. 1926. M.D., Univ. of Ankara 1950. Radiology (MNS). Appointed from Univ. of Ankara. *Place of Study*: U.S.A., 1959—.
- SISON, ABDULIA E. FRONDA (*Philippines*) b. 1924. M.S., Cornell Univ. 1955. Agricultural Education (A). Appointed from Univ. of the Philippines, Los Baños, Laguna. *Place of Study*: U.S.A., 1959—.
- SIVARAJASINGHAM, SIVASUPRAMANIAM (*Ceylon*) b. 1932. M.S., Cornell Univ. 1958. Soil Science (A). Appointed while a Rockefeller Foundation Trainee. *Place of Study*: U.S.A., 1959—.
- SMOLINSKI, STEFAN (*Poland*) b. 1915. Ph.D., Jagiellonian Univ. of Cracow 1951. Biochemistry—Organic (MNS). Appointed from Jagiellonian Univ. of Cracow. *Place of Study*: Switzerland, 1959—.
- SOETOMO, RADEN (*Indonesia*) b. 1922. B.A., Univ. of Indonesia, Djakarta, 1955. Intercultural Understanding (H). Appointed from Indonesian Natl. Police. *Place of Study*: U.S.A., 1959—.
- SOYSAL, MUMTAZ (*Turkey*) b. 1929. Ph.D., Univ. of Ankara 1958. Political Science (SS). Appointed from Univ. of Ankara. *Place of Study*: U.S.A., 1959—.
- SPOERER C., ALBERTO (*Chile*) b. 1926. M.D., Univ. of Chile, Santiago, 1952. Cardiovascular Surgery (MNS). Appointed from Univ. of Chile. *Place of Study*: U.S.A., 1959—.
- SRIVASTAVA, SHYAMACHARAN (*India*) b. 1930. Research Fellow, Indian Agric. Research Inst., New Delhi, 1955. Soil Science (A). Appointed from Indian Agric. Research Inst. *Place of Study*: U.S.A., 1959—.
- STARCK, JAN ROMAN (*Poland*) b. 1926. M.S., Central Coll. of Agric., Warsaw, 1951. Agricultural Sciences (A). Appointed from Central Coll. of Agric. *Place of Study*: U.S.A., 1959—.
- STETKEWYCZ, JAROSLAW (*United States*) b. 1929. Lic., Univ. of Madrid 1959. Intercultural Understanding (H). *Place of Study*: U.S.A., 1959—.
- STETTING, LAUGE ODUM (*Denmark*) b. 1925. Cand. Polit., Univ. of Copenhagen 1954. Economics (SS). Appointed from Copenhagen School of Economics and Business Administration. *Place of Study*: U.S.A., 1959—.
- SUGIURA, IPPPEI (*Japan*) b. 1925. B.A., Osaka Univ. 1949. Economics (SS). Appointed from Wakayama Univ. *Place of Study*: U.S.A., 1959—.
- SUH, SUK-SOON (*Korea*) b. 1922. Ph.D., Univ. of Nebraska 1953. International Relations (SS). Appointed from Yonsei Univ., Seoul. *Place of Study*: U.S.A., 1959—.
- SULESTROWSKI, WALDEMAR (*Poland*) b. 1927. M.D., Med. Acad., Gdansk, 1951. Psychiatry (MNS). Appointed from Med. Acad. *Place of Study*: England, 1959—.
- SUTCLIFFE, JOHN PHILIP (*Australia*) b. 1926. Ph.D., Univ. of

- Sydney 1958. Social Psychology (SS). Appointed from Univ. of Sydney. *Place of Study*: U.S.A., 1959-.
- SYCH, MAREK (*Poland*) b. 1923. Dipl., Med. Acad., Cracow, 1953. Anesthesiology (MNS). Appointed from Med. Acad. *Place of Study*: U.S.A., 1959-.
- SZAJEWSKI, JANUSZ MACIEJ (*Poland*) b. 1924. Phys., Univ. of Warsaw 1951. Biochemistry — Proteins (MNS). Appointed from Med. Acad., Warsaw. *Place of Study*: U.S.A., 1959-.
- SZENDZIKOWSKI, STEFAN (*Poland*) b. 1926. Phys., Med. Acad., Lodz, 1952. Pathology (MNS). Appointed from Med. Acad. *Place of Study*: England, 1959-.
- SZMIDT, ALFRED (*Poland*) b. 1920. Dr., Coll. of Agric., Poznan, 1956. Plant Science—Economic Entomology (A). Appointed from Poznan Univ. *Place of Study*: Germany, 1959-.
- SZOTA, ZDZISLAW (*Poland*) b. 1929. Dr., Plant Breeding Inst., Bydgoszcz, 1959. Plant Science—Genetics and Plant Breeding (A). Appointed from Plant Breeding Inst. *Place of Study*: U.S.A., 1959-.
- TAGA, NOBUO (*Japan*) b. 1923. Nogakushi (B.Agr.), Tokyo Univ. 1949. Biology — Marine (MNS). Appointed from Tokyo Univ. *Place of Study*: U.S.A., 1959-.
- TAKBUCHI, AKIRA (*Japan*) b. 1927. M.D., Tokyo Univ. 1951. Physiology (MNS). Appointed from Juntendo Univ., Hongo. *Place of Study*: U.S.A., 1959-.
- TAMARU, NORIYOSHI (*Japan*) b. 1931. B.A., Tokyo Univ. 1953. Intercultural Understanding (H). Appointed while student at Univ. of Bonn, Germany. *Place of Study*: U.S.A., 1959-.
- TAMBOLI, PRABHAKAR MAHADEO (*India*) b. 1929. Assoc., Indian Agric. Research Inst., New Delhi, 1952. Soil Science (A). Appointed from Agric. Coll. and Research Inst., Gwalior. *Place of Study*: U.S.A., 1959-.
- TARDENT, PIERRE ERNEST (*Italy*) b. 1927. Ph.D., Univ. of Bern 1953. Biology — Embryology (MNS). Appointed from Zoological Station of Naples. *Place of Study*: U.S.A., 1959-.
- TAYLOR, KEITH BREDDEN (*United Kingdom*) b. 1924. D.M., Univ. of Oxford 1955. Experimental Medicine (BMRC). Appointed from Univ. of Oxford. *Place of Study*: U.S.A., 1959-.
- THALBERG, BJORN THORGEIR (*Norway*) b. 1924. Cand. Econ., Univ. of Oslo 1951. Economics (SS). Appointed from Univ. of Oslo. *Place of Study*: U.S.A., 1959-.
- THEANDER, OLOF (*Sweden*) b. 1924. Tech. Lic., Royal Inst. of Technology, Stockholm, 1955. Biochemistry—Organic (MNS). Appointed from Swedish Forest Products Research Lab., Stockholm. *Place of Study*: U.S.A., 1959-.
- TONO T., HENRIQUE (*Colombia*) b. 1929. M.S., Philadelphia Coll. of Pharmacy and Sciences 1954. Biochemistry (MNS). Appointed while grad. student at Univ. of Pennsylvania. *Place of Study*: U.S.A., 1959-.

- TORGENSEN, ULF (*Norway*) *b.* 1931. M.A., Univ. of Oslo 1955. Sociology (SS). Appointed from Univ. of Oslo. *Place of Study:* U.S.A., 1959-.
- TORRETTI EDWARDS, JORGE (*Chile*) *b.* 1933. M.D., Univ. of Chile, Santiago, 1957. Clinical Physiology (MNS). Appointed from Univ. of Chile. *Place of Study:* U.S.A., 1959-.
- TOVAR ZAMORA, ENRIQUE (*Mexico*) *b.* 1932. M.D., Natl. Univ. of Mexico, Mexico City, 1955. Radioisotopes (MNS). Appointed from Hosp. for Nutritional Diseases, Mexico City. *Place of Study:* U.S.A., 1959-.
- TRABKA, JAN (*Poland*) *b.* 1931. M.D., Med. Acad., Cracow, 1955. Electroneurophysiology (MNS). Appointed from Med. Acad. *Place of Study:* U.S.A., 1959-.
- TSUDA, CHIKAHIRO (*Japan*) *b.* 1923. M.S. (Agr.), Hokkaido Univ., Sapporo, 1945. Plant Science—Genetics and Plant Breeding (A). Appointed from Hokkaido Univ. *Place of Study:* U.S.A., 1959-.
- TUFFI GARCIA, FERNANDO (*Colombia*) *b.* 1929. M.D., Univ. of Valle, Cali, 1958. Basic Medical Sciences (MNS). Appointed from Univ. of Valle. *Place of Study:* U.S.A., 1959-.
- UEDA, TAIJI (*Japan*) *b.* 1918. Bungakushi, Kyoto Univ. 1943. Philosophy (H). Appointed from Kyoto Univ. *Place of Study:* U.S.A., 1959-.
- URABE, HARUKUNI (*Japan*) *b.* 1924. D.M.S., Kyushu Univ., Fukuoka, 1954. Biology—Microbiology (MNS). Appointed from Kyushu Univ. *Place of Study:* U.S.A., 1959-.
- URATA, GUMPEI (*Japan*) *b.* 1926. D.M.S., Tokyo Univ. 1959. Biochemistry—Enzymes (MNS). Appointed from Inst. of Public Health, Tokyo. *Place of Study:* U.S.A., 1959-.
- VAID, KRISHNA BALDEV (*India*) *b.* 1927. M.A., East Punjab Univ. Camp Coll., New Delhi, 1949. Literature (H). Appointed while grad. student at Harvard Univ. *Place of Study:* U.S.A., 1959-.
- VALENCIA, ILUMINADO G. (*Philippines*) *b.* 1926. M.S., Univ. of Wisconsin 1954. Soil Science (A). Appointed from Philippine Atomic Energy Commission, Natl. Science Development Board, Manila. *Place of Study:* U.S.A., 1959-.
- VELARDE FRIAS, RAMON (*Mexico*) *b.* 1933. M.D., Univ. of Guanajuato, León, 1957. Microbiology (MNS). Appointed from Univ. of Guanajuato. *Place of Study:* Mexico, 1959-.
- VELEZ, LIGIA DE MINGO (*Brazil*) *b.* 1936. Cert., Catholic Univ., São Paulo, 1956. Medical Library Technology (MNS). Appointed from Paulista School of Med., São Paulo. *Place of Study:* U.S.A., 1959-.
- VILLABLANCA HERNANDEZ, JAIME (*Chile*) *b.* 1929. M.D., Univ. of Chile, Santiago, 1954. Neurophysiology (MNS). Appointed from Univ. of Chile. *Place of Study:* U.S.A., 1959-.
- VIVARELLI, ROBERTO (*Italy*) *b.* 1929. Laur. (Pol.Sci.), Univ. of Flor-

- ence 1954. History (H). Appointed from Univ. of Siena. *Place of Study: U.S.A., 1959-*.
- VOSS, DINOR OLEGARIO (Brazil) *b.* 1928. Chem. Eng., Univ. of Paraná, Curitiba, 1955. Biophysics—Instrumentation (MNS). Appointed from Inst. of Biology and Technol. Research, Curitiba. *Place of Study: U.S.A., 1959-*.
- WALIGORA, BOLESŁAW (Poland) *b.* 1919. D.Sc., Jagiellonian Univ. of Cracow 1955. Biochemistry (MNS). Appointed from Jagiellonian Univ. of Cracow. *Place of Study: Sweden, 1959-*.
- WHITBY, LIONEL GORDON (United Kingdom) *b.* 1926. Ph.D., Univ. of Cambridge and Middlesex Hosp. Med. School 1951. Biochemistry (BMRC). Appointed from Postgrad. Med. School of London. *Place of Study: U.S.A., 1959-*.
- WIESER, GEORG (Austria) *b.* 1930. Ph.D., Univ. of Vienna 1958. Sociology (SS). Appointed from Univ. of Vienna. *Place of Study: U.S.A., 1959-*.
- WIEWIÓROWSKI, MACIEJ (Poland) *b.* 1918. Docent, Poznan Univ. 1954. Biochemistry (A). Appointed from Polish Acad. of Sciences, Poznan. *Place of Study: Canada, 1959-*.
- WIKRAMANAYAKE, THOMAS WALTER (Ceylon) *b.* 1918. Ph.D., Univ. of Glasgow 1952. Biochemistry (MNS). Appointed from Univ. of Ceylon, Colombo. *Place of Study: U.S.A., 1959-*.
- WILKIE, DAVID (United Kingdom) *b.* 1923. Ph.D., Univ. of Glasgow 1954. Biology—Genetics (MNS). Appointed from Univ. of London. *Place of Study: U.S.A., 1959-*.
- WINID, BOGUCHWAŁ (Poland) *b.* 1925. Phys., Med. Acad., Cracow, 1951. Psychiatry (MNS). Appointed from Med. Acad. *Place of Study: U.S.A., 1959-*.
- WISŁAWSKI, JERZY (Poland) *b.* 1924. M.D., Med. Acad., Warsaw. Biology—Histology (MNS). Appointed from Med. Acad. *Place of Study: England, 1959-*.
- WITCZAK, FRANCISZEK (Poland) *b.* 1921. D.Agr., Central Coll. of Agric., Warsaw, 1957. Animal Science—Nutrition (A). Appointed from Central Coll. of Agric. *Place of Study: Denmark, 1959-*.
- WOJTCZAK, LECH (Poland) *b.* 1926. D.Sc., The Nencki Inst. of Exper. Biology, Warsaw, 1954. Biochemistry—Enzymes (MNS). Appointed from The Nencki Inst. of Exper. Biology. *Place of Study: U.S.A., 1959-*.
- WOLFE, SAMUEL (Canada) *b.* 1923. M.D., Univ. of Toronto 1950. Social Medicine and Public Health (MNS). Appointed from Univ. of Saskatchewan, Saskatoon. *Place of Study: U.S.A., 1959-*.
- WOOD-GUSH, DAVID G. M. (United Kingdom) *b.* 1922. Ph.D., Univ. of Edinburgh 1953. Animal Science—Physiology (A). Appointed from Agric. Research Council Poultry Research Centre, Edinburgh. *Place of Study: U.S.A., 1959-*.
- WOYKE, STANISŁAW (Poland) *b.* 1928. M.D., Pomeranian Med. Acad., Szczecin, 1957. Histopathology—Experimental Oncology (MNS). Appointed from Pomeranian Med. Acad. *Place of Study: U.S.A., 1959-*.
- YAMAMOTO, TAKEHIKO (Japan) *b.*

1922. Ph.D., Kyushu Univ., Fukuoka, 1958. Biochemistry—Enzymes (MNS). Appointed from Osaka City Univ. *Place of Study:* U.S.A., 1959-.
- YASUDA, KENJIRO (*Japan*) b. 1926. M.D., Keio Univ., Tokyo, 1954. Biochemistry — Cytochemistry (MNS). Appointed from Keio Univ. *Place of Study:* U.S.A., 1959-.
- YENAL, OKTAY (*Turkey*) b. 1931. Ph.D., Univ. of Istanbul 1958. Economics (SS). Appointed from Univ. of Istanbul. *Place of Study:* U.S.A., 1959-.
- YOKOYAMA, AKIRA (*Japan*) b. 1927. D.Agr., Tokyo Univ. 1950. Animal Science — Physiology (A). Appointed from Nagoya Univ., Anjo. *Place of Study:* England, 1959-.
- YUDELMAN, MONTAGUE (*United States*) b. 1922. Ph.D., Univ. of California 1951. Agricultural Economics (SS). Appointed while a Rockefeller Foundation Officer.
- Place of Study:* Southern Rhodesia, 1959-.
- ZABLAN, FLORENDO FLORES (*Philippines*) b. 1927. M.S., Cornell Univ. 1956. Agricultural Economics (A). Appointed from Mindanao Agric. Coll., Musuan. *Place of Study:* U.S.A., 1959-.
- ZALESKI, JAN HENRYK (*Poland*) b. 1926. Dr. (Biol.), State Inst. of Hygiene, Warsaw, 1958. Food Technology (A). Appointed from State Inst. of Hygiene. *Place of Study:* U.S.A., 1959-.
- ZAMOJSKI, ALEKSANDER (*Poland*) b. 1929. Ph.D., Univ. of Warsaw 1958. Biochemistry — Organic (MNS). Appointed from Univ. of Warsaw. *Place of Study:* Switzerland, 1959-.
- ZEBROWSKI, LEON (*Poland*) b. 1913. D.V.M., State Veterinary Inst., Pulawy, 1959. Animal Science (A). Appointed from State Veterinary Inst. *Place of Study:* U.S.A., 1959-.

## OTHER STUDY AWARDS

In addition to its fellowship appointments in 1959, the Foundation made 92 special awards to persons from 29 countries.

- ACAUAN, BENEDICTO ROSAT (*Brazil*) b. 1936. Eng.Agr., Univ. of Rio Grande do Sul, Pôrto Alegre, 1958. Plant Science — Agronomy (A). Appointed from Rio Grande do Sul Secretariat of Agric., Industry, and Commerce, Pôrto Alegre. *Place of Study:* Colombia, 1959-.
- ADDED, ABDALLA (*Brazil*) b. 1929. B.S. (Econ.), School of the Heart of Jesus, São Paulo, 1955. Economics (SS). Appointed while grad. student at the School of Sociology and Politics of São Paulo. *Place of Study:* U.S.A., 1959-.
- AHMED, MANZOORUDDIN (*Paki-*

- stan*) b. 1929. M.I.A., Columbia Univ. 1959. Political Science (SS). Appointed while grad. student at Columbia Univ. *Place of Study*: U.S.A., 1959-.
- ALLES, WAJIRARANSI SADDHANI (*Ceylon*) b. 1929. B.S., Univ. of Ceylon, Colombo, 1954. Soil Science (A). Appointed from Dry Zone Research Station, Dept. of Agric., Maha-Illuppallama. *Place of Study*: U.S.A., 1959-.
- ANDES, BIENVENIDO C. (*Philippines*) b. 1923. B.S. (Agr.Eng.), Araneta Inst. of Agric. 1953. Agricultural Engineering (A). Appointed from Bureau of Plant Industry, Manila. *Place of Study*: U.S.A., 1959-.
- ANRAKU, MASATERU (*Japan*) b. 1926. M.Agr., Hokkaido Univ., Sapporo, 1950. Marine Resources (A). Appointed from Hokkaido Univ. *Place of Study*: U.S.A., 1959-.
- ARIYANAYAGAM, DAVID VELUPPILAI (*Ceylon*) b. 1919. Assoc., Indian Agric. Research Inst., New Delhi, 1948. Plant Science — Genetics and Plant Breeding (A). Appointed from Dept. of Agric., Peradeniya. *Place of Study*: U.S.A., 1959-.
- ARTIGAS COCH, JORGE (*Chile*) b. 1929. Ing.Agr., Catholic Univ. of Chile, Santiago, 1952. Plant Science — Entomology (A). Appointed from Univ. of Concepción. *Place of Study*: U.S.A., 1959-.
- BASTIDAS R., ALFONSO (*Colombia*) b. 1925. B.S., Natl. Univ. of Colombia, Bogotá, 1953. Plant Science — Agronomy (A). Appointed from Ministry of Agric., Bogotá. *Place of Study*: U.S.A., 1959-.
- BERNARDO, FERNANDO APELO (*Philippines*) b. 1932. M.S., Univ. of the Philippines, Los Baños, Laguna, 1957. Plant Science — Genetics and Plant Breeding (A). Appointed from Univ. of the Philippines. *Place of Study*: U.S.A., 1959-.
- BRAUN LYON, JUAN (*Chile*) b. 1933. Commercial Eng., Univ. of Chile, Santiago, 1959. Economics (SS). Appointed from Univ. of Chile. *Place of Study*: U.S.A., 1959-.
- CASAS D., EDUARDO (*Mexico*) b. 1933. Ing.Agr., Natl. School of Agric., Chapingo, 1958. Plant Science — Genetics and Plant Breeding (A). Appointed from Office of Special Studies, Mexico City. *Place of Study*: U.S.A., 1959-.
- CHAN, RICARDO MORENO (*Mexico*) b. 1931. D.V.M., Natl. Univ. of Mexico, Mexico City, 1955. Animal Science — Poultry (A). Appointed from Office of Special Studies, Mexico City. *Place of Study*: U.S.A., 1959-.
- CHMIELEWSKI, TADEUSZ (*Poland*) b. 1933. M.S., Univ. of Lodz 1957. Plant Science — Genetics and Plant Breeding (A). Appointed from Polish Acad. of Sciences, Skierniewice. *Place of Study*: U.S.A., 1959-.
- COPAIRA BELTRAN, MARCOS (*Peru*) b. 1925. D.V.M., Univ. of San Marcos, Lima, 1951. Veterinary Science (A). Appointed twice from Univ. of San Marcos. *Places of Study*: Brazil, 1956; U.S.A., 1959-.

- COTO MONGE, ALVARO (*Costa Rica*)  
*b.* 1927. Ing.Agr., Univ. of Costa Rica, San José, 1951. Plant Science—Pathology (A). Appointed from Ministry of Agric. and Industry, San José. *Place of Study:* U.S.A., 1959-.
- COUTO, EDALMO SOUZA (*Brazil*)  
*b.* 1928. D.V.M., Rural Univ. of the State of Minas Gerais, Belo Horizonte, 1952. Veterinary Science (A). Appointed from Rural Univ. of the State of Minas Gerais. *Place of Study:* U.S.A., 1959-.
- CUCA GARCIA, MANUEL (*Mexico*)  
*b.* 1932. Ing.Agr., Natl. School of Agric., Chapingo, 1956. Animal Science—Poultry (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- CUESTA, ERNESTO (*Cuba*) *b.* 1915. Economics (SS). Appointed from U.N. Economic Commission for Latin America, Mexico City. *Place of Study:* U.S.A., 1959-.
- DA SILVA, DARCY MARTINS (*Brazil*) *b.* 1918. Eng.Agr., Univ. of São Paulo 1954. Biochemistry (A). Appointed from Inst. of Agron. of the State of São Paulo, Campinas. *Place of Study:* U.S.A., 1959-.
- DAVILA GUZMAN, EDMUNDO (*Mexico*) *b.* 1937. Ing.Agr., Antonio Narro Coll. of Agric., Coahuila, 1959. Plant Science—Pathology (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- DE LAS CASAS AGUIRRE, ERNESTO (*Mexico*) *b.* 1932. Ing.Agr., Private School of Agric., Ciudad Juárez, 1957. Plant Science—Entomology (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- DE SOUZA, GERALDO ESTRAZULAS PEREIRA (*Brazil*) *b.* 1935. Eng. Agr., Univ. of Rio Grande do Sul, Pôrto Alegre, 1958. Plant Science—Agronomy (A). Appointed from Rio Grande do Sul Secretariat of Agric., Industry, and Commerce, Pôrto Alegre. *Place of Study:* Mexico, 1959-.
- DELGADO SANCHEZ, SANTIAGO (*Mexico*) *b.* 1932. Agron., Univ. of Coahuila, Saltillo, 1956. Plant Science—Pathology (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- DIAS, DOMICIANO PEREIRA DE SOUZA (*Brazil*) *b.* 1928. M.S., Cornell Univ. 1953. Plant Science—Economic Entomology (A). Appointed from Univ. of São Paulo, Piracicaba. *Place of Study:* U.S.A., 1959-.
- DIAZ BOTERO, EFRAIN (*Colombia*) *b.* 1916. Ing.Agr., Univ. of Antioquia, Medellín, 1952. Plant Science—Genetics and Plant Breeding (A). Appointed from Palmira Agric. Exper. Station. *Place of Study:* U.S.A., 1959-.
- DORUCHOWSKI, ROCH WLODZIMIERZ (*Poland*) *b.* 1930. Eng., Central Coll. of Agric., Warsaw, 1956. Plant Science—Genetics and Plant Breeding (A). Appointed from Inst. of Agric., Fertilization, and Soil Science, Pulawy. *Place of Study:* U.S.A., 1959-.

- DUARTE, RODRIGO (*Colombia*) *b.* 1931. Ing.Agr., Univ. of Nariño, Pasto, 1959. Plant Science—Genetics and Plant Breeding (A). Appointed from Ministry of Agric., Bogotá. *Place of Study:* U.S.A., 1959-.
- ECHVERRI E., SILVIO (*Colombia*) *b.* 1931. Ing.Agr., Univ. of Caldas, Manizales, 1959. Plant Science—Agronomy (A). Appointed from Ministry of Agric., Bogotá. *Place of Study:* U.S.A., 1959-.
- EMI, KOICHI (*Japan*) *b.* 1921. B.A., Hitotsubashi Univ., Tokyo, 1952. Economics (SS). Appointed from Hitotsubashi Univ. *Place of Study:* U.S.A., 1959-.
- FELIX BARRERA, ANIBAL (*Peru*) *b.* 1921. Ing.Agr., Natl. School of Agric., Lima, 1951. Plant Science—Pathology (A). Appointed from Cooperative Program of Agric. and Livestock Research, Lima. *Place of Study:* Mexico, 1959-.
- FERRER FERNANDEZ, MARIO (*Mexico*) *b.* 1932. Ing.Agr., Technol. Inst. and School of Advanced Studies of Monterrey 1956. Plant Science—Agronomy (A). Appointed from Center of Trop. Agric. Research, Cotaxtla. *Place of Study:* U.S.A., 1959-.
- FUJIHARA, TERUO (*Japan*) *b.* 1929. M.Agr., Kyushu Univ., Fukuoka, 1953. Agricultural Engineering (A). Appointed from Kyushu Univ. *Place of Study:* U.S.A., 1959-.
- FUJII, HIROSHI (*Japan*) *b.* 1924. B.Agr., Tokyo Univ. 1947. Plant Science—Pathology (A). Appointed from Kyushu Natl. Agric. Exper. Station, Chikugo, Fukuoka. *Place of Study:* U.S.A., 1959-.
- GARCIA, LUIS ALBERTO (*Colombia*) *b.* 1929. Ing.Agr., Natl. Univ. of Colombia, Palmira, 1957. Plant Science—Genetics and Plant Breeding (A). Appointed from Ministry of Agric., Bogotá. *Place of Study:* U.S.A., 1959-.
- GHOSE, SUVA (*India*) *b.* 1930. Assoc., Indian Agric. Research Inst., New Delhi, 1956. Plant Science—Genetics and Plant Breeding (A). Appointed from Government of West Bengal, Calcutta. *Place of Study:* U.S.A., 1959-.
- GUERRERO S., DANIEL (*Mexico*) *b.* 1930. Perito in Agr., Practical School of Agric., Oaxaca, 1947. Plant Science—Physiology (A). Appointed from Natl. School of Agric., Chapingo. *Place of Study:* U.S.A., 1959-.
- HERNANDEZ BRAVO, GUILLERMO (*Mexico*) *b.* 1933. Ing.Agr., Natl. School of Agric., Chapingo, 1958. Plant Science—Horticulture (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- HIDALGO-ARRECILLAS, RAUL (*Mexico*) *b.* 1923. D.V.M., Natl. Univ. of Mexico, Mexico City, 1950. Animal Science—Poultry (A). Appointed from Univ. of Sonora, Hermosillo. *Place of Study:* U.S.A., 1959-.
- HOLGUIN MOSQUERA, JORGE ENRIQUE (*Colombia*) *b.* 1930. Ing. Agr., Natl. Univ. of Colombia, Bogotá, 1955. Plant Science—Agronomy (A). Appointed from



- Agric., Indust., and Mining Credit Bank, Bogotá. *Place of Study*: U.S.A., 1959-.
- HOSS, SALIM AHMED (*Lebanon*) b. 1929. M.B.A., American Univ. of Beirut 1957. Economics (SS). Appointed from American Univ. of Beirut. *Place of Study*: U.S.A., 1959-.
- IDARRAGA HURTADO, GILBERTO (*Colombia*) b. 1926. Ing.Agr., Univ. of Caldas, Manizales, 1954. Animal Science (A). Appointed from Univ. of Caldas. *Place of Study*: U.S.A., 1959-.
- JETHMALANI, SHAMPAL CHUHARMAL (*India*) b. 1924. Assoc., Indian Agric. Research Inst., New Delhi, 1957. Plant Science — Agronomy (A). Appointed from Agric. Coll. and Research Inst., Gwalior. *Place of Study*: U.S.A., 1959-.
- JIMENEZ SAENZ, EDUARDO (*Costa Rica*) b. 1929. M.S., Univ. of Florida 1955. Plant Science — Physiology (A). Appointed from Inter-American Inst. of Agric. Sciences, Turrialba. *Place of Study*: U.S.A., 1959-.
- KITANO, KIYOMITSU (*Japan*) b. 1926. Gakushi, Tohoku Univ., Sendai, 1952. Marine Resources (A). Appointed from Hokkaido Regional Fisheries Research Lab., Yoichi. *Place of Study*: U.S.A., 1959-.
- LARREA HERRERA, PABLO ENRIQUE (*Ecuador*) b. 1931. Ing.Agr., Central Univ. of Ecuador, Quito, 1957. Plant Science — Genetics and Plant Breeding (A). Appointed from Izobamba Exper. Station, Quito. *Place of Study*: Mexico, 1959-.
- LOPEZ SAUBIDET, CARLOS ALFREDO (*Argentina*) b. 1930. Ing.Agr., Univ. of Buenos Aires 1954. Animal Science—Breeding (A). Appointed from Exper. Station, Balcarce. *Place of Study*: U.S.A., 1959-.
- MAGLAQUE, ARMANDO LOPEZ (*Philippines*) b. 1922. M.A., Stanford Univ. 1957. Economics (SS). Appointed from Natl. Economic Council of the Philippines, Manila. *Place of Study*: U.S.A., 1959-.
- MAHMOOD, SYED HAMID (*Pakistan*) b. 1924. M.S., Muslim Univ., Aligarh, 1946. Plant Science — Economic Entomology (A). Appointed from Univ. of Karachi. *Place of Study*: U.S.A., 1959-.
- MAKI, YOSHISUKE (*Japan*) b. 1924. B.S., Tokyo Univ. of Education 1954. Plant Science — Agronomy (A). Appointed from Kyushu Natl. Agric. Exper. Station, Kumamoto. *Place of Study*: U.S.A., 1959-.
- MARIN VILLEGAS, JAIME (*Colombia*) b. 1933. Ing.Agr., Univ. of Caldas, Manizales, 1957. Agricultural Engineering (A). Appointed from Univ. of Caldas. *Place of Study*: U.S.A., 1959-.
- MATHIEU VEILLARD, JEAN MARIO (*Mexico*) b. 1935. Ing.Agr., Technol. Inst. and School of Advanced Studies of Monterrey 1957. Animal Science—Entomology (A). Appointed from Technol. Inst. and School of Advanced

- Studies of Monterrey. *Place of Study*: U.S.A., 1959-.
- MIRANDA, LUIS TORRES (*Brazil*) b. 1935. Eng.Agr., Univ. of São Paulo 1957. Plant Science — Genetics and Plant Breeding (A). Appointed from Inst. of Agron. of the State of São Paulo, Campinas. *Place of Study*: Mexico, 1959-.
- MONACO, LOURIVAL CARMO (*Brazil*) b. 1934. Eng.Agr., Univ. of São Paulo, Piracicaba, 1956. Plant Science — Genetics and Plant Breeding (A). Appointed from Inst. of Agron. of the State of São Paulo, Campinas. *Place of Study*: U.S.A., 1959-.
- MONTES GUTIERREZ, HERMILO (*Mexico*) b. 1928. Ing.Agr., Natl. School of Agric., Chapingo, 1958. Plant Science — Genetics and Plant Breeding (A). Appointed from Inst. for the Improvement of Sugar Cane Production, Rosario Izapa. *Place of Study*: U.S.A., 1959-.
- MORALES RAMOS, DANIEL (*Mexico*) b. 1934. Ing.Agr., Technol. Inst. and School of Advanced Studies of Monterrey 1956. Soil Science (A). Appointed from Technol. Inst. and School of Advanced Studies of Monterrey. *Place of Study*: U.S.A., 1959-.
- NARAYAN, KISHEN (*India*) b. 1928. B.S., Osmania Univ., Hyderabad, 1950. Plant Science—Genetics and Plant Breeding (A). Appointed from Agric. Research Inst., Rajendra Nagar. *Place of Study*: U.S.A., 1959-.
- NOER, DELIAR (*Indonesia*) b. 1926. B.A., Univ. of Indonesia, Djakarta, 1958. Political Science (SS). Appointed while grad. student at Cornell Univ. *Place of Study*: U.S.A., 1959-.
- NORERO, ALDO (*Chile*) b. 1933. Ing. Agr., Catholic Univ. of Chile, Santiago, 1959. Soil Science (A). Appointed from Catholic Univ. of Chile. *Place of Study*: U.S.A., 1959-.
- NUNEZ AMADRO, RODRIGO (*Panama*) b. 1936. B.S.(Econ.), Franklin and Marshall Coll. 1955. Economics (SS). Appointed while grad. student at Univ. of Chicago. *Place of Study*: U.S.A., 1959-.
- NUNEZ ESCOBAR, ROBERTO (*Mexico*) b. 1934. Ing.Agr., Natl. School of Agric., Chapingo, 1958. Soil Science (A). Appointed from Office of Special Studies, Mexico City. *Place of Study*: U.S.A., 1959-.
- PADILLA ARANDA, RAFAEL (*Mexico*) b. 1937. Ing.Agr., Private School of Agric., Ciudad Juárez, 1957. Plant Science — Economic Entomology (A). Appointed from Office of Special Studies, Mexico City. *Place of Study*: U.S.A., 1959-.
- PEPITO, NARCISO N. (*Philippines*) b. 1911. M.S., Univ. of Maryland 1952. Animal Science — Breeding and Nutrition (A). Appointed while at Oklahoma State Univ. *Place of Study*: U.S.A., 1959-.
- PLURAD, SANTIAGO BACANI (*Philippines*) b. 1927. B.S., Univ. of the Philippines, Los Baños, Laguna, 1952. Plant Science — Economic Entomology (A). Appointed from Mindanao Agric. Coll.,

- Bukidnon. *Place of Study:* U.S.A., 1959-.
- POOLSUP, MAITRI (*Thailand*) b. 1935. B.S., Chulalongkorn Univ., Bangkok, 1957. Agricultural Engineering (A). Appointed from Kasetsart Univ., Bangkok. *Place of Study:* U.S.A., 1959-.
- RAMOS, PAULO DIAS DE CASTRO (*Brazil*) b. 1925. Eng.Agr., Univ. of Rio Grande do Sul, Pôrto Alegre, 1948. Agricultural Engineering (A). Appointed from Univ. of Rio Grande do Sul. *Place of Study:* U.S.A., 1959-.
- RIVERA, CELESTINO T. (*Philippines*) b. 1933. B.S. (Agr.), Univ. of the Philippines, Los Baños, Laguna, 1955. Plant Science — Economic Entomology (A). Appointed from Mindanao Agric. Coll., Musuan. *Place of Study:* U.S.A., 1959-.
- ROMERO COVA, SEBASTIAN (*Mexico*) b. 1926. Ing.Agr., Natl. School of Agric., Chapingo, 1958. Plant Science — Pathology (A). Appointed from Office of Special Studies, Mexico City. *Place of Study:* U.S.A., 1959-.
- ROSEMO MORAN, MANUEL JESUS (*Colombia*) b. 1931. Ing.Agr., Natl. Univ. of Colombia, Medellín, 1955. Plant Science — Genetics and Plant Breeding (A). Appointed from Ministry of Agric., Bogotá. *Place of Study:* U.S.A., 1959-.
- ROSSI, JUAN CARLOS (*Argentina*) b. 1917. Ing.Agr., Univ. of Buenos Aires 1944. Plant Science — Genetics and Plant Breeding (A). Appointed from Natl. Inst. for the Technology of Agric. and Animal Husbandry, Pergamino. *Place of Study:* Mexico, 1959-.
- RUIZ LARA, JORGE (*Colombia*) b. 1925. B.S.(Econ.), Univ. of Illinois 1954. Economics (SS). Appointed from Univ. of the Andes, Bogotá. *Place of Study:* U.S.A., 1959-.
- SAID, MIAN (*Pakistan*) b. 1917. M.S., Punjab Agric. Coll., Lyallpur, 1951. Plant Science — Horticulture (A). Appointed from Dept. of Agric., West Pakistan. *Place of Study:* U.S.A., 1959-.
- SAID, WANDER (*Brazil*) b. 1934. Eng.Agr., Rural Univ. of the State of Minas Gerais, Belo Horizonte, 1958. Agricultural Education (A). Appointed from Rural Agric. Credit Assn. of Espírito Santo, Vitoria. *Place of Study:* Mexico, 1959-.
- SANCHEZ CAMPOS, HUGO EDUARDO (*Peru*) b. 1927. Ing.Agr., Natl. School of Agric., La Molina, 1952. Plant Science — Genetics and Plant Breeding (A). Appointed from Ministry of Agric., Ayacucho. *Place of Study:* Mexico, 1959-.
- SANKARA RAO, MANDAVA (*India*) b. 1921. B.S., Benares Hindu Univ. 1941. Plant Science — Genetics and Plant Breeding (A). Appointed from Coordinated Maize Breeding Scheme, Amberpet, Hyderabad. *Place of Study:* U.S.A., 1959-.
- SEKHON, GURCHARAN SINGH (*India*) b. 1930. Assoc. in Agron., Indian Agric. Research Inst., New Delhi, 1952. Plant Science — Agronomy (A). Appointed from

- Model Agronomic Trials Scheme, Nasirpur, Patiala. *Place of Study*: U.S.A., 1959-.
- SESHADRI, A. R. (*India*) b. 1924. M.A., Madras Christian Coll., Tambaram, 1946. Plant Science — Nematology (A). Appointed from Agric. Coll. and Research Inst., Coimbatore. *Place of Study*: U.S.A., 1959-.
- SHARMA, VEDA VRATA (*India*) b. 1927. M.S., Balwant Rajput Coll., Agra, 1951. Animal Science — Dairy (A). Appointed from Madhya Bharat Coll. of Agric., Gwalior. *Place of Study*: U.S.A., 1959-.
- SHIMAJI, KEN (*Japan*) b. 1922. Dr., Tokyo Univ. 1959. Plant Science — Botany (A). Appointed from Tokyo Univ. *Place of Study*: U.S.A., 1959-.
- SHIMBAYASHI, KOICHI (*Japan*) b. 1928. B.S. (Agr.), Hokkaido Univ., Sapporo, 1942. Biochemistry (A). Appointed from Natl. Inst. of Animal Health, Tokyo. *Place of Study*: U.S.A., 1959-.
- SILOS, JOSE S. (*Mexico*) b. 1933. Ing. Agr., Antonio Narro Coll. of Agric., Saltillo, 1958. Agricultural Economics (A). Appointed from Office of Special Studies, Mexico City. *Place of Study*: U.S.A., 1959-.
- SMITANANDA, PHANOM (*Thailand*) b. 1911. M.S., Cornell Univ. 1958. Agricultural Education (A). Appointed from Kasetsart Univ., Bangkok. *Place of Study*: U.S.A., 1959-.
- SOEBIJANTO SOEMOHADISEPOETRO, RADEN (*Indonesia*) b. 1929. Dipl., Acad. of Agric. Research, Bogor, 1955. Plant Science — Physiology (A). Appointed from Rice Research Inst., Bogor. *Place of Study*: Japan, 1959-.
- STRZELCZYK, EDMUND (*Poland*) b. 1930. Magis. in Microbiology (M.S.), Univ. of Lublin 1955. Microbiology—Bacteriology (A). Appointed from Agric. Coll., Lublin. *Places of Study*: Canada, U.S.A., 1959-.
- TAMBUNAN, BUNTUANGIN KOSTER JASMIN (*Indonesia*) b. 1922. Intercultural Understanding — Industrial and Labor Relations (H). Appointed from Indonesian Natl. Railways Workers' Union, Bandung. *Place of Study*: U.S.A., 1959-.
- TUCCORI, PEDRO (*Brazil*) b. 1931. B.A., Catholic Univ. of Campinas, São Paulo, 1955. Economics (SS). Appointed from School of Sociology and Politics of São Paulo. *Place of Study*: U.S.A., 1959-.
- VAZQUEZ GONZALEZ, JOSE TRINIDAD (*Mexico*) b. 1932. Ing. Agr., Natl. School of Agric., Chapingo, 1958. Plant Science — Entomology (A). Appointed from Natl. School of Agric. *Place of Study*: U.S.A., 1959-.
- WING MARTINEZ, MARCO ANTONIO (*Mexico*) b. 1929. Ing. Agr., Antonio Narro Coll. of Agric., Saltillo, 1956. Plant Science—Genetics and Plant Breeding (A). Appointed from Northwest Agric. Research Station (CIANO), Sonora. *Place of Study*: U.S.A., 1959-.

- WIRJOSUBROTO, SAHADAT (*Indonesia*) b. 1932. Sardjana Muda, Univ. of Indonesia, Djakarta, 1959. Economics (SS). Appointed from State Planning Bureau, Djakarta. *Place of Study*: U.S.A., 1959-.
- WROBEL, TADEUSZ (*Poland*) b. 1926. M.Biol.Sc., Marie Curie-Skłodowska Univ., Lublin, 1952. Microbiology — Bacteriology (A). Appointed from Inst. of Soil Science and Plant Cultivation, Pulawy. *Place of Study*: U.S.A., 1959-.
- YOPO PAIVA, BORIS (*Chile*) b. 1929. Ing.Agr., Catholic Univ. of Chile, Santiago, 1953. Animal Science — Breeding (A). Appointed from Catholic Univ. of Chile. *Place of Study*: U.S.A., 1959-.
- YOSHIDA, TADASHI (*Japan*) b. 1928. M.Agr., Hokkaido Univ., Sapporo, 1956. Microbiology (A). Appointed from Hokkaido Univ. *Place of Study*: U.S.A., 1959-.



## **Report of the Treasurer**





## REPORT OF THE TREASURER

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**I**N THE FOLLOWING PAGES is submitted a report of the financial transactions of The Rockefeller Foundation for the year ended December 31, 1959.

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# LYBRAND, ROSS BROS. & MONTGOMERY

CERTIFIED PUBLIC ACCOUNTANTS

2 BROADWAY, NEW YORK 4, N.Y.

## AUDITORS' REPORT

To the Board of Trustees,  
The Rockefeller Foundation:

We have examined the balance sheet of The Rockefeller Foundation as of December 31, 1959 and the related statements of principal fund, appropriations and payments, income available for commitment and equipment fund for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and statements of principal fund, appropriations and payments, income available for commitment and equipment fund present fairly the financial position of The Rockefeller Foundation at December 31, 1959, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

(Signed) Lybrand, Ross Bros. & Montgomery

*March 4, 1960.*

## BALANCE SHEET — DECEMBER 31, 1959

*ASSETS*

Marketable securities principally at cost or market quotations at date of gift (market quotations December 31, 1959, \$584,456,318.00)	\$196,761,516.22
<b>CURRENT ASSETS:</b>	
Cash on deposit	2,947,184.23
Advances and deferred charges	959,370.95
Equipment at approximate net depreciated cost	181,331.64
	<u>\$200,849,403.04</u>

*FUNDS AND OBLIGATIONS*

PRINCIPAL FUND	\$130,524,412.01
<b>COMMITMENTS:</b>	
Unpaid Appropriations	66,872,065.84
INCOME AVAILABLE FOR COMMITMENT	3,130,405.15
<b>CURRENT LIABILITIES:</b>	
Accounts payable	141,188.40
EQUIPMENT FUND	181,331.64
	<u>\$200,849,403.04</u>

PRINCIPAL FUND

Balance, December 31, 1958		\$135,594,715.41
Add:		
Amount by which the proceeds of securities sold during the year exceeded the ledger value	\$859,207.43	
Anonymous gift received	15,000.00	
Profit on sale of part interest in Paris Office Building	55,489.17	929,696.60
		<u>\$136,524,412.01</u>
Deduct:		
Amount transferred to Income Available for Commitment in accordance with action taken by Trustees at meeting of December 1-2, 1959		6,000,000.00
Balance, December 31, 1959		<u><u>\$130,524,412.01</u></u>

REPORT OF THE TREASURER

APPROPRIATIONS AND PAYMENTS

Unpaid appropriations, December 31, 1958		\$ 62,269,986.63
Appropriations during the year	\$34,189,339.60	
Unused balances of appropriations allowed to lapse	1,724,262.14	32,465,077.46
		<u>\$ 94,735,064.09</u>
Payments on 1959 and prior years' appropriations		27,862,998.25
Unpaid appropriations, December 31, 1959		<u><u>\$ 66,872,065.84</u></u>

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INCOME AVAILABLE FOR COMMITMENT

Balance, December 31, 1958		\$ 6,507,341.10
Add:		
Income and refunds:		
Income from securities	\$23,044,031.70	
Refunds on closed appropriations	44,109.81	
Amount transferred from Principal Fund as of December 31, 1959	6,000,000.00	
Unused balances of appropriations allowed to lapse	<u>1,724,262.14</u>	30,812,403.65
		<u>\$37,319,744.75</u>
Deduct:		
Appropriations during 1959		34,189,339.60
Balance, December 31, 1959		<u><u>\$ 3,130,405.15</u></u>

EQUIPMENT FUND

	BALANCE	CHANGES DURING 1959			BALANCE
	DEC. 31, 1958	ADDITIONS	SALE	DEPRECIATION	DEC. 31, 1959
Library	\$ 8,544.00	\$ 2,855.46	\$	\$ 4,514.46	\$ 6,885.00
Equipment	152,562.53	43,978.08		22,093.97	174,446.64
Paris Office:					
Part Interest in Paris Office Building	<u>23,810.66</u>			<u>23,810.66</u>	
	<u>\$184,917.19</u>	<u>\$46,833.54</u>	<u>\$23,810.66</u>	<u>\$26,608.43</u>	<u>\$181,331.64</u>

FINANCE COMMITTEE'S STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS

PURCHASED

\$1,000,000	United States of America Treasury Bills April 2, 1959 @ 99.327	\$ 993,270.00
1,000,000	United States of America Treasury Bills April 16, 1959 @ 99.2908	992,908.00
1,000,000	United States of America Treasury Bills May 28, 1959 @ 99.3444	993,444.00
1,000,000	United States of America Treasury Bills July 2, 1959 @ 99.2844	992,844.00
1,000,000	United States of America Treasury Bills July 16, 1959 @ 99.2222	992,222.00
1,000,000	United States of America Treasury Bills August 27, 1959 @ 99.2738	992,738.00
1,000,000	United States of America Treasury Bills October 1, 1959 @ 99.1992	991,992.00
1,000,000	United States of America Treasury Bills October 15, 1959 @ 99.144	991,440.00
1,000,000	United States of America Treasury Bills January 14, 1960 @ 98.9318	989,318.00
70	shares Dow Chemical Co. (Par \$5) @ 76.8548571	5,379.84
21.05	" International Business Machines Corp. Common (Par \$5) @ 517.6269767	11,128.98
26,000	" The Southern Company Common (Par \$5) @ 39.09946346	1,016,586.05
		<u>\$ 9,963,270.87</u>

OTHERWISE ACQUIRED

\$ 8,000,000	United States of America 3¾% Treasury Certificates of Indebtedness "A" February 15, 1960 received in exchange for a like amount of United States of America 1¾% Treasury Notes February 15, 1959 @ 100	\$ 8,000,000.00
4,000,000	United States of America 4% Treasury Certificates of Indebtedness "B" May 15, 1960 received in exchange for a like amount of United States of America 1¼% Treasury Certificates of Indebtedness May 15, 1959 @ 99.95	3,998,000.00
11,000,000	United States of America 4¾% Treasury Notes August 15, 1960 received in exchange for a like amount of United States of America 1½% Treasury Certificates of Indebtedness August 1, 1959 @ 99.3295454	10,926,250.00
1,000,000	United States of America 4¾% Treasury Notes "C" November 15, 1963 received in exchange for a like amount of United States of America 3¾% Certificates of Indebtedness November 15, 1959 @ 99.95	999,500.00

REPORT OF THE TREASURER

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**FINANCE COMMITTEE'S STATEMENT OF TRANSACTIONS  
RELATING TO INVESTED FUNDS — *continued***

49,500	shares American Telephone & Telegraph Co. Capital (Par \$33-1/3) received in a stock split on 24,750 shares of Capital (Par \$100) owned of record 4/29/59	\$ — 0 —
15,423	rights Consolidated Edison Co. of New York, Inc. received on 15,423 shares of Common (No Par) owned of record 1/26/59 @ .825	12,723.98
300,000	" Consolidated Natural Gas Co. received on 300,000 shares of Capital (Par \$10) owned of record 5/21/59 @ .18875603	56,626.81
2,500	shares Continental Insurance Co. Capital (Par \$5) received as a stock dividend on 25,000 shares of Capital (Par \$5) owned of record 7/2/59	— 0 —
430	" Dow Chemical Co. Common (Par \$5) received as a stock dividend on 21,500 shares of Common (Par \$5) owned of record 9/18/59	— 0 —
60,000	" Freeport Sulphur Co. Common (Par \$10) received in a stock split on 30,000 shares of Common (Par \$10) owned of record 4/27/59	— 0 —
20,000	" Inland Steel Co. Common (No Par) received in a stock split on 10,000 shares of Common (No Par) owned of record 4/23/59	— 0 —
140.95	" International Business Machines Corp. Common (Par \$5) received as a stock dividend on 5,638 shares of Common (Par \$5) owned of record 1/6/59	— 0 —
2,900	" International Business Machines Corp. Common (Par \$5) received in a stock split on 5,800 shares of Common (Par \$5) owned of record 5/5/59	— 0 —
1,428	" International Paper Co. Common (Par \$7.50) received as a stock dividend on 71,400 shares Common (Par \$7.50) owned of record 11/20/59	— 0 —
632	" Monsanto Chemical Co. Common (Par \$2) received as a stock dividend on 31,600 shares Common (Par \$2) owned of record 11/20/59	— 0 —
11,111	" Standard Oil Co. (New Jersey) Capital (Par \$7) received as a stock dividend on 1,000,000 shares Standard Oil Co. (Indiana) Capital (Par \$25) owned of record 11/13/59. Taken into the books @ 47.982763 and the value credited to income. (Cash in the amount of \$5.20 was received in lieu of the fractional share and was also credited to income.)	533,136.48
		<u>\$24,526,237.27</u>
		<u>\$34,489,508.14</u>



SOLD		PROCEEDS	LEDGER VALUE
\$1,000,000	United States of America Treasury Bills August 27, 1959 @ 99.2738	\$ 992,738.00#	\$ 992,738.00
1,000,000	United States of America Treasury Bills October 1, 1959 @ 99.1992	991,992.00#	991,992.00
15,000	shares Canadian Industries Limited Common (No Par) @ 19.05748533	285,862.28	331,066.44
15,423	" Consolidated Edison Co. of New York, Inc. Common (No Par) @ 63.4668845	978,849.76	747,811.07
15,423	rights Consolidated Edison Co. of New York, Inc. @ .825	12,723.98	12,723.98
300,000	" Consolidated Natural Gas Co. @ .18875603	56,626.81	56,626.81
13,000	shares Fireman's Fund Insurance Co. Capital (Par \$2.50) @ 58.3797092	758,936.22	683,019.94
28	" International Paper Co. Common (Par \$7.50) @ 135.1132142	3,783.17	907.83
32	" Monsanto Chemical Co. Common (Par \$2) @ 55.34375	1,771.00	760.08
41,700	" Union Pacific Railroad Co. Common (Par \$10) @ 35.7474947	1,490,670.53	897,100.17
11,111	" Standard Oil Co. (New Jersey) Capital (Par \$7) @ 47.982763	533,136.48	533,136.48
		<u>\$6,107,090.23</u>	<u>\$5,247,882.80</u>
<b>REDEEMED AT MATURITY</b>			
\$1,000,000	United States of America Treasury Bills April 2, 1959 @ 99.327	\$ 993,270.00#	\$ 993,270.00
1,000,000	United States of America Treasury Bills April 16, 1959 @ 99.2908	992,908.00#	992,908.00
1,000,000	United States of America Treasury Bills May 28, 1959 @ 99.3444	993,444.00#	993,444.00
1,000,000	United States of America Treasury Bills July 2, 1959 @ 99.2844	992,844.00#	992,844.00
1,000,000	United States of America Treasury Bills July 16, 1959 @ 99.2222	992,222.00#	992,222.00
1,000,000	United States of America Treasury Bills October 15, 1959 @ 99.144	991,440.00#	991,440.00
		<u>\$5,956,128.00</u>	<u>\$5,956,128.00</u>

REPORT OF THE TREASURER

**FINANCE COMMITTEE'S STATEMENT OF TRANSACTIONS  
RELATING TO INVESTED FUNDS — *concluded***

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THE ROCKEFELLER FOUNDATION

OTHERWISE DISPOSED OF	PROCEEDS	LEDGER VALUE
\$ 4,000,000    United States of America 1¼% Treasury Certificates of Indebtedness May 15, 1959 exchanged for a like amount of United States of America 4% Treasury Certificates of Indebtedness "B" May 15, 1960 @ 100	\$ 4,000,000.00	\$ 4,000,000.00
11,000,000    United States of America 1½% Treasury Certificates of Indebtedness August 1, 1959 exchanged for a like amount of United States of America 4¾% Treasury Notes August 15, 1960 @ 99.3295454	10,926,250.00	10,926,250.00
8,000,000    United States of America 1¾% Treasury Notes February 15, 1959 exchanged for a like amount of United States of America 3¾% Treasury Certificates of Indebtedness "A" February 15, 1960 @ 100	8,000,000.00	8,000,000.00
1,000,000    United States of America 3¾% Treasury Certificates of Indebtedness "E" November 15, 1959 exchanged for a like amount of United States of America 4¾% Treasury Notes November 15, 1963 @ 99.95	999,500.00	999,500.00
	<b>\$23,925,750.00</b>	<b>\$23,925,750.00</b>
# Proceeds of U. S. A. Treasury Bills sold and redeemed were augmented by the sum of \$55,334.78 which was appropriately credited to income.		
<b>LEDGER VALUE REDUCED</b>		
15,423    shares Consolidated Edison Co. of New York, Inc. Common (No Par) by value of 15,423 rights @ .825	\$ 12,723.98	\$ 12,723.98
300,000    "    Consolidated Natural Gas Co. Capital (Par \$10) by value of 300,000 rights @ .18875603	56,626.81	56,626.81
Amortization of bond premiums	10,520.39	10,520.39
	<b>\$ 79,871.18</b>	<b>\$ 79,871.18</b>
	<b>\$36,068,839.41</b>	<b>\$35,209,631.98</b>

RECONCILIATION

Ledger Value of Securities December 31, 1958		\$197,481,640.06
Purchased	\$ 9,963,270.87	
Otherwise Acquired	24,526,237.27	34,489,508.14
		<u>\$231,971,148.20</u>
Sold	\$ 5,247,882.80	
Redeemed at Maturity	5,956,128.00	
Otherwise Disposed of	23,925,750.00	
Ledger Value Reduced	79,871.18	35,209,631.98
Ledger Value of Securities December 31, 1959		<u><u>\$196,761,516.22</u></u>

REPORT OF THE TREASURER

SCHEDULE OF SECURITIES

BONDS	PAR	LEDGER VALUE		MARKET QUOTATIONS	
		PRICE	TOTAL	PRICE	TOTAL
American Telephone & Telegraph Co. 3 7/8% 34 yr. Deb. July 1, 1990	\$ 2,000,000	102.511	\$ 2,050,216.80	86.00	\$ 1,720,000.00
Dallas Power & Light Co. 4 1/4% 1st Mtge. December 1, 1986	500,000	100.764	503,819.22	90.00	450,000.00
General Motors Acceptance Corp. 5% 20 yr. Deb. August 15, 1977	1,000,000	97.50	975,000.00	100.00	1,000,000.00

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SCHEDULE OF SECURITIES—*continued*

BONDS— <i>concluded</i>	PAR	LEDGER VALUE		MARKET QUOTATIONS	
		PRICE	TOTAL	PRICE	TOTAL
Illinois Bell Telephone Co. 4¼% Series "E" March 1, 1988	\$ 1,000,000	101.287	\$ 1,012,872.10	90.00	\$ 900,000.00
International Bank for Reconstruction and Development 3½% October 15, 1971	1,000,000	98.00	980,000.00	88.00	880,000.00
Michigan Bell Telephone Co. 4¾% 35 yr. Deb. December 1, 1991	1,000,000	102.073	1,020,734.42	91.50	915,000.00
The Mountain States Telephone & Tele- graph Co. 4¾% 31 yr. Deb. February 1, 1988	1,000,000	101.174	1,011,744.45	91.50	915,000.00
Pacific Gas & Electric Co. 4½% 1st & Ref. Mtge. "AA" December 1, 1986	1,000,000	101.351	1,013,510.66	96.75	967,500.00
Public Service Electric & Gas Company 4¾% 1st & Ref. Mtge. November 1, 1986	1,000,000	101.133	1,011,334.28	92.50	925,000.00
Scott Paper Company 3% Conv. Deb. March 1, 1971	1,000,000	103.321	1,033,211.38	102.50	1,025,000.00
United States of America Treasury Bills Jan. 14, 1960	1,000,000	98.9318	989,318.00	98.9318	989,318.00

United States of America Treasury Bonds:

2¾% — Sept. 15, 1961	1,920,000	100.00	1,920,000.00	96.50	1,852,800.00
2½% — Nov. 15, 1961	9,000,000	100.019	9,001,743.96	95.5625	8,600,625.00
2½% — Aug. 15, 1963	11,000,000	99.460	10,940,554.94	91.5625	10,071,875.00
2½% — June 15, 1962-67	11,200,000	98.739	11,058,762.94	85.0625	9,527,000.00
2½% — Dec. 15, 1964-69	12,000,000	96.305	11,556,562.50	81.6875	9,802,500.00
2½% — June 15, 1967-72	9,000,000	98.941	8,904,650.50	79.875	7,188,750.00

United States of America 2½% Savings Bonds "G" October 1, 1962

1,000,000	100.00	1,000,000.00	97.30	973,000.00
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United States of America Treasury Certificates of Indebtedness:

3¾% — Feb. 15, 1960	8,000,000	100.00	8,000,000.00	99.9375	7,995,000.00
4% — May 15, 1960	4,000,000	99.95	3,998,000.00	99.59375	3,983,750.00

United States of America Treasury Notes:

4¾% — Aug. 15, 1960	11,000,000	99.330	10,926,250.00	99.84375	10,982,812.50
1½% — April 1, 1963	4,000,000	92.25	3,690,000.00	89.875	3,595,000.00
4¾% — Nov. 15, 1963	1,000,000	99.95	999,500.00	99.8125	998,125.00

\$93,597,786.15

\$86,258,055.50

SCHEDULE OF SECURITIES—*continued*

STOCKS	SHARES	LEDGER VALUE		MARKET QUOTATIONS	
		PRICE	TOTAL	PRICE	TOTAL
American Electric Power Co. Inc. (Par \$10)	62,700	\$ 17.138	\$ 1,074,570.80	\$ 48.50	\$ 3,040,950.00
American Telephone & Telegraph Co. Cap. (Par \$33-1/3)	74,250	44.029	3,269,169.30	79.75	5,921,437.50
Christiana Securities Co. (Par \$100)	200	5,568.00	1,113,600.00	17,300.00	3,460,000.00
Consolidated Natural Gas Co. Cap. (Par \$10)	300,000	16.001	4,800,180.01	48.25	14,475,000.00
Continental Insurance Co. Cap. (Par \$5)	27,500	33.262	914,713.17	55.375	1,522,812.50
Continental Oil Co. Cap. (Par \$5)	300,000	6.718	2,015,418.15	55.75	16,725,000.00
Corning Glass Works (Par \$5)	12,500	35.593	444,917.79	145.00	1,812,500.00
Crown Zellerbach Corporation (Par \$5)	22,500	26.274	591,167.64	53.75	1,209,375.00
Dow Chemical Co. (Par \$5)	22,000	22.746	500,413.67	98.75	2,172,500.00
First National Bank of Chicago (Par \$100)	8,375	139.689	1,169,895.85	370.00	3,098,750.00
Freeport Sulphur Co. (Par \$10)	90,000	24.799	2,231,877.90	26.50	2,385,000.00
General Electric Co. (Par \$5)	60,000	19.674	1,180,424.14	99.125	5,947,500.00
Goodrich, B. F. Co. (Par \$10)	50,000	36.798	1,839,893.41	88.75	4,437,500.00
Hartford Fire Insurance Co. Cap. (Par \$10)	25,000	87.141	2,178,527.78	203.00	5,075,000.00
Inland Steel Co. (No Par)	30,000	24.984	749,507.83	46.625	1,398,750.00
Insurance Company of North America Cap. (Par \$5)	25,000	96.476	2,411,908.38	131.000	3,275,000.00

International Business Machines Corp. (Par \$5)	8,700	77.189	671,546.06	438.25	3,812,775.00
International Nickel Co. of Canada Ltd. (No Par)	55,000	41.636	2,289,969.82	110.25	6,063,750.00
International Paper Co. (Par \$7.50)	72,800	32.423	2,360,358.18	135.75	9,882,600.00
Kennecott Copper Corporation (No Par)	30,000	58.539	1,756,180.37	94.625	2,838,750.00
Monsanto Chemical Co. (Par \$2)	32,200	23.753	764,835.02	55.50	1,787,100.00
National Lead Co. (Par \$5)	15,300	48.811	746,805.13	107.125	1,639,012.50
The Ohio Oil Co. (No Par)	200,000	17.292	3,458,394.00	38.625	7,725,000.00
Peoples Gas Light & Coke Co. (Par \$25)	33,600	31.469	1,057,373.46	60.75	2,041,200.00
Phelps Dodge Corporation Cap. (Par \$12.50)	70,000	26.358	1,845,087.74	55.875	3,911,250.00
Socony Mobil Oil Co. Inc. Cap. (Par \$15)	300,000	25.927	7,778,152.30	41.50	12,450,000.00
The Southern Co. (Par \$5)	26,000	39.009	1,016,586.05	39.75	1,033,500.00
Standard Oil Co. of California Cap. (Par \$6.25)	200,000	9.468	1,893,562.39	50.25	10,050,000.00
Standard Oil Co. (Indiana) Cap. (Par \$25)	1,000,000	14.185	14,184,717.71	44.125	44,125,000.00
Standard Oil Co. (New Jersey) Cap. (Par \$7)	6,000,000	5.006	30,037,173.47	49.625	297,750,000.00
Travelers Insurance Co. Cap. (Par \$5)	25,000	34.255	856,385.00	85.75	2,143,750.00
Union Carbide Corporation (No Par)	20,000	85.790	1,715,807.93	147.00	2,940,000.00

## SCHEDULE OF SECURITIES—concluded

STOCKS—concluded	SHARES	LEDGER VALUE		MARKET QUOTATIONS	
		PRICE	TOTAL	PRICE	TOTAL
Union Tank Car Co. Cap. (No Par)	100,000	\$ 5.931	\$ 593,186.57	\$ 30.125	\$ 3,012,500.00
United States Steel Corporation (Par \$16-2/3)	20,000	41.115	822,293.22	98.625	1,972,500.00
Westinghouse Electric Corporation (Par \$12.50)	20,000	61.227	1,224,541.52	109.375	2,187,500.00
Weyerhaeuser Co. Cap. (Par \$7.50)	120,000	13.3716	1,604,588.31	40.625	4,875,000.00
			<u>\$103,163,730.07</u>		<u>\$498,198,262.50</u>

## SUMMARY

	LEDGER VALUE	MARKET QUOTATIONS
Bonds	\$ 93,597,786.15	\$ 86,258,055.50
Stocks	<u>103,163,730.07</u>	<u>498,198,262.50</u>
	<u>\$196,761,516.22</u>	<u>\$584,456,318.00</u>



**Geographical Distribution  
of Grants, 1959**



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Program of interuniversity cooperation: support	10,000	250
<b>ARKANSAS</b>		
UNIVERSITY OF ARKANSAS		
Chemistry of the nervous system: research	5,000	107
<b>CALIFORNIA</b>		
CENTER FOR ADVANCED STUDY IN THE BEHAVIORAL SCIENCES		
Social sciences:		
S. T. Alisjahbana; visiting study appointment	14,500	161
POMONA COLLEGE		
Political science: W. C. Olson; research	5,000	209
STANFORD UNIVERSITY		
Natural product chemistry: research and training	125,500	123
Planetary biology: studies on instrumentation	10,000	113
School of Medicine: development	3,000,000	70
Small-group research laboratory: completion and equipment	8,000	188
UNIVERSITY OF CALIFORNIA		
<i>Berkeley:</i>		
Urban redevelopment: study	9,700	172
<i>Davis:</i>		
Plant pathology: W. B. Hewitt; travel	2,937	237
<i>Los Angeles:</i>		
Nursing: development of doctoral program	10,000	84
Nursing education: L. W. Hassenplug; travel	2,530	84
Political science: L. Binder; research	7,500	207
Research on Tibet: K. Ch'en; travel	2,900	159

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VIRUS STUDIES	33,000	43
COLORADO		
UNIVERSITY OF DENVER		
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R. C. Good; research and travel	9,200	206
E. R. Platig; research	8,000	206
CONNECTICUT		
CONNECTICUT AGRICULTURAL EXPERIMENT STATION		
Plant genetics: research	6,400	235
ECONOMETRIC SOCIETY		
Analytical survey articles:		
commissioning and publication expenses	5,000	189
WESLEYAN UNIVERSITY		
Political science: E. E. Schattschneider; study	1,500	209
YALE UNIVERSITY		
American political history:		
H. G. Nicholas and R. B. McCallum; travel	2,300	207
Biophysics: E. H. Hon; travel and research	5,017	101
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Legal study: G. B. J. Hughes; research	4,500	211
Music: H. L. Boatwright; study	3,000	159
Philosophy: D. Braybrooke; research and travel	7,000	211
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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE		
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Congress on Nutrition: expenses of participants	10,000	132
AMERICAN UNIVERSITY		
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Symposium in entomology: expenses of a participating insect pathologist	1,340	236
<b>GOLDEN ANNIVERSARY WHITE HOUSE CONFERENCE ON CHILDREN AND YOUTH</b>		
Expenses of foreign participants	10,000	262
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<b>NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL</b>		
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Agricultural losses caused by pests: study	9,500	236
Personnel policies: review	5,000	264
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<b>UNITED STATES COMMITTEE FOR THE ATLANTIC CONGRESS, INC.</b>		
Atlantic Congress: preparation of material	25,000	261
<b>WORLD FORESTRY CONGRESS</b>		
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<b>ELIZABETH STEVENSON, ATLANTA</b>		
Biography of Lafcadio Hearn: travel	1,200	174
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M. H. Fisch; preparation	9,300	162
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Exhibition of Thai national art treasures:		
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**JOHNS HOPKINS UNIVERSITY**

Neurosurgery congress: A. E. Walker; travel expenses	1,150	83
Political science: R. W. Tucker; research	4,250	209

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**BRANDEIS UNIVERSITY**

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A. Razzaq; visiting fellowship	6,700	207
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C. B. Tancock; travel	1,100	82
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<b>UNIVERSITY OF NORTH CAROLINA</b>		
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<b>KENYON COLLEGE</b>		
Conference on philosophy: expenses	800	163
<b>MIAMI UNIVERSITY</b>		
Population trends in the United States: research	219,000	182
<b>OHIO AGRICULTURAL EXPERIMENT STATION</b>		
Research equipment and supplies	9,500	237
<b>OHIO STATE UNIVERSITY</b>		
English population history: J. T. Krause; study	6,050	189
Political philosophy: D. Spitz; completion of study	3,725	212
 <b>OREGON</b>		
<b>REED COLLEGE</b>		
Biology and biochemistry: research	250,000	109
 <b>PENNSYLVANIA</b>		
<b>AMERICAN FRIENDS SERVICE COMMITTEE</b>		
Mr. and Mrs. J. Narayan: travel expenses	10,000	262
<b>HAVERFORD COLLEGE</b>		
West German foreign policy: G. Freund; research	2,750	209
<b>SWARTHMORE COLLEGE</b>		
Ethical theory: R. Brandt; study	6,920	162
<b>UNIVERSITY OF PENNSYLVANIA</b>		
Argentine nationalism: study	75,000	151
Biology and medical sciences: building construction	430,000	108
International economic journal: support	5,000	194
Microbiology: M. G. Sevag; travel	1,500	83
Population redistribution and economic growth: research	13,000	194
Structure of the American economy: research	8,000	189

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<b>PUERTO RICO</b>		
DEPARTMENT OF HEALTH OF PUERTO RICO		
Medical care: J. A. Perez; travel	2,500	96
UNIVERSITY OF PUERTO RICO		
Preventive medicine and public health:		
E. Grzegorzewski; travel	3,050	83
School of Medicine: development	400,000	71
<b>RHODE ISLAND</b>		
BROWN UNIVERSITY		
English language teaching activities: continuation of program	15,251	157
<b>SOUTH CAROLINA</b>		
CLEMSON AGRICULTURAL COLLEGE		
Department of Entomology and Zoology: equipment	3,500	236
<b>TENNESSEE</b>		
UNIVERSITY OF TENNESSEE		
Medicine:		
G. Barlow; travel	2,075	84
G. B. Spurr; travel	2,075	83
VANDERBILT UNIVERSITY		
Economic development: E. Willems; study	10,000	194
<b>TEXAS</b>		
BAYLOR UNIVERSITY		
Virology and epidemiology: J. L. Melnick; travel	1,215	139
DALLAS COUNCIL ON WORLD AFFAIRS		
World Conference on Religion and Freedom: expenses of Asian participants	7,500	263
DALLAS THEATER CENTER		
Repertory theater: fellowships	28,000	170
INSTITUTE OF RELIGION		
Effects of religion on the ill: clinical studies	10,000	83
TEXAS RESEARCH FOUNDATION		
Ancient agriculture: C. L. Lundell; study	9,600	250
UNIVERSITY OF TEXAS		
Research in genetics	40,000	118
<b>WASHINGTON</b>		
UNIVERSITY OF WASHINGTON		
Humanities: expenses of visiting scholar in Taiwan	9,500	157
Russian Revolution: I. Spector; travel and study	2,000	162

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Tibetan studies:		
R. B. Ekvall; travel	5,169	158
L. N. Hurvitz; travel	5,461	157
T. V. Wylie; travel	7,750	148
 WEST VIRGINIA		
AMERICAN SYMPHONY ORCHESTRA LEAGUE, INC.		
Workshops for conductors: support	178,000	164
 WISCONSIN		
MARQUETTE UNIVERSITY		
Biochemistry: M. Laskowski; travel	1,400	135
STATE HISTORICAL SOCIETY OF WISCONSIN		
History of mass communications: conference	5,000	178
UNITED STATES DEPARTMENT OF AGRICULTURE		
Plant genetics: E. L. Nielsen; travel	2,460	237
UNIVERSITY OF WISCONSIN		
International Soil Science Congress: expenses of foreign participants	25,000	233
Medical genetics: development	100,000	117
Physiology: P. R. Morrison; travel and study	2,920	108
Use of solar energy devices: study	45,000	249
 NORTH AMERICA		
 CANADA		
ATKINSON SCHOOL OF NURSING, TORONTO		
Nursing education: A. E. Griffin; travel	1,100	84
CANADIAN MOTHERCRAFT SOCIETY, TORONTO		
Nursing: C. Richards; travel	1,230	85
MCGILL UNIVERSITY, MONTREAL		
Christian ethics: I. Faruqi; study	8,475	158
TORONTO WESTERN HOSPITAL		
Nursing education: M. E. Parkes; travel	1,390	85
UNIVERSITY OF MANITOBA, WINNIPEG		
Genetics: I. Uchida; research	2,100	122
UNIVERSITY OF TORONTO		
Chemistry: research	9,000	133
 MEXICO		
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<b>CENTER FOR LATIN AMERICAN MONETARY STUDIES, MEXICO CITY</b>		
Latin American monetary developments: publication of annual survey	18,000	193
<b>STATE OF COAHUILA, GENERAL AGRICULTURAL DIVISION, SALTILLO</b>		
Photogrammetry: Q. Orta; travel	1,595	238
<b>COLEGIO DE MÉXICO, MEXICO CITY</b>		
History of commerce: L. F. Muro; study	3,000	162
International relations: library development	10,000	206
Latin American studies: L. Gonzalez y G.; travel	2,500	159
United Nations diplomacy: study	7,300	206
<b>MEXICAN CENTER OF WRITERS, MEXICO CITY</b>		
Anthology of Mexican literature: preparation of English translation	7,500	173
Creative writing in Mexico: support	82,000	166
<b>MEXICAN-AMERICAN CULTURAL INSTITUTE, MEXICO CITY</b>		
Survey of English language teaching	2,820	178
<b>MINISTRY OF AGRICULTURE, MEXICO CITY</b>		
Potato production: J. Fernandez B.; travel	2,280	239
<b>NATIONAL CORN COMMISSION, MEXICO CITY</b>		
Corn research and production: E. Gutiérrez R.; travel	2,400	239
<b>NATIONAL INSTITUTE OF CARDIOLOGY, MEXICO CITY</b>		
Laboratories of Experimental Medicine: development	200,000	97
<b>NATIONAL SCHOOL OF AGRICULTURE, CHAPINGO</b>		
Botany: M. E. Ríos G.; travel	740	239
Cereal chemistry: E. Villegas; travel	1,900	239
Graduate School of Agriculture: development	100,000	222
Soil science: J. Muñoz V.; travel	550	239
<b>NATIONAL UNIVERSITY OF MEXICO, MEXICO CITY</b>		
Pathology: F. Marroquin R.; travel and study	2,800	89
Virology: research	5,415	138
<b>UNIVERSITY OF COAHUILA, SALTILLO</b>		
Antonio Narro College of Agriculture: H. A. Velasco; travel	1,265	238
<b>UNIVERSITY OF GUANAJUATO, LEÓN</b>		
Department of Biochemistry: equipment and supplies	10,000	89
<b>UNIVERSITY OF NUEVO LEÓN, MONTERREY</b>		
Contemporary civilization: inauguration of new course	36,500	177
Faculty of Economics: development	28,000	191
<b>UNIVERSITY OF SAN LUIS POTOSÍ</b>		
Medical education: J. M. Torre; travel	850	89
Physics and biology programs: expenses	10,000	140
<b>VERACRUZ UNIVERSITY, XALAPA</b>		
Humanities: teaching and research	88,800	175

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## WEST INDIES

## JAMAICA

## UNIVERSITY COLLEGE OF THE WEST INDIES, MONA

## Archives of the West Indies:

preservation and organization 39,330 160

Economics: K. Boulding; visiting professorship 10,000 194

Hematology: J. E. MacIver; travel 1,055 85

Medicine: J. A. Tulloch; travel 1,400 85

## Obstetrics and gynecology:

J. Gardiner; visiting lectureship 8,200 85

Physiology: faculty interchange program 1,810 85

Social and preventive medicine: R. J. Gourlay; travel 1,300 85

Surgery: D. Gore; visiting lectureship 6,850 85

## TRINIDAD

## IMPERIAL COLLEGE OF TROPICAL AGRICULTURE, ST. AUGUSTINE

Cytogenetics: N. W. Simmonds; travel 700 239

VIRUS RESEARCH PROGRAM, PORT-OF-SPAIN 70,390 43

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## INSTITUTE OF BIOCHEMICAL INVESTIGATIONS (CAMPOMAR FOUNDATION), BUENOS AIRES

Biochemistry: research 30,000 129

## INSTITUTE OF BIOLOGY AND EXPERIMENTAL MEDICINE, BUENOS AIRES

Physiology: research 15,000 106

## NATIONAL UNIVERSITY OF CUYO, MENDOZA

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Medical education and research: M. H. Burgos; travel 830 115

## UNIVERSITY OF BUENOS AIRES

American art: M. J. Buschiazco; travel 1,600 173

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## BRAZIL

## CAMPAIGN FOR THE IMPROVEMENT OF HIGHER EDUCATION PERSONNEL, RIO DE JANEIRO

Brazilian Society of Genetics: expenses 12,000 116

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Nursing education:		
E. J. M. W. Rombach; travel	800	86
C. Viegas; travel	3,450	86
INSTITUTE OF AGRONOMY OF THE STATE OF SÃO PAULO, CAMPINAS		
Plant science: research equipment	68,000	226
JOAQUIM NABUCO INSTITUTE, RECIFE		
Social sciences: research and visiting lecturers	6,000	195
MINISTRY OF AGRICULTURE, RIO DE JANEIRO		
Animal diseases: research	6,000	238
Plant physiology: research	9,000	113
PAULISTA SCHOOL OF MEDICINE, SÃO PAULO		
Experimental surgery: H. Melega; travel	2,775	86
ROCKEFELLER FOUNDATION FIELD OFFICE, RIO DE JANEIRO	42,725	59
SCHOOL OF SOCIOLOGY AND POLITICS OF SÃO PAULO		
Brazilian communities: D. Pierson; completion of study	3,000	195
TRIANGULO MINEIRO FACULTY OF MEDICINE, UBERABA		
Basic sciences: teaching equipment	10,000	87
UNITED NATIONS ECONOMIC COMMISSION FOR LATIN AMERICA, SÃO PAULO		
Economic research: N. F. de Figueiredo; travel	3,150	195
UNIVERSITY OF BAHIA, SALVADOR		
Human genetics: research	12,200	116
Physiology: research	10,000	107
Public health nursing program: development	10,000	86
UNIVERSITY OF BRAZIL, RIO DE JANEIRO		
Biochemical genetics: research	10,000	121
UNIVERSITY OF CEARÁ, FORTALEZA		
School of Agronomy: equipment	10,000	238
UNIVERSITY OF MINAS GERAIS, BELO HORIZONTE		
Cytology and genetics: research	9,500	122
Neurology: J. G. Albernaz; travel	1,810	86
UNIVERSITY OF PARANÁ, CURITIBA		
Cell physiology: research	72,000	124
Human genetics: research	20,000	116
UNIVERSITY OF RECIFE		
Tropical medicine: R. J. Marques; travel	3,475	86
UNIVERSITY OF RIO GRANDE DO SUL, PÔRTO ALFEGRE		
Economics: faculty training	7,060	194
Human genetics: research	32,650	116
Neurohistology: research	5,700	107
School of Agron. and Vet. Medicine: development	94,400	225
Surgery: J. C. Monteiro; travel	2,475	86
Veterinary medicine: O. Corrêa; travel	2,945	238

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<b>UNIVERSITY OF SÃO PAULO</b>		
Clinical medicine: research	18,000	100
Faculty of Medicine: development and equipment	250,000	72
Human genetics: research	43,400	116
Medical education: Dr. and Mrs. Z. Vaz; travel	3,825	86
Nuclear physics: research	36,650	139
Organic chemistry: research	4,000	114
Orthopedic surgery: J. P. Marcondes de Souza; travel	3,095	86
Pediatrics: J. R. Woiski; travel	2,750	87
<b>VIRUS RESEARCH PROGRAM, BELÉM</b>	<b>40,500</b>	<b>43</b>
 <b>CHILE</b>		
<b>AGRICULTURAL OPERATING PROGRAM</b>	<b>173,750</b>	<b>39</b>
<b>CATHOLIC UNIVERSITY OF CHILE, SANTIAGO</b>		
Chemistry: E. Bianchi; travel	350	87
Economics and agricultural economics: research and training	24,000	193
Faculty of Agronomy: development	100,000	225
<b>MINISTRY OF AGRICULTURE, SANTIAGO</b>		
Laboratory of Soil Research: equipment	10,000	238
<b>UNIVERSITY OF CHILE, SANTIAGO</b>		
Chilean history: A. Jara H., and R. Mellafe R.; study	6,332	162
Cytochemistry: cooperative research	6,700	114
Diagnostic cardiac roentgenology: Dr. and Mrs. J. Saavedra V.; travel	950	87
Economics: research	90,000	189
Graduate School of Economics: development	80,000	189
Human genetics: E. R. Covarrubias B.; travel	950	123
Internal medicine: H. Claire-Saavedra; staff appointment	2,700	87
Medical education: B. Viel; travel	300	87
Postgraduate medical training	9,000	87
 <b>COLOMBIA</b>		
<b>AGRICULTURAL OPERATING PROGRAM</b>	<b>192,350</b>	<b>36</b>
<b>MINISTRY OF AGRICULTURE, BOGOTÁ</b>		
Agriculture: C. Cardona; travel	1,575	238
E. Llano; travel	1,575	238
Animal disease laboratories: development	50,000	218
<b>NATIONAL UNIVERSITY OF COLOMBIA, BOGOTÁ</b>		
Animal disease laboratory: development	150,000	218
<b>UNIVERSITY OF THE ANDES, BOGOTÁ</b>		
Biology: M. D. Arvey; research expenses	9,000	107
Library development	5,000	87
Research	6,000	114
Cell physiology: research	8,400	114

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Deterioration of stored grain: research	5,000	238
Linguistics: faculty training	3,600	178
Physiology: F. R. Hunter; travel and research	1,200	88
Social sciences: materials and equipment	5,500	195
UNIVERSITY OF CALDAS, MANIZALES		
Agronomy: H. Gutiérrez; travel	1,575	238
Faculty of Medicine:		
Faculty interchange program	10,000	87
Library development	400	87
UNIVERSITY OF VALLE, CALI		
Agricultural census: expenses	4,000	195
Biochemistry: C. V. Serrano; travel	400	88
Epidemiology: expenses of meeting	15,000	88
Experimental medicine: research	125,000	98
Faculty of Medicine: postgraduate training	9,500	88
Medical care: A. Franco H.; travel	1,850	88
Nursing:		
I. Mora; travel	1,400	88
I. Viveros; travel	1,400	88
Physiology:		
Equipment	10,000	88
H. G. Swann; staff appointment	10,000	88
Surgery: J. Isaza; travel	1,500	88
COSTA RICA		
INTER-AMERICAN INSTITUTE OF AGRICULTURAL SCIENCES, TURRIALBA		
Horticulture: cooperative research	13,360	238
EL SALVADOR		
UNIVERSITY OF EL SALVADOR, SAN SALVADOR		
Anatomy: O. J. Aidar; travel	1,275	89
Basic medical sciences: development	44,500	79
PERU		
UNIVERSITY OF SAN MARCOS, LIMA		
Cell metabolism: M. Villavicencio; research	5,340	133
Internal medicine: Dr. and Mrs. V. Alzamora C.; travel	5,425	89
Veterinary science:		
D. D. Delahanty; visiting appointment	9,975	239
URUGUAY		
UNIVERSITY OF THE REPUBLIC, MONTEVIDEO		
Hematology:		
W. S. Hill; travel	2,350	137
Research	10,000	136
Neurophysiology: research	5,000	107
Obstetrical physiology: S. V. Pose; travel and research	1,200	101

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<b>EUROPE</b>		
<b>AUSTRIA</b>		
AUSTRIAN INSTITUTE FOR ECONOMIC RESEARCH, VIENNA		
Economic growth and industrial structure: research	10,000	194
UNIVERSITY OF VIENNA		
Biochemistry: research equipment and supplies	20,000	132
Botany: F. Ehrendorfer; travel and research	1,000	123
Sociology: research	24,700	185
<b>BELGIUM</b>		
UNIVERSITY OF BRUSSELS		
Cell physiology: A. Ficq; travel	1,450	89
Nursing: teaching materials and equipment	2,000	122
UNIVERSITY OF GHENT		
Biochemistry: research equipment	1,500	135
UNIVERSITY OF LOUVAIN		
Biochemistry: research	60,000	127
<b>DENMARK</b>		
UNIVERSITY OF COPENHAGEN		
Experimental physiology: research	23,000	106
<b>FINLAND</b>		
UNIVERSITY OF TURKU		
Pharmacology: research equipment	1,700	134
<b>FRANCE</b>		
ÉCOLE PRATIQUE DES HAUTES ÉTUDES, PARIS		
Mathematics and the social sciences: seminar	10,000	188
Tibetan studies: R. A. Stein; travel	7,750	148
FONDATION DES ÉTATS-UNIS, PARIS		
European Association for American Studies: research	20,000	156
<b>GERMANY</b>		
FREE UNIVERSITY OF BERLIN		
Microbiology: H. K. Kaiser; travel	1,650	115
Middle Eastern studies: W. Braune; travel	3,900	158
GERMAN INSTITUTE FOR ECONOMIC RESEARCH, BERLIN		
East German economic problems: research	48,000	185
INSTITUTE FOR CONTEMPORARY HISTORY, MUNICH		
Recent German history: research	12,000	161

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<b>KLINGSFOR MUSEUM, OFFENBACH</b>		
Exhibition of book collection:		
H. A. Halbey; travel expenses	1,800	173
<b>UNIVERSITY OF MUNICH</b>		
Biochemistry: appointment of visiting scientist	4,000	134
 <b>GREECE</b>		
<b>NATIONAL UNIVERSITY OF ATHENS</b>		
Virology: research	6,000	137
 <b>IRELAND</b>		
<b>UNIVERSITY COLLEGE, DUBLIN</b>		
Social and preventive medicine: J. Gallagher; travel	725	89
 <b>ITALY</b>		
<b>CATHOLIC UNIVERSITY OF THE SACRED HEART, MILAN</b>		
Plant genetics: equipment and research expenses	4,225	239
<b>UNIVERSITY OF BARI</b>		
Experimental embryology and histology: research	8,000	114
<b>UNIVERSITY OF BOLOGNA</b>		
Biochemistry: research equipment	7,200	133
<b>UNIVERSITY OF MILAN</b>		
Botany: E. Marre; travel	3,100	114
Cybernetics:		
S. Ceccato, E. Maretti, and E. Albani; travel	670	178
Genetics: research	13,000	121
Philosophy: F. Rossi-Landi; study and writing	10,000	161
Plant physiology: research equipment	8,500	133
<b>UNIVERSITY OF NAPLES</b>		
Genetics: research	26,400	121
Human biochemical genetics: symposium	3,000	122
<b>UNIVERSITY OF PADUA</b>		
Biochemistry: research	38,000	128
<b>UNIVERSITY OF PARMA</b>		
Plant physiology: research	6,500	114
<b>UNIVERSITY OF PAVIA</b>		
Medical mycology: R. Ciferri; travel	2,850	115
<b>UNIVERSITY OF PISA</b>		
Animal behavior: F. Papi; research equipment	6,200	107
Neurophysiology: research	55,000	102
<b>UNIVERSITY OF ROME</b>		
Institute of Zoology: equipment	8,200	114
Ultrastructure of bone: research	5,500	137

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<b>UNIVERSITY OF SASSARI</b>		
Biochemistry: E. Leone; travel and study	1,800	134
<b>UNIVERSITY OF TURIN</b>		
Animal behavior: research equipment	6,200	107
Human genetics	10,000	122
<b>VILLA SERBELLONI, BELLAGIO</b>		
Conference on Tibetan studies: expenses	2,400	159
Expenses of consultations and conferences	65,000	262
 <b>NETHERLANDS</b>		
<b>NETHERLANDS INSTITUTE FOR PREVENTIVE MEDICINE, LEIDEN</b>		
Public health: J. T. Buma; travel	2,400	89
<b>UNIVERSITY OF LEIDEN</b>		
Korean culture: F. Vos; research	11,000	157
 <b>NORWAY</b>		
<b>INSTITUTE FOR SOCIAL RESEARCH, OSLO</b>		
Social structure: research	9,900	188
<b>UNIVERSITY OF BERGEN</b>		
Medical care: T. Gjestland; travel	3,025	96
<b>UNIVERSITY OF OSLO</b>		
Biochemistry: research equipment	2,400	134
 <b>POLAND</b>		
<b>ACADEMY OF MEDICINE, CRACOW</b>		
Cardiac surgery: J. Oszacki; travel	3,750	101
Neurology: W. Jakimowicz; travel	2,700	89
Physiology: J. Kaulbersz; additional travel funds	150	108
<b>ACADEMY OF MEDICINE, WARSAW</b>		
Medical education and research: W. Januszewicz; travel	1,309	89
<b>AGRICULTURAL COLLEGE, CRACOW</b>		
Animal breeding: W. Bielanski; travel	3,225	240
Plant physiology: A. Markowski; travel	3,150	240
<b>AGRICULTURAL COLLEGE, OLSZTYN</b>		
Plant breeding: Z. Tomaszewski; travel	1,800	240
<b>AGRICULTURAL COLLEGE, WROCLAW</b>		
Plant physiology: S. Guminski; travel	1,950	240
<b>CENTRAL AGRICULTURAL LIBRARY, WARSAW</b>		
Equipment and books	10,000	240
<b>INSTITUTE OF BIOCHEMISTRY AND BIOPHYSICS, POLISH ACADEMY OF SCIENCES, WARSAW</b>		
Biochemistry: A. M. Michelson; visiting appointment	500	135

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Nematology: H. Sandner; travel	1,675	240
<b>INSTITUTE OF TECHNOLOGY OF ANIMAL PRODUCTS, GDANSK-WRZESZCZ</b>		
Research equipment	5,750	240
<b>MINISTRY OF HEALTH, WARSAW</b>		
Medical education and pediatric radiology: K. Rowinski; travel	2,400	90
<b>POLISH ACADEMY OF SCIENCES, WARSAW</b>		
Office of Bibliography and Scientific Documentation: equipment	4,700	115
Rental of research facilities in Italy: expenses	2,500	115
<b>ROCKEFELLER FOUNDATION POLISH SCIENCE PROGRAM</b>		
Fellowships and scholarships	200,000	269
<b>STUDIUM FOR TEACHERS IN NURSING SCHOOLS, WARSAW</b>		
Nursing education: M. Minczewska; travel	1,750	90
 <b>PORTUGAL</b>		
<b>MATERNAL INSTITUTE, LISBON</b>		
Public health nursing: M. Z. C. Quintas Alves; travel	2,400	90
 <b>RUMANIA</b>		
<b>ACADEMY OF THE RUMANIAN PEOPLE'S REPUBLIC, BUCHAREST</b>		
Linguistics: research equipment	3,200	264
 <b>SPAIN</b>		
<b>NATIONAL INSTITUTE OF AGRICULTURAL INVESTIGATIONS, MADRID</b>		
Corn breeding: research	10,000	240
 <b>SWEDEN</b>		
<b>INSTITUTE OF GENETICS, UPPSALA</b>		
Genetics: A. Nygren; travel	1,750	240
<b>KAROLINSKA INSTITUTE, STOCKHOLM</b>		
Biomolecular structure: research	15,000	136
Neurophysiology: research	30,000	105
<b>STATE BACTERIOLOGICAL LABORATORY, STOCKHOLM</b>		
Virology: T. Johnsson; travel	1,670	138
<b>SWEDISH ACADEMY OF SCIENCES, STOCKHOLM</b>		
International Commission on Radiological Protection: expenses of participants at meeting	8,000	263
<b>SWEDISH STATE PLANT PROTECTION INSTITUTE, SOLNA</b>		
Plant pathology: D. Lihnell; travel	2,650	240

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<b>UNIVERSITY OF LUND</b>		
Biochemistry: research	15,000	132
<b>UNIVERSITY OF UPPSALA</b>		
Molecular structure: research equipment	21,000	136
<b>SWITZERLAND</b>		
<b>GENEVA GRADUATE INSTITUTE OF INTERNATIONAL STUDIES</b>		
Advanced training program: development	116,600	201
International organization program: development	79,000	201
<b>INTERNATIONAL PRESS INSTITUTE, ZURICH</b>		
Asian press program: development	38,700	155
<b>UNITED KINGDOM</b>		
<b>COWLEY ROAD HOSPITAL, OXFORD</b>		
Gerontology: P. D. Bedford; travel	2,675	96
<b>FLORENCE NIGHTINGALE INTERNATIONAL FOUNDATION, LONDON</b>		
Nursing seminar: expenses of consultant	4,600	90
<b>JOHN INNES HORTICULTURAL INSTITUTION, BAYFORDBURY</b>		
Plant science:		
K. S. Dodds; travel	3,130	240
G. J. Paxman; travel	3,130	240
<b>INSTITUTE OF RACE RELATIONS, LONDON</b>		
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