

The  
Rockefeller Foundation  
  
Annual Report  
1949

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<sup>1</sup> Elected May 20, 1949.

<sup>2</sup> Resigned September 23, 1949.

<sup>3</sup> Resigned from Executive Committee May 20, 1949.

<sup>4</sup> Elected October 21, 1949.

<sup>5</sup> Resigned May 31, 1949.

<sup>6</sup> Elected April 6, 1949.

<sup>7</sup> Retired December 31, 1949.

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<sup>1</sup> Elected April 5, 1950.

<sup>2</sup> Retired April 5, 1950.

<sup>3</sup> Resigned as member of the Executive Committee April 5, 1950.

<sup>4</sup> Elected December 6, 1949.



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 period January 1, 1949, to December 31, 1949, together with detailed reports of the Secretary and the Treasurer of the Foundation, the Director for the International Health Division, and the Directors for the Medical Sciences, the Natural Sciences, the Social Sciences and the Humanities.

Respectfully yours,  
CHESTER I. BARNARD  
*President*



**THE  
PRESIDENT'S REVIEW  
FOR 1949**



## PRESIDENT'S REVIEW

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## PRESIDENT'S REVIEW

### PROGRAMS AND PRINCIPLES

#### THE CHANGING SCENE

AMONG the radically changed conditions in the world today, there are two that have an especially direct bearing on the policies and activities of The Rockefeller Foundation. One of these has to do with the Iron Curtain now dividing the world into two parts, and the other concerns the shift from a Western world which thought in terms of millions of dollars to one which thinks in terms of billions.

The deeply disturbed political situation now prevailing in a large part of the world has had the effect of considerably curtailing the world-wide and international scope of Foundation programs. Profound political changes have prevented the Foundation from operating in several countries in which it was formerly active. These countries include Poland, Czechoslovakia, Hungary and China. During the past year the Far Eastern office of the International Health Division of The Rockefeller Foundation was

moved from Shanghai to Macao and then to Bangalore, India. All personnel were withdrawn from China, and a malaria project under way in the Island of Formosa was transferred to government auspices.

**Monetarily speaking, this is an age of huge financial operations.** In the United States large funds, chiefly governmental, are available even in the relatively restricted field of research and fellowships. This has brought about a sharp awareness of the discrepancy between the resources of any privately endowed philanthropic organization, such as The Rockefeller Foundation, and the magnitude of funds needed today for large-scale research or educational enterprises.

Until recently The Rockefeller Foundation was a principal source of funds for foreign student fellowships at the advanced level. Today, as shown by the United Nations Educational, Scientific and Cultural Organization handbook of available fellowships, *Study Abroad*, appointments made annually by the Foundation constitute hardly 2 per cent of the 15,070 comparable awards now offered, 62.5 per cent of them by government agencies. It has been calculated that in 1913, when there were about 900 institutions of higher education in the United States, the appropriations of the General Education Board and of the Carnegie Corporation, the two principal foundations at that time, represented more than 15 per cent of the current income of all higher educational institutions. In other words, these philanthropic resources were fairly large in relation to the activities with which they were concerned, and they were not

unsubstantial even with reference to public primary and secondary education.

As things stand now, the income of The Rockefeller Foundation, the General Education Board and the Carnegie Corporation covers less than 1 per cent of the budgetary needs of the 1,800 institutions now ministering to higher education. Indeed, the annual expenditures of all foundations, even though roughly \$100,000,000, are insignificant in relation to public and private funds now needed and now available for education, scientific research and scholarly activities.

In the light of these changed conditions I propose to devote part of this Review to a brief discussion of Rockefeller Foundation techniques in giving and in cooperating with other agencies and other countries. It is hoped that some light may be shed on the comparatively modest, yet significant, role that can still be played under present world conditions by a privately endowed philanthropic organization.

### FINANCIAL POLICY

First a word or two about the resources of The Rockefeller Foundation. During the past 20 year period Foundation income has ranged between a high of \$14,746,000 and a low of \$6,627,000. In 1949 the income was \$10,984,000. Annual income from the present assets of the Foundation may be expected to average about \$8,000,000.

Almost from the beginning, the policy of the Board of Trustees of The Rockefeller Foundation has been

to utilize portions of the Principal Fund, that is to say, capital, as well as current income. Except for certain years, including those in which opportunities were restricted by the war, substantial appropriations were made from the Principal Fund. In 1946, 1947 and 1948, in particular, extraordinarily heavy drafts were made on the Principal Fund, the total of the appropriations for these three years being \$30,-390,308 in excess of the income. To date, \$124,773,015 of Principal has been appropriated together with \$313,876,856 of income. The year-end book value of Foundation assets has declined from a high of \$218,-000,000 in 1929 to \$153,000,000 in 1949. (The market value as of December 31, 1949 was \$226,000,000.)

It is clear that the policy of the Board of Trustees has resulted in a substantial use of the Principal Fund, partly offset by net profits from the sale of securities and by a presently substantial increase in market value of securities retained. Since rapid depletion of Principal might well result in premature curtailment of Foundation activities, the Board of Trustees in 1944 directed that appropriations from Principal and income be kept at a level of approximately \$10,000,000 a year, "less or more from time to time as the importance and significance of the opportunities presented may justify." This policy was reaffirmed by the Trustees in 1949. While it is expected that the average use of Principal may be around \$2,000,000 annually in the years immediately ahead, the Trustees have taken the position that such expenditures from capital can be justified only

for the support of projects of exceptional significance whose needs can be met only through Foundation financing.

In 1949 the net appropriations amounted to \$10,276,525, and for the first time since 1929, except for three of the war years, appropriations were kept within income.

### EDUCATIONAL INSTITUTIONS

During the many years that the various philanthropic agencies founded by Mr. John D. Rockefeller have been operative, educational and research activities have succeeded in attracting support in the form of both building and endowment funds from an increasing number of sources. Large-scale aid for advancing the quality and scope of education is currently excluded from the program of the Foundation, except insofar as the Foundation still makes annual payments to the General Education Board. (The Board's program, it may be noted, is now limited to its original interest — the advancement of education in the southern states.) This policy of the Foundation does not connote a disregard of the fundamental importance of education at all levels, from the earliest and perhaps the most critically important years, through the elementary schools, the high schools and the undergraduate college years. Both in their own rights and as an essential preparation for the higher scientific research, scholarship and public health work which are now absorbing

Foundation interest, all such educational activities are indispensable.

But the present needs for plant expansion, plant replacement and increased income in both public and private institutions of higher education are so great that the Foundation simply has not sufficient resources to ease effectively the financial necessities of these institutions. This is often disturbing to the officers of the Foundation, who are well aware of urgent needs, and is often no doubt disappointing to the authorities of educational institutions. Manifestly, the main burden of education must be borne by the general public, either through voluntary contributions or through taxation. This principle is already generally accepted in most countries of the world. This fact, together with the long record of foundation aid to educational institutions in the United States and the proportionately larger number of institutions of higher learning here which have never been state-supported, make the question of foundation aid to higher education peculiarly an American question.

Even if we consider only private institutions of higher education in the United States, such as the privately endowed universities, liberal arts and technical colleges and professional schools, the magnitude of the financial problem is such as to place it beyond Foundation reach. If the support were even more selectively distributed, there would result too high a degree of discrimination in favor of a few of the 1,800 institutions, or aid could relate only to

some special type, such as the medical schools. Consequently, the Foundation has considered it wise to limit its aid in this field to certain projects rendering broad, general services to education, for example, the work of consultative and fact-finding organizations such as the Commission on Financing Higher Education of the Association of American Universities, the Conference Board of the Associated Research Councils and the American Council on Education. Although the Foundation continues to give substantial assistance to some special teaching programs in its fields of primary interest, large grants for buildings and endowments are rarely made.

In 1947 the Foundation appointed an Exploratory Committee on Financing Higher Education and Research and granted \$10,000 for a preliminary survey. Dr. Paul H. Buck, Provost of Harvard University, served as chairman. The committee recommended that in view of the vastness of the issue, a commission be established to make an intensive long-range study and to formulate policies. Acting upon this recommendation, the Association of American Universities, whose membership includes the major universities of this country, appointed a Commission on Financing Higher Education. The commission was granted \$400,000 by the Foundation in 1949 toward a three-year study. Dr. Frank D. Fackenthal, former Acting President of Columbia University, accepted the chairmanship of the commission, and Dr. John D. Millett, professor of public administration at Columbia University, was made executive director. The

commission is composed of outstanding leaders in the educational world and of distinguished laymen.

In 1947 the Foundation made a grant of \$20,000 to the National Research Council for the expenses of a joint committee on personnel problems. The committee was appointed by the Conference Board of the Associated Research Councils, which represents a fair sample of the scholarly resources of the country in the natural, medical and social sciences, in the humanities and in education. The pilot study carried out by the committee dealt with several questions of major importance. Is our society developing an insatiable appetite for experts? How many young people can be brought up to top levels in the various branches of scientific and intellectual activity? What are the demands, and how valid are they in each field? For example, is an overabundance of scientists and technologists, trained perhaps at the expense of the humanistic callings, distorting the nation's cultural and intellectual life? The survey revealed a surprising lack of systematic investigation in this field. It was made clear that the study of the supply and demand for highly trained personnel and their role in our national life is in its infancy.

In 1949 the Foundation made a further grant of \$120,000 to the National Research Council to assist the Conference Board of the Associated Research Councils in a two-year study of the nation's human resources in relation to the needs in the fields of higher learning. The Conference Board will attempt to determine what are the major problems, to appraise

their importance and to enlist the help of other agencies for the continuing study that lies ahead.

### SMALL VERSUS LARGE GRANTS

Ever since The Rockefeller Foundation was launched in 1913, with what were then considered very substantial capital resources, there has been a tendency on the part of many to think that the Foundation concerns itself only with large grants. Also, it has sometimes been suggested that the Foundation should primarily concern itself with large-scale, spectacular undertakings. It is true that there have been a considerable number of substantial grants, especially for the development of medical schools, the construction of a large cyclotron, well before other agencies found cyclotrons of interest, and the promotion of extensive research programs, but in general the Foundation officers look for opportunities to make grants which will be strategic in terms of human welfare, rather than grants which would necessarily involve large sums of money.

Most projects involve the support of men. And although research workers sometimes join together in large groups, the really significant unit remains the individual. It is interesting, therefore, to note that the support of the research activities of a single individual is unlikely to require large sums. During the war it was frequently noted that, even when freed of ordinary budgetary restrictions, an active research physicist or engineer was apt to cost only about

\$10,000 a year beyond his own salary. The great budgets which are so familiar tend to result from the heavy equipment costs in certain special fields, plus large numbers of workers. Although there are some scientific activities which require great capital outlays, and some which require large groups of workers, nevertheless, in the research field it is the small and successful plantings which most frequently lead to new forests. Huge undertakings entailing large risks are often best and more safely evolved from a modest start. The chance of eventual success is increased if a limited initial input is followed by increasing support based on a record of accomplishment.

The history of the Foundation's program is replete with instances of this procedure. The work of Professor W. C. Rose of the University of Illinois, one of this country's leading biochemists, has received a total of \$129,000 in Foundation aid. But the first Foundation award for Professor Rose's research was for only \$5,000; it was made in 1935 for a study of the amino acid requirements of human beings. Grants to Professor Vincent du Vigneaud of Cornell University, another of this country's distinguished biochemists, amount in all to \$134,098; his first Foundation support was an appropriation of \$2,198 in 1934. Because Dr. du Vigneaud's work has proved fruitful, he now has substantial support from other sources. Professor The Svedberg of Sweden, one of the youngest men ever to win the Nobel prize, has received a total of \$197,500 for his work in physical chemistry, beginning with the moderate sum of \$13,000 in 1931.

Such instances illustrate a repeating pattern of Foundation aid in developing scientific leadership: a fellowship, a modest one-year grant in aid, a second grant in aid for perhaps two years, a somewhat larger but still smallish appropriation for three years, and then one or more substantial grants in support of an established research project. For instance, the 1932 grant of \$1,282,652 for buildings and endowment of the Neurological Institute at McGill University in Montreal had as a prelude the \$2,784 fellowship awarded previously to Dr. W. G. Penfield, who became the director of the institute.

In effect, large appropriations such as those made in the past to organizations like the National Research Council, the Brazilian government and the National Bureau of Economic Research merely meant that it was up to the recipient organization to break down the large funds into smaller ones to meet the needs of specialized activities. It is often forgotten that except for the financing of buildings and the development of great pieces of apparatus (and even these involve expenditures by individuals and teams of workers) a single authority seldom spends a really large sum as a unit.

From this point of view, the question of small versus large appropriations is deceptive. Actually, the choice is between centralized and decentralized distribution, depending in the end on practical considerations. In the last analysis, most appropriations are best distributed to small projects, individuals and small groups. It is well to bear in mind that some of

the most useful discoveries and important developments have sprung from modest beginnings financed by small initial sums. Some of the most effective foundation work that can be done is often of a character that so diffuses its influence through the world that it cannot be identified with the donor except in the most modest and undramatic degree.

### FELLOWSHIPS AND GRANTS IN AID

During the past 35 years, the Foundation has awarded some 10,000 fellowships, either directly or through intermediate research agencies. The aggregate cost of these thousands of small separate grants runs to 25 million dollars and represents a substantial portion of the total appropriations of the Foundation. These fellowships represent investments in men and in the future. They are investments in intellectual capacity, imagination and character. A foundation can find no better use for its money.

The fact that the fellows before receiving a fellowship must be sponsored by a recognized institution such as a university or an official branch of a government offers strong probability of unusual individual capabilities. It further affords the expectation that the fellows will promptly find effective ways of utilizing their fellowship experience. It is the intention that those who are granted fellowships receive the best training anywhere available in their particular fields. For the most part they study outside their native countries and return to their homelands to

take up positions of usefulness and distinction in government service, on university faculties or in research laboratories.

A substantial number of the fellows receive additional aid from the Foundation in later years, through grants to their institutions or through grants in aid for their individual research programs. Some receive national or international honors in recognition of their achievements. Among the Nobel prize winners each year there have frequently been one or two who received Foundation support at some stage of their careers. A high percentage of the top research men now working in the United States are former fellows or scientists whose early work received aid from a Rockefeller board, either directly or through some intermediate agency. In nearly every foreign country former Foundation fellows are now occupying positions of leadership in important teaching, research and administrative posts.

A fellowship is in one sense an uncontrolled experiment. What kind of record the man in question might have established without the fellowship can never be determined. The aim at the start is to choose outstanding individuals for fellowships. To the extent that the selection procedure is effective, it can be assumed that many of these young men would carve out distinguished careers whether or not they held a fellowship. Thus it would be wholly unwarranted to attribute to the fellowship itself the proud record made by many hundreds of Rockefeller Foundation fellows. The direct testimony of the men themselves,

however, is convincing evidence that fellowship experience, wisely planned and coming at a critical juncture in a man's development, really plays a significant role.

While the Foundation awards a large number of its fellowships directly, it has also followed a policy of appropriating sizeable lump funds toward the fellowship activities of several intermediate agencies. Organizations such as the National Research Council, the American Council of Learned Societies, the Social Science Research Council and the British Medical Research Council have had long experience in studying the personnel and research needs within their special areas and are hence well equipped to select and administer advanced fellowships. Something like a third of all Foundation-supported fellowships have been awarded by intermediate agencies in this country or by similar agencies operating abroad.

The sustained fellowship program of the Foundation has contributed to the remarkable progress in the field of public health during the past quarter of a century. The Foundation began in 1916 by granting funds to build public health schools on the university level, to train faculties and to arouse student interest. Schools such as those at Johns Hopkins University and Harvard University have played a significant role in helping to convert the job of the public health officer from a political one to a professional one. This transformation was facilitated by a fellowship program which supplied the new public health schools with qualified students and with an improved faculty.

In foreign countries, public health men who received some of their early training on Foundation fellowships have been responsible for introducing modern public health practices and for training younger men in public health posts.

The Humanities division of The Rockefeller Foundation, since the inauguration of its fellowship program in 1933, has awarded some 500 fellowships. Over two-fifths of the fellows acquired an international experience through study in countries other than their own. Roughly half of the fellows have specialized in fields of direct international interest such as language and cultural studies of the Far East, the Middle East, Latin America and the Slavic countries, as well as studies in radio and library administration.

All divisions of the Foundation have united in supporting its broad fellowship program. During the past year the Foundation made a grant to publish a directory of its thousands of fellows, together with some general information, chiefly statistical in character, on this fellowship program, which started over 30 years ago and has been going on without interruption ever since.

#### HUMAN ECOLOGY, COMMUNICATION AND COOPERATION

In the Review of last year it was suggested that a convenient framework for securing a balanced view of the problems with which mankind may deliberately concern itself could be constructed by putting

together the interrelated classifications of *population*, *communication* and *cooperation*. The scheme then set forth has helped to show the relevance and significance of many separate fields of interest. It has also provided an additional aid for the evaluation of projects which come under consideration. For example, plant and animal genetics are given a high emphasis from the standpoint of pure science. At the same time they are of intense human interest because they have a salient bearing on the breeding of more useful plants and animals. Interest in genetics increases still further, however, when it is recognized that this subject is important in the relationship of men to their environment as well as in the sustenance of populations and the elucidation of the fundamental life processes.

Further reflection on the implications of this scheme and a study of some of the pertinent problems led to the adoption of the phrase *human ecology* in place of the narrower *population*. Human ecology, together with the numerous fields of study that it embraces, is now widely recognized as a subject of first importance. Its ramifications and complexities are great. To help the officers of the Foundation to coordinate and pool their respective views and discover the gaps in ecological interest and research in the academic world, Mr. Marston Bates, a biologist on the staff of the International Health Division of The Rockefeller Foundation, has been appointed Special Assistant to the President and assigned to this area of study.

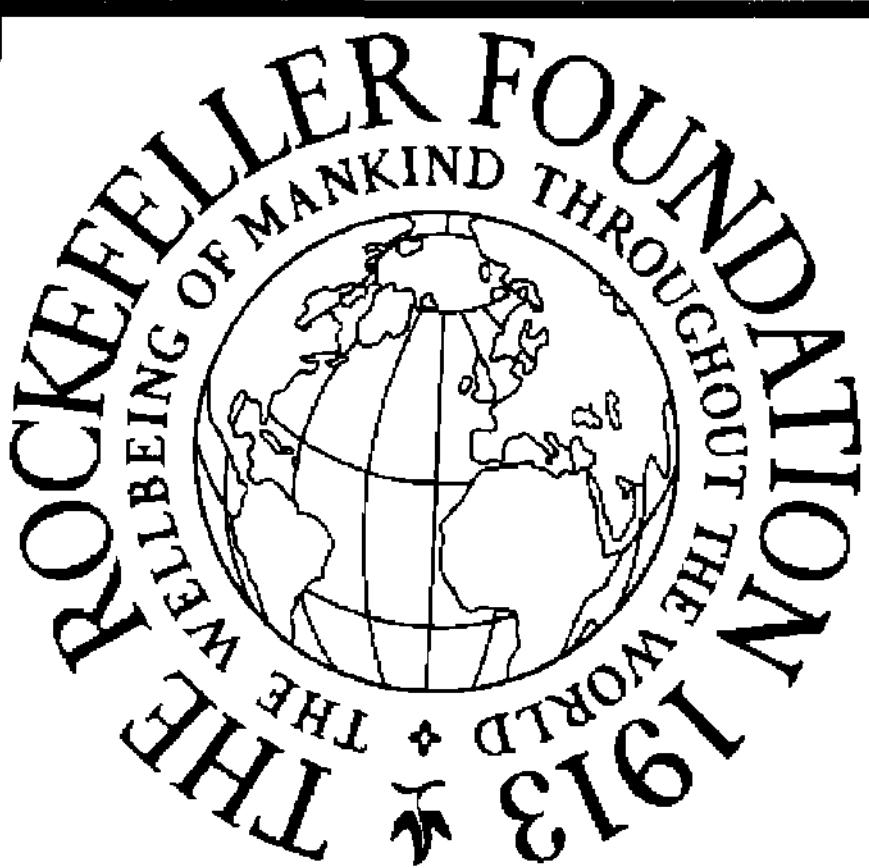
The only additional comment to be made at this time concerning the comprehensive scheme of human ecology, cooperation and communication refers to communication. Correspondence and interviews following the publication of last year's Review indicated that the word communication is interpreted rather narrowly by many students who use it. Some think of the word in the restricted sense of mass communication and propaganda, some in terms of the special field of linguistics. For others, the word calls to mind the mathematical theory of communication developed by Dr. Claude E. Shannon of the Bell Telephone Laboratories, Professor Norbert Wiener of the Massachusetts Institute of Technology and others, this being a theory of the statistical probabilities in coding, transmitting and decoding messages in oral, written and other forms of communication. Still others consider communication as ordinary translation from one language to another, or as a problem in the relationships of the members of groups, particularly formally organized groups. But the word as used here embraces all of these fields plus many others which are also essential aspects of the broad problem of human communication.

It seems evident that in the very recent past man has attained a far more perfect understanding of this subject as a whole than ever before. This understanding is radically affecting the conventional disciplines by breaking down the dividing lines between these disciplines and bringing to light large new fields for exploration. It is no longer possible for natural

science, medical science, social science and humanism to exist in separate and self-contained spheres. There are today new ties between them and a realization that these communicating threads make for a truly vital understanding and perhaps even mastery of the world of knowledge as a whole.

The Foundation was established originally on the premise that the welfare of mankind could be advanced through an increase in knowledge. It has become more and more clear that the most important knowledge is that which concerns human beings, and that the key to the attainment of dignified and rational existence for all men depends essentially upon a vastly improved understanding of human behavior. To achieve this understanding there must be a synthesis of effort toward which all disciplines contribute. Since so very large a fraction of all human behavior has for a major purpose the achieving of communication, clearly there is a very broad and significant overlap between the Foundation's interest in human behavior and its interest in communication.

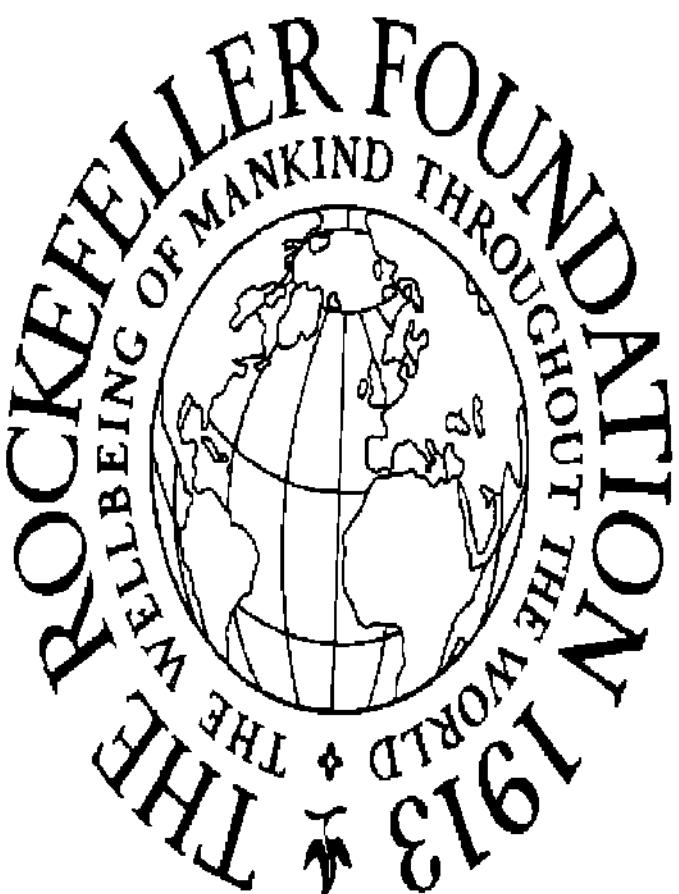
Cooperation among scientists in the various branches of knowledge is needed for two main reasons. First, they have much to learn from one another; second, many fundamental problems refuse to be categorized, and they must be attacked by way of two or more disciplines, with all the tools at hand. To take a few examples at random: the spread of democratic ideas, one of the primary aims of the Foundation's recent efforts in Europe, is in considerable measure a responsibility of the humanists; it



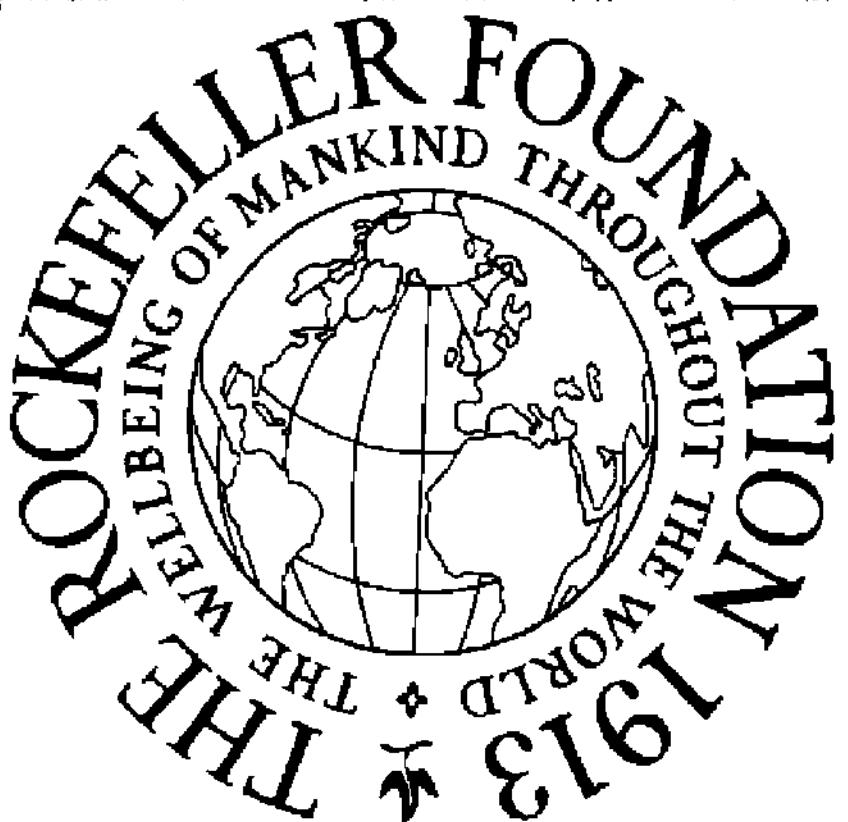
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Sardinian officials and Rockefeller Foundation representatives on a recent trip to study the effects of the malaria control campaign

A corner of the library at the Italian Institute of Historical Studies, Naples



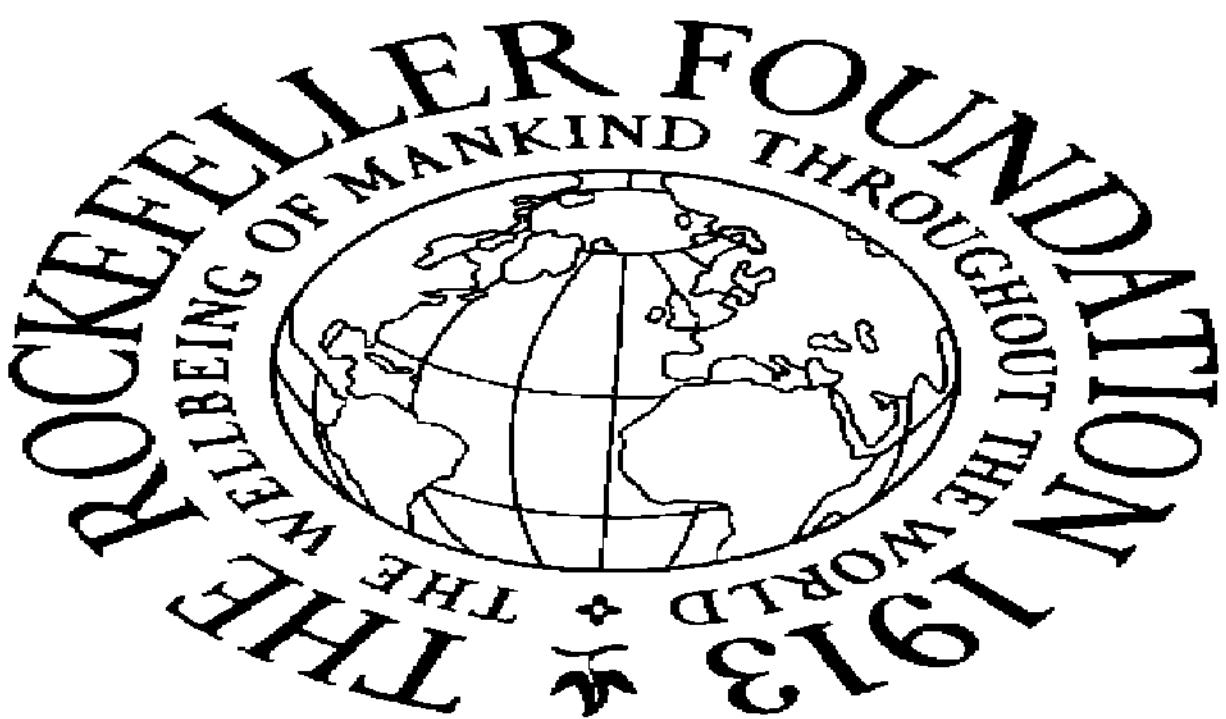
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A weekly staff meeting at Yale University's Institute of International Studies

Main building of the Medellín Faculty of Agronomy, National University of Colombia



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is equally an obligation on the part of the social scientists. Workers in mathematics and physiology have joined forces at the National Institute of Cardiology, Mexico City, where an investigation of the basic principles of nerve activity is currently proceeding with Foundation support. Alcoholism is a special topic but also one with multiple implications. It is at the same time a medical and a social problem. Biochemistry, one of the natural sciences, is being used to study this puzzle under a 1949 Rockefeller Foundation grant to the University of Texas.

The Tavistock Institute of Human Relations, London, whose work is described more fully in another section of this report, symbolizes the partnership of psychiatry and sociology for the purpose of finding a way to eliminate some of industry's present troubles. Statistics and the humanities meet in a Foundation supported language study at Wayne University, Detroit. Political science, economics, medicine and psychology are all represented in the Institute of Industrial Relations of the University of California, which this year received a Foundation grant for studies of the impact of an aging population on American society. The long record of Foundation activity in the field of public health is a classic example of the coalition of medical science, natural science and some aspects of social science toward a common goal. Indeed, the very term public health implies recognition of this unity of purpose. A study of human resources and the fields of higher learning under the auspices of the National Research Council was aided

in 1949 by a grant in which all five divisions of the Foundation participated.

These grants all exemplify a growing cooperation of the sciences and the humanities on common problems. It is the Foundation's policy to stress activities that promise to increase man's understanding of himself. And it is the belief of Foundation Trustees and officers that emphasis on cooperation between scholars and scientists in all fields may yield some of the wisdom to utilize that information properly. One scientist put it: "It may be that we shall presently begin to use science in a new and worthier way, to give us our bearings, to help us understand the ecology of our own species."

#### HIGHLIGHTS OF THE YEAR

##### MEXICAN AGRICULTURE

One need in contemporary life is more and better food for undernourished populations in areas of low agricultural production. The Rockefeller Foundation and the Mexican government together are attacking this problem on a nation-wide scale in Mexico. This project represents a cooperative venture in a Western Hemisphere country, not ravaged by war, but coping with climatic contrasts and special physical conditions. Although predominantly an agrarian country, Mexico has in the past suffered from a shortage of available cropland, as well as from mediocre grain stocks. In the joint agricultural program which has

been under way since 1943, the resources of modern science and technology are improving both quantity and quality in the output of Mexico's farms. This raising of nutritional levels through an expanded agricultural development may be expected to step up the whole Mexican economy in years to come. Each of the collaborating agencies has contributed heavily to operating costs of the program: a total of \$1,317,155 has been furnished to date by The Rockefeller Foundation and nearly a million pesos by the Mexican government. On these investments, substantial in one sense but relatively small in comparison with the size of the problems to be solved, the returns are already considerable.

In the short space of six or seven years, Foundation-appointed agricultural experts, working with Mexican scientists, have helped Mexico well along the way to self-sufficiency in the production of corn and other staple foods of the people. The heart of the field research program is the central experiment station, with its well-appointed laboratories and acres of experimental plantings, located on the grounds of the National College of Agriculture in Chapingo, a few miles east of Mexico City. Pioneering research at Chapingo, as well as in the central laboratories in Mexico City and in experimental fields scattered throughout the republic, has brought into being new kinds of crop plants. New hybrid and synthetic varieties of corn and wheat, developed by geneticists in conjunction with plant pathologists, entomologists and soil experts, combine the desirable

characteristics of the best native grains. They introduce new characteristics which are important both for yield and for disease resistance. Not only do these improved varieties give a much higher yield than the average native stock, they are especially adapted to the different climates and soils in Mexico. They have been bred to withstand the major plant diseases and insect pests so costly to Mexican agriculture in the past. At the same time, methods are being worked out to rejuvenate exhausted soils by means of crop rotation and green manures, such procedures being essential for a country where commercial fertilizers are scarce and expensive. Modern farm machinery is gradually replacing primitive tools to make for greater efficiency in tillage practices.

To round out the program, the Foundation staff, on the recommendation of the Mexican government, have given selected young Mexican scientists the opportunity to participate directly in laboratory and field work. It is expected that in time there will be enough of them to take over the program and make it wholly Mexican. These men and the new Rocamex grains — named for The Rockefeller Foundation and Mexico — are the insurance for Mexico's agricultural future, the insurance for more food and better food for all the people.

In the meantime, national grain commissions are distributing the improved seed as fast as it can be grown in quantity. Because of this policy of immediate practical application of results, thousands of farmers have already benefited from the program.

Little by little they are learning to get more out of their land, to improve the national food supply. The initial result was that in 1948, for the first time in 35 years, Mexico did not need to import corn. This does not mean that Mexico's food problem has been solved. In poor crop years there will still be shortages of corn. But certainly a promising beginning has already been made and additional progress is in sight.

Although the Mexican Agricultural Program bids fair to raise future standards of the entire Mexican economy, perhaps its greatest significance lies in the pattern it has set for other areas. It is a demonstration of how modern science can harness resources to meet basic needs. It indicates that, given expert personnel, enough capital and good organization, the way may be opened for unprecedented agricultural expansion in many underfed regions of the world.

It must be remembered, however, that the critical ingredient for a successful program of this sort is well-trained, experienced, able and devoted personnel. Granted such personnel, plus reasonable backing, plus the requisite freedom of action, great results can eventuate. Mediocre personnel, or men of any kind, hampered by too tight restrictions on their activities, will not get the job done and are almost bound to waste large sums of money.

To promote cooperation among Latin American agricultural scientists and make the results of the Mexican program more widely known, The Rockefeller Foundation in 1949 invited scientific workers from Argentina, Bolivia, Brazil, Chile, Colombia,

Costa Rica, Cuba, Guatemala, Peru, Uruguay and Venezuela to attend an inter-American symposium on plant breeding in Mexico City. Since most of these men are actively engaged in plant breeding, the meeting proved very worth while. A number of good technical papers were presented, and the visitors had an opportunity to observe work in progress at the experimental field stations.

With the help of The Rockefeller Foundation, several of the Central and South American countries are strengthening the training offered in their agricultural schools and expanding their research programs. In Colombia developmental aid has been going to the Faculties of Agronomy and Veterinary Medicine of the National University for a number of years. Together with fellowships and travel grants, Foundation aid to agricultural science in Colombia since 1942 amounts to a quarter of a million dollars.

This year a nation-wide program in applied agriculture began to take shape in Colombia. Stimulated by the success of the Mexican program, the government of Colombia, over a year ago, extended an official invitation to The Rockefeller Foundation to lend technical leadership to a Colombian program in agriculture. Since that time Foundation officers have devoted intensive study to the possibilities in Colombia. At the end of 1949 a cooperative agreement was ready to be signed by the participating agencies.

In 1949, also, the Foundation made several modest grants to schools of agriculture or veterinary medicine in Mexico, Colombia, Chile, Brazil, Honduras, Peru

and Costa Rica. One of the grants went to the Inter-American Institute of Agricultural Sciences in Turrialba. Operated by convention agreement among the American republics, with the Governing Board of the Pan American Union serving as its board of directors, the institute is supported by the member countries and by special grants from organizations interested in tropical agricultural products and problems. A part of the Foundation appropriation will be used for the development of a scientific communication program, in particular a new scientific abstract journal in Spanish.

#### NATURAL SCIENCE AND THE LIVING PAST

Since earliest times mankind has attempted to make practical use of the fact of heredity. Men have long recognized that heredity holds great potentialities for improving the food supply and, to a limited extent, perhaps the human race itself. Hence the centuries-old emphasis on "good blood" or "good stock" in matters of family, animal husbandry and plant culture. But attempts at selective breeding of plants or animals met with little success because there was no validated theory to serve as a yardstick in making decisions or setting up experiments. The commonly held beliefs regarding heredity had no basis in fact, as witness, for instance, the varying status of cousin marriages. Such marriages were highly esteemed in some societies and prohibited in others. In human beings and animals, inheritance was

often falsely assumed to be through the blood, and in plants outward appearance was likely to be mistakenly used as a criterion.

The situation began to change about half a century ago with the rise of a new science, genetics. Now a well-established branch of scientific inquiry, genetics received its initial impetus around 1900, when three prominent European scientists independently and more or less simultaneously rediscovered the neglected, 35 year-old work of the famous Augustinian monk, Gregor Mendel. Although modern genetics cuts across the boundaries of a host of other natural science disciplines such as anatomy, biochemistry and physiology, the entire science stems from Mendel's experiments with garden peas. The scheme has been modified, of course, and enormously expanded, but there remains the essential Mendelian principle of the segregation and recombination of the specific traits (now known to depend on genes) which constitute the units of heredity.

Today genetics takes as its province the broad questions of how living things came to possess their present natures and what potentialities they have for change in the future. Thus it is one of the most far reaching of modern sciences. Genetics has developed intimate connections not only with all the other branches of natural science, but also with many areas of human endeavor in the medical and the social sciences. Concern with genetics is not limited to geneticists per se. The subject has important rami-

ficiations in such widely varying fields as education, criminology, nutrition, psychiatry and demography, to name only a few.

Progress in practical breeding experiments, slow and haphazard for centuries, has been rapid in the last 50 years. Forward strides in poultry and cattle raising, in grain production and in other aspects of agriculture have furnished a better and more abundant food supply to growing numbers of people. Genetics has helped clothe an expanding population in several ways, notably by producing cotton plants that yield longer, stronger fiber and by developing sheep with heavier and finer fleeces. Increased understanding of human heredity, in regard both to normal characteristics such as blood type and to imperfections such as color blindness, has been of great benefit in many fields, including law, medicine, psychology and sociology.

There can be little doubt that all this is due directly to advances in theoretical genetics. The study of genetics has penetrated to the most minute constituents of organisms. The unit of heredity was first reduced to the chromosome of the cell nucleus and later to the gene, an exceedingly small and possibly even monomolecular division of the chromosome. Significant work has been accomplished on the theory and application of gene action through experiments with insects and with corn, wheat and other plants. Fundamental genetic research has clearly proved itself to be one of the most promising instru-

ments available for the vital task of bringing to full utilization the great but still unrealized potentialities of the world's biological resources.

At present genetic research in several universities receives Foundation support. This work is highly diversified, reflecting a number of different approaches to the main problem of heredity. The Rockefeller Foundation believes such diversification of effort and of approach is a healthy sign and, as such, deserving of encouragement. Accordingly, the Foundation has not concentrated its support of research in genetics in any one institution or along any one line.

In 1949 several modest grants were made to assist a number of promising endeavors. Among these are a project in plant genetics directed by Professor A. F. Blakeslee at Smith College and two programs of drosophila research, one at the University of Texas under Professor John T. Patterson and the other at Purdue University under Professor Don C. Warren. The group of zoologists at Texas have built up an unusually large collection of drosophila species, which they are studying intensively in the hope of finding an explanation for the evolution of different species. At Purdue the researchers are trying to develop some basic information, concerning hybrid vigor, needed for their program in poultry genetics. A part of the money allocated to the University of Copenhagen during the year for work in the natural sciences was for research in genetics under the direction of Dr. Mogens Westergaard.

Four other 1949 grants of The Rockefeller Foundation went to projects in the biochemical, physiological and mathematical aspects of genetics, all of which are attracting increased attention. Hybrid vigor and innate resistance to disease are being investigated by Professor John W. Gowen and his colleagues at Iowa State College, while at Stanford University Professor E. L. Tatum is in charge of research aimed at further clarification of the relationship between genes and the particular enzymes controlling biochemical reactions in the cell. A group of scientists under the direction of Professor Wilson S. Stone at the University of Texas are at work on chemically induced mutations in microorganisms. The mathematical and statistical phases of genetic research, without which the other branches of genetics would have but limited significance, are under study at the Institute of Statistics of the University of North Carolina. Work in the field of genetics there centers on mathematical problems in quantitative genetics and on experimental genetic theories.

#### MALARIA IN SARDINIA

The Sardinian malaria control campaign going forward under the technical direction of the International Health Division of The Rockefeller Foundation illustrates the most recent phase of the Foundation's long standing program in malaria. The work in Sardinia promises not only to wipe out the malaria problem of that island but also to yield some extra

benefits in opening up new living frontiers for the Italian people.

For hundreds of years the Italian Island of Sardinia was known as an unhealthy place to live. Its 9,300 square miles supported only one-third as many persons per square mile as the mainland of Italy. Although the mainland became overcrowded, people were unwilling to emigrate to Sardinia. The big reason for this was malaria. One out of ten Sardinians came down with the disease every year. This meant that practically everyone in the island had malaria at one time or another. Following the usual pattern, the Sard early in life either died or acquired a strain immunity — an immunity gained at the expense of health and energy. Throughout many centuries, malaria held the upper hand in Sardinia.

The invisible malaria barrier was more than a barrier to immigration. It hampered agriculture, industry, social development — progress of all kinds. Until a year or two ago, the farmers and shepherds, who constitute the bulk of the population, were content to raise their crops and produce their meat, cheese and milk in much the same way that these things were done in Biblical times. That they could rid themselves of the scourge of malaria, that the benefits of modern technology could reach their wild and rugged island, was not believable.

In one way the Sards profited from the second world war, for the decision to wipe out malaria in the island was a direct consequence of the lessons learned during the war. As the United Nations Relief and

Rehabilitation Administration (UNRRA) mission to Italy began to develop the use of counterpart funds for rehabilitation and construction work, Rockefeller Foundation trained experts were brought into consultation. The upshot was that the Italian government and the International Health Division of The Rockefeller Foundation in 1946 embarked on a vast experimental project to kill off the indigenous species of malaria mosquito in Sardinia. There are several kinds of anopheline mosquitoes in Sardinia, but only one is a key malaria carrier. To do away with malaria only the vector mosquito need be eliminated. Even though the Foundation had already participated in successful campaigns to eradicate a mosquito vector which invaded Brazil and Egypt, this was a bold move. But the Foundation specialists who assumed technical direction of the work saw in Sardinia an opportunity not only to improve public health but to set in motion social changes of wide significance.

This year, after three years of intensive work, malaria is no longer a threat in Sardinia. For the first time in history, although the mosquito culprit still hides out in a few districts, not a single new case of malaria was reported, and a considerable reduction in relapses was apparent. The task has not been an easy one, considering the scale of operations, the exceedingly difficult terrain, the complex research, the minutely detailed organization and techniques required for such a project. Unlike an ordinary military operation, mosquito control aimed at eradication requires that a constant advance be made.

Foundation staff discovered that interruptions of any kind, whether in supplies, payments or operations, not only stop the progress of the project but give the enemy an opportunity to recover lost ground. A great deal of extra effort is needed to regain even the point of interruption.

While to a considerable extent the pattern of the Brazilian and Egyptian eradication services was useful, differences in technique were necessary in Sardinia. In Brazil and Egypt the anopheline mosquito involved was a newcomer and could be forced to do battle on favorable ground, but the Sardinian mosquito was indigenous and had been entrenched in the island for centuries. The campaign against the Sardinian malaria carrier had to take the form of guerrilla warfare. The picturesque countryside, with its rugged mountains, boggy soil and meandering rivers overgrown with foliage, provides abundant harborage for mosquitoes. To make matters more difficult, operations had to be tailored to the peculiarities of this one species of mosquito. It is not surprising, therefore, that the combined talents of Italian and American experts were called into action. Rather, it is remarkable that less than a dozen men in the organization are full-fledged technicians. The rest, varying in number up to 33,000 at one stage, are Sards. They come from all parts of the island, with no experience or training for this type of work. But they have given all their energy and good will, and in a little time they have been trained and have come to

understand the rigid standard of perfection without which the program could not succeed at all.

Some idea of the size of the operation can be gained from the fact that the total cost to the end of 1950 will be about 12 million dollars. This money has been provided by the UNRRA lire and dollar funds and more recently by the Economic Cooperation Administration. The Rockefeller Foundation, besides furnishing technical direction to the project, will have provided a dollar budget totaling \$375,000 by the end of 1950.

While the project is still in the mopping-up stages and must be followed by strict quarantine and insect control services, numerous benefits are already apparent. The absence of the debilitating effect of malaria has significantly raised the health level of the population. House-spraying operations, which wiped out flies and other domestic insects as well as mosquitoes, have lowered infant mortality rates and the incidence of intestinal infection. The elaborate program of drainage and clearing which was essential in the island-wide larviciding operations has made available for human habitation and agricultural development a great many acres of land that were formerly unfit for any purpose.

The impact of these innovations on the population has been dramatic. In time they will no doubt alter the balance of the whole island economy, for new possibilities in the development of Sardinia have been opened up. The island, formerly an economic lia-

bility, is emerging as Italy's new frontier. Sardinia is now a healthy place to live and work.

### THE CRETE SURVEY

Prompted by postwar economic emergencies, national governments, alone or through the United Nations, are spending millions of dollars annually not only to revive war-shattered economies but also to help accelerate the advancement of backward and unindustrialized populations.

The Rockefeller Foundation has long been concerned with some of the problems associated with this effort. For 35 years it has allocated funds to government agencies and universities, provided fellowships and sent out its own field staff to perform various services in every part of the world. A considerable part of Foundation activity has been designed to raise the level of medical, public health and agricultural practices.

Drawing on its experience in working with other countries, the Foundation last year accepted an invitation from the Greek government to survey socioeconomic conditions in the Island of Crete. To obtain a reasonably comprehensive picture of present-day Crete the Foundation sent public health experts, social scientists, nutritionists, a water geologist and other specialists to the island. All welcomed this opportunity because Crete in many respects is representative of all the Mediterranean countries.

Because the survey staff found little published material about modern Crete, they adopted a tech-

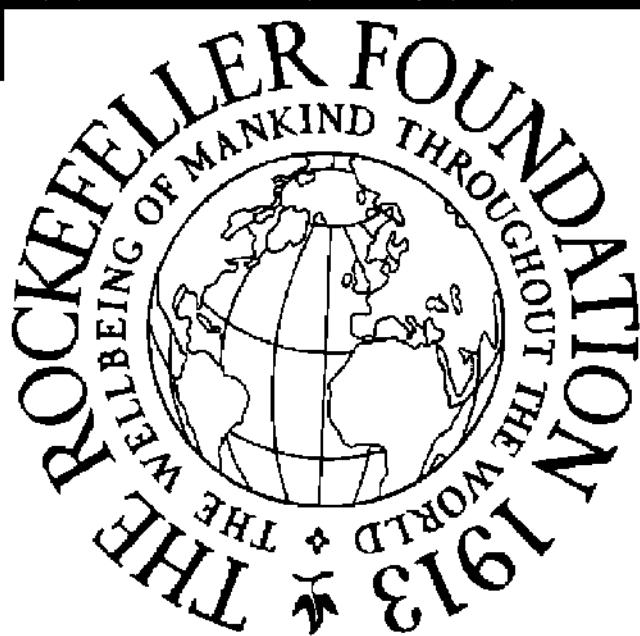
nique not commonly used in studying a backward area. They set out to collect their data at the "grass roots" where the people live. What they needed was not a generalized impressionistic report on Crete but a factual, down-to-earth picture of the way modern Cretans live and earn their bread, the kinds of problems they face and the needs they have. The only way to get this quickly, the staff decided, was to supplement the meager official data with sampling surveys. Modern sampling techniques were applied in a broad, careful analysis of the area. Experienced personnel from the Statistical Office of Iowa State College were called in to help work out the sampling plan. Above all the survey staff sought to get down to cases, to probe the realities of Cretan life. In the end information was obtained on three levels: the household, the individual and the community; one Cretan household out of every 150 was included in the sampling design. In addition three special studies were made, one on health, one on water and one on nutrition.

Crete has been almost untouched by the industrial revolution or by the technological changes in agriculture which have accompanied the development of modern science. Its population, for the most part, is descended from families that have inhabited the land for generations, and the manner of living has not essentially changed for centuries. Over 80 per cent of the people live in rural areas, giving their major effort to the raising of food.

Many factors are delaying progress in Crete, among them the disruptions of war, mounting inflation, high taxation and lack of capital. While the deficiencies

are not mild ones, many of them appear to be susceptible of correction, if attacked in the right way. Here perhaps is a crucial problem confronting those who seek to promote the welfare of backward populations. The standards in an underdeveloped area cannot and should not be judged by mere mechanical comparison with the more highly industrialized regions. Every culture has a pattern of its own; usually it is a mistake to assume that the people of one culture want the same things that others want. Recognition of this fact by outsiders who are to undertake remedial measures in the field ranks in importance with good planning and effective organization.

Perhaps one reason why the skills of more advanced countries are sometimes ineffectively and ineptly delivered to the underdeveloped countries is that results are expected in a great hurry. Changes cannot be imported ready-made from the outside. In speed, in scale and in character they must be suited to the cultural and social system which is indigenous. The desire for economic development and higher living levels is spreading rapidly. But successful change must be precisely adapted to the particular area; it must in the end spring from the labors of the people themselves. For this reason outside effort must not ignore the "grass roots" where the people live and work. Fundamentally the need is for a demonstration that recognizes the totality of human life, that makes an integrated attack from the bottom up. Specific recommendations for such an effort in Crete are still in the formative stage. In the meantime it is hoped



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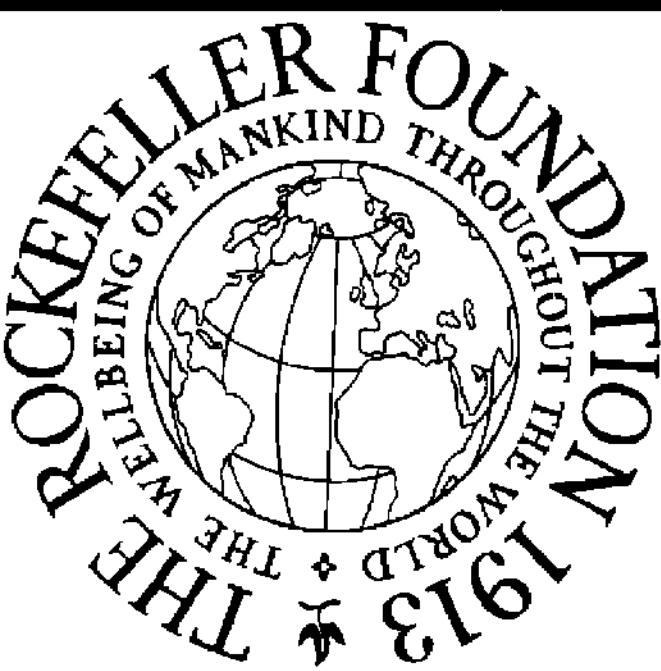
Studies in Arab civilization at the American University of Beirut

The electroencephalograph is used in a study of epilepsy by Harvard University.

The brain wave patterns of twins contribute important data to the evaluation of genetic and acquired factors in the causation of epilepsy



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Hand sprayers used in the malaria control campaign  
in Sardinia are refilled from a drum of DDT emulsion

A volunteer Red Cross nurse weighing food at the start of  
a seven-day recording of the diet of a community in Crete



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that this survey will lead toward a pattern for identifying the most strategic and helpful points of attack in any program of economic development.

### EUROPEAN RECOVERY

Some months ago the Economic Cooperation Administration (ECA) requested the Council on Foreign Relations, New York, to undertake certain studies of the problems involved in aid to Europe. The ECA emphasized the value for administrators and policy-makers of the advice of a group of competent private citizens unencumbered by the restrictions inherent in government organizations. The council, welcoming the opportunity to organize such studies, enlisted the services of eminent authorities in the fields of economics, politics and military strategy. These include Allen Dulles, Hamilton Fish Armstrong, Hanson Baldwin, John H. Williams, Stacy May, Edward Mead Earle and General Dwight D. Eisenhower, who is chairman of the group. The council also appointed a staff of research experts to assist in the preparation of materials. To help defray the expenses of the program for the first year, The Rockefeller Foundation in 1949 allocated the sum of \$50,000 to the Council on Foreign Relations.

The United States government, stressing economic stability as a key aid in promoting international order, in 1948 instituted the Marshall Plan for the economic recovery of Europe. This plan is unique in peacetime history. In the two years that it has been

in operation, the plan has met with considerable success in bringing about expansion of European production and in checking inflation. These are first steps toward a balanced world economy. The Council on Foreign Relations is taking another essential step by reviewing present achievements so that plans can be made to meet future needs of Western Europe for the next three years, the life span of the Marshall Plan.

The United Nations Economic Commission for Europe is likewise investigating the tendencies, especially the long-run tendencies, of European economy. A growing store of information has been accumulated on the changing trends of the European economy. With these data as a working nucleus, the commission in 1949 embarked on a study of long-range economic possibilities and their relation to the current planning programs. The focus of the new research is on the pattern of European industry and intra-European trade. With the aid of a two-year grant of \$50,000 from The Rockefeller Foundation, the study is progressing under the direction of the Swedish economist, Ingvar Svennilson. The results will be made public in 1951 when the work of the Economic Commission for Europe comes up for review by the Economic and Social Council of the United Nations.

The Institute of Economics at the University of Oslo has undertaken a series of investigations known as "repercussion studies." These studies of Norwegian economy attempt to analyze the interrelations between different economic variables, such as em-

ployment and consumer expenditure, income and savings, incentive taxes and internal employment. Professor Ragnar Frisch, director of the Institute of Economics, frequently acts as consultant to the Norwegian government and is also a member of the United Nations Subcommission on Employment and Stability. In 1949 the Foundation made a grant of \$30,000, available for three years, to the University of Oslo in support of Professor Frisch's research program.

The Institute of Applied Economics, a private research organization founded in 1944 by Professor François Perroux of the University of Paris, received a three-year grant of \$30,000 from The Rockefeller Foundation in support of its research program. The institute will study the achievements of the Marshall Plan and the modern theory of international investment, as well as the national wealth and the economic system of France.

### THE HUMANITIES IN EUROPE

When the officers of the Foundation returned to Europe after the war, it quickly became evident to them that the relatively small amounts which the Foundation could allot for work in the humanities in Europe were urgently needed. Though work in the humanities was of course strongly established in all the major universities of Europe, the governments of these countries quite naturally in the reconstruction period gave prior attention to more pressing needs.

As a result the humanists of Europe found it difficult to secure locally the funds they required to buy books essential for their work and to renew their direct acquaintance with the work of colleagues in other countries. In the years immediately preceding 1949, grants to the University of Oslo, the University of Leiden and to three major French provincial universities — Lyon, Toulouse and Bordeaux — provided the hard currency necessary for the purchase of books and travel abroad. The general outcome of the grants, none of which exceeded \$10,000 a year, has been to help the humanists of these universities bring their work back into the main stream of international humanistic studies. A grant of \$50,000 to the Committee of Vice-Chancellors and Principals of the Universities, Great Britain, provided for the purchase of needed books abroad which were allocated by this committee to the universities in accordance with their needs.

It was not until 1948 that representatives of the Foundation in the humanities were first able to revisit Italy. These visits soon revealed the keen desire of Italian humanists to regain the high standards which they had attained before their work was handicapped by the oppression of the fascist regime. Characteristic of their spirit was the act of the well known Italian scholar, Senator Benedetto Croce, in establishing in Naples an Institute of Historical Studies. Some 25 younger Italian historians have been brought together at this institute for advanced training and research under the direction of another leading

Italian historian, Federico Chabod. Here a 1949 grant of \$21,000 from the Foundation over a three-year period, besides meeting special needs of the institute, is facilitating the acquisition of foreign books and periodicals essential for the work of its students.

A 1949 grant in aid of \$6,000 is helping the Scuola Normale Superiore of Pisa to send three of its staff members abroad to continue their research and likewise is providing the means of purchasing needed materials abroad. The Scuola Normale Superiore and the Institute of Historical Studies at Naples are two of the few institutions in Italy that are primarily concerned with advanced training and research in the humanities.

The year 1949 also brought the Foundation's first major postwar opportunity to assist work in the humanities in Germany. In 1949 the University of Munich completed its plans for an Amerika Institut, at which a substantial number of students will undertake studies of American civilization. A grant of \$50,000 from the Foundation, available over three years, again provides hard currency to enable the university to bring leading American humanists to Munich for teaching in the institute and to build up its library resources by purchases abroad.

The total expenditure of the Foundation for the humanities in Europe during the postwar years is slight in comparison with the support the various countries themselves have given their universities. But the discrimination and care with which the Foundation grants have been expended by their

recipients undoubtedly have made for outcomes far out of proportion to the amounts of money involved.

With European recovery well under way, it is now a question whether further general assistance of this kind from the Foundation for the humanities in Europe can continue to be significant. Fortunately the humanists of Europe are now more and more able to find help for themselves at home. The significance of what the Foundation can contribute to work in the humanities in Europe over the coming years will depend, not on the temporary demands of the reconstruction period, but rather on the discovery of opportunities where aid on a scale the Foundation can consider is both necessary and strategic.

### THE NEAR EAST

These Reviews in earlier years have frequently affirmed the interest of the Foundation in encouraging a better understanding of the life, thought and traditions of some great cultures of the world whose development has paralleled the development of Western European culture. In earlier years particular emphasis has been placed on efforts to improve understanding of two of these great cultures, that of the Far East and that of the Slavic peoples. For these purposes the Foundation since 1934 has granted more than \$3,000,000 under its programs in the humanities and the social sciences.

The interest of the Foundation in the understanding of the culture of a third great region, the Near

East, dates from 1926. In that year the Laura Spelman Rockefeller Memorial first granted assistance to the American University of Beirut for work in the social sciences dealing particularly with the social, economic and governmental problems of the Near East. Support of this work at Beirut by the Foundation continued without interruption, after the consolidation of the Laura Spelman Rockefeller Memorial with The Rockefeller Foundation in 1929, until 1940, and resulted in a series of publications which today are basic for an understanding of many Near Eastern problems.

In the meantime the officers of the Foundation were trying to find ways of encouraging the humanistic interpretation of the region. The number of humanists qualified for study of the modern Near East is small, but in 1947 the American Council of Learned Societies organized a Committee on Near Eastern Studies with Mr. Mortimer Graves as secretary. The members of this committee include scholars in the four principal cultures of the region — Turkish, Arabic, Iranian and Hebrew. With the aid of The Rockefeller Foundation the committee has endeavored to meet certain urgent needs in Turkish and Arabic studies. An introduction to Turkish studies entitled *A Guide to Turkish Area Study* was published by the council in 1949. The council has also been responsible for work in Turkey on a revised English-Turkish dictionary, just now published in Turkey. In 1948 the council received a grant of \$75,000 from the Foundation for translating important works in Near

Eastern languages into English, a project which will continue over a period of several years.

These three projects of the American Council of Learned Societies are helping to supply essential materials for the development of Near Eastern studies in the United States and elsewhere. Two major 1949 grants of the Foundation were for additional studies of the Near East. One in the amount of \$83,000 to the American University of Beirut is for interpretative studies of the life, thought and tradition of the modern Arab Middle East. The potential contribution of these countries to modern life and thought is now more than ever recognized. The other grant provided \$25,000 to the American Board of Commissioners for Foreign Missions for studies of intellectual and cultural movements in modern Turkey. Dr. J. Kingsley Birge, who heads the project, plans to give particular attention to the nineteenth century Turkish thought which led to the emergence of the Turkish republic in the twentieth century.

#### RADIO AND PRESS IN KOREA AND JAPAN

It is not often that an organization like the Foundation can assist effectively in the improvement of such large and well-established enterprises as radio broadcasting and the daily press. Yet two grants made in 1949 seem likely to have marked effects on the development of broadcasting and journalism in Korea and Japan.

Since the early days of the Allied Powers' occupation of Japan and Korea it has been a policy of the

occupying authority to encourage the decentralization of broadcasting in these countries by stimulating the development of additional broadcasting facilities. New facilities, however, inevitably depend for their success on the availability of qualified personnel, and in this respect both countries suffered from a scarcity, Korea much more so than Japan. As Korea emerged from the long years of Japanese domination, it found itself virtually without trained radio personnel among its own citizenry, broadcasting there having been largely in the hands of the Japanese. In this situation the Allied occupying authorities asked the Bureau of Applied Social Research of Columbia University to provide a few Koreans and Japanese with the means to study broadcasting in the United States and Canada. The bureau had provided such experience to a group of German broadcasters in a previous year.

From the start the occupying authority also made it a policy to promote the independence of the press from the Japanese government and to abolish restrictive regulations, with the aim of fostering the development of a truly democratic press. As military government controls were relaxed, Japanese newspapermen had to learn to operate their newspapers under entirely changed conditions. The Allied authorities asked the American Press Institute of Columbia University to arrange a course of study in the United States and Canada for Japanese journalists, as it had already done for a group of German journalists.

In neither of these cases did the occupying authority have the means of providing the necessary funds, though in both cases it was possible to provide

transportation to the United States. Money for the expenses of the two groups in the United States and Canada was furnished by the Foundation through two 1949 grants to Columbia University. The sum of \$50,000 was allocated for the broadcasters and \$25,000 for the journalists.

These were instances in which the Foundation with its relative freedom in the use of funds was able to act when an agency with far larger resources, in this case the occupying authority, was initially unable to do so. The same had been true of the earlier projects for German broadcasters and journalists. Those projects had likewise been proposed by the occupying authorities in Germany, but prevailing regulations made it impossible for them to allot any funds for this purpose from the substantial resources at their disposal. Indeed, they were unable even to provide transportation across the Atlantic, and the entire cost of both these German projects was met by the Foundation. It is noteworthy, however, that after the value of the visit of the German journalists had become evident, changes in regulations in Germany allowed the American authorities themselves to finance entirely the visit of a second group.

### INTERGROUP RELATIONS

One of the main concerns of the Social Sciences division of The Rockefeller Foundation is exploration of the social, political and psychological factors involved in both the individual and the group behavior

of human beings. This interest is founded on the conviction that a thorough understanding of the relationships between individuals, between groups and between the individual and the group is of great importance in establishing better bases of cooperation for the functioning of present-day society.

In 1949 The Rockefeller Foundation made a number of grants for studies of interpersonal and inter-group relations. Of the four studies considered here, one is a socioanthropological project, two are in the field of international relations and one deals with a social problem of growing significance in the United States.

Students of anthropology have shown that men of different continents and regions are physically much more alike than they are different and that there are many parallels in their cultures. For several years Dr. Clyde Kluckhohn, professor of anthropology at Harvard University, and his associates have been investigating the social system and behavior of the Navaho Indians near Ramah, New Mexico. A 1949 grant from the Foundation for the Laboratory of Social Relations at Harvard provides for a comparative study of the value systems of the Navaho and four other nearby culture groups. These four include the small Mormon settlement of Ramah itself and Zuni Indian, Spanish American and Texan communities. The study is being carried out under an advisory committee consisting of Professor Talcott Parsons, chairman of the Department of Social Relations, Professor John O. Brew, director of the Peabody

Museum, and Professor Kluckhohn. The project aims to describe existing patterns of personal and group values in the five cultures and to analyze the factors which have modified these patterns.

At Yale University the subject of consensus in international affairs is being studied by members of the Institute of International Studies, headed by Professor Frederick S. Dunn. The institute has defined consensus as voluntary accord between nations which disagree at the outset of negotiations. It is widely recognized today that such voluntary agreement among nations is a prerequisite to a more stable international order. The institute at Yale will concentrate on the conditions essential to more extensive international consensus and the means of achieving it.

Aid was also given by the Foundation in 1949 to the University of Notre Dame for its research program in international relations. This program traces the influence of ethics, philosophies and ideologies on world affairs. Current investigations center on the interrelations of religion, democracy and international order. Special studies have been planned on such topics as the Soviets and world affairs, the Christian Democratic parties of Europe, twentieth century political religions and the threat to religion presented by totalitarianism in its manifold forms.

With a grant made by the Foundation in 1949 the Institute of Industrial Relations of the University of California will study the social, political and economic impact of an aging population on American society. The program of research is a cooperative one,

combining the efforts of the various academic departments represented in the Institute of Industrial Relations as well as the university's School of Public Health and School of Medicine. A few of the topics that will receive attention in the study are: the impact of an aging labor force on management and union policies; job requirements for elderly workers; and the effect of retirement plans on fiscal policies.

### PSYCHOSOCIOLOGICAL STUDIES

The complex problems associated with the successful conduct of human affairs at many different levels clearly call for attention from those trained in the study of individual behavior as well as from social scientists. Psychologists and psychiatrists especially must study these problems because, in the final analysis, a society can be understood only in terms of the individuals, or groups of individuals, who comprise it and their interaction with the environment. Why is it, for example, that one man is able to collaborate successfully with his fellows in work and in play, while another consistently fails to do so? What is the relationship of this capacity for cooperation to other aspects of personality structure? How is human behavior related to the ideals to which people profess allegiance? And how can we apply what we know and what we hope to learn to the problems facing man in our modern industrial society?

Questions such as these are the central concern of a research program in the dynamics of personality development which is going forward at Harvard

University under the direction of Professor Henry A. Murray, Jr., and which was reported in this Review last year. They also underlie the work of the Institute for Personality Assessment and Research directed by Dr. Donald W. MacKinnon at the University of California. This institute was established in 1949 with the aid of a three-year grant of \$100,000 from The Rockefeller Foundation. The core of its working philosophy is the conviction that if we wish to promote the well-being of society as a whole we should not seek only to identify sources of failure but should also examine carefully those who have successfully adapted to their surroundings. We should study effective and happy people and try to find out just what it is that makes them so. What personality factors are responsible for their ability to cooperate with other human beings, to form lasting friendships, to triumph over difficult circumstances or to make adequate compromises with them, in short, to achieve a satisfactory and a satisfying adjustment to their total environment?

To get at some of the answers the institute carries out comprehensive psychological assessment of normal and supranormal persons in individual situations and in groups. This approach provides a basis for fundamental research on personality structure and development. It also furnishes a foundation for practical work such as personnel selection and the improvement of relations between members of a single group or between two or more groups. Particular attention is given to determining the defense

mechanisms adopted by successful individuals. It has been shown in the past that these persons in many cases exhibit the same basic anxieties that produce illness in others.

In Great Britain, too, it is recognized that although problems of human personality differences, attitudes and feelings underlie and contribute to nearly all social problems, the human relations factor is too often ignored or insufficiently considered in the quest for solutions. Several years ago this failing prompted a group of workers at the Tavistock Clinic, London, to organize a new type of research project in human relations. During the recent war several members of the group had successfully combined the practices of medical psychology with the precepts of sociology in working out urgent matters of military morale and efficiency. The new project was designed to apply this wartime experience to research on problems confronting civilian groups.

Work was begun in 1946 with the aid of a Rockefeller Foundation grant to the Tavistock Clinic. Subsequently the Tavistock Institute of Human Relations was established as an independent organization to take over the research activities of the clinic, and the appropriation was transferred. The new institute, toward whose support the Foundation made a three-year grant of \$121,200 in 1949, represents a synthesis of medical and social sciences. Psychiatrists, psychologists, economists, anthropologists and experts in education and industrial science have joined together in an attempt to apply the scientific method

to human affairs. They are trying to utilize the principles of individual or personality psychology to solve group problems, especially in the realm of industrial relations.

The institute believes, moreover, that it should not confine itself to research work and that it has an obligation to help meet the needs of the community. It has therefore planned its operations along three lines: methodological research; training for additional personnel in the field; and specific projects conducted in collaboration with industrial firms, community service agencies and government bodies.

It may well be that misunderstanding of ourselves is a main barrier in the long struggle of men to learn how to live together without recurrent catastrophes. If so, greater knowledge of individual human beings and the application of such knowledge to group problems can do much to promote the smooth functioning of life at the family, community, national and even international levels.

### HIGH ALTITUDE RESEARCH

Among the foremost research organizations in the new study of high altitude adaptation is the Institute of Andean Biology of the University of San Marcos, Lima, Peru, which is engaged chiefly in research on the effects of high altitude environment upon the human body. The work of this institute has wide application today. The great height at which modern airplanes fly compels increasingly large numbers of

civilians and military personnel accustomed to the conditions of life at or near sea level to contend with an environment essentially the same as that of the Andean Indian.

Not so very long ago the modifications in physiology which enabled the inhabitants of distant lands with harsh or extraordinary climates to survive and sometimes even thrive in their rigorous surroundings were of little more than academic interest. People in general may have marvelled at the ability of Eskimos to conquer Arctic cold or of certain South American Indians to live normally at elevations as high as or higher than Pike's Peak. But only a handful of medical scientists were concerned with the means by which, for instance, the Indians adjusted to the rarefied atmosphere that prevails 15,000 feet up in the Andes.

The salient feature of the environment at high altitudes is the decreased atmospheric pressure, as a result of which there is less oxygen present in any given volume of air. Natives of these upper reaches are adapted to the lowered oxygen concentration; others, after periods of distress varying in intensity and in duration, may also become reconciled to it. But sudden transfer to high altitudes, such as occurs in present-day flying, produces immediately a physiological oxygen deficiency known as anoxia. Mild anoxia greatly limits the efficiency of human beings; severe anoxia causes acute and incapacitating illness.

The Institute of Andean Biology is attempting to elucidate the mechanism or mechanisms involved in

the body's adjustment to oxygen-poor air. It has approached the problem mainly through a comprehensive study of individuals born and living at high altitudes. For this purpose it recently built a new laboratory in the town of Morococha, a mining center with an elevation of 14,900 feet but only 93 miles from Lima, which is at sea level. Dr. Alberto Hurtado, a former Foundation fellow, is in charge. The Peruvian government supplied the funds for the building, and The Rockefeller Foundation provided \$50,000, available until the end of 1951, toward equipment.

Because the new laboratory is the highest in the world it is ideally suited for an expanded program of high altitude research. Weather conditions allow operation of the laboratory all year round. Morococha's permanent population of about 4,000, including natives and persons from sea level living there temporarily, assures an ample supply of subjects for study. Furthermore, the proximity of Morococha to Lima, where the institute has several well-equipped physiological, chemical and clinical laboratories, makes it possible to investigate the effects of sudden transition from normal pressure surroundings to a low pressure environment and vice versa. Studies have been completed or are under way in the fields of respiration, circulation, hematology, fertility, metabolism, pharmacology, industrial hygiene and clinical illness.

In addition to its direct bearing on aviation, the work of the Morococha laboratory has significance

for clinical medicine. Anoxia is characteristic of many pulmonary, circulatory and other diseases and is directly responsible for some of the symptoms exhibited by patients suffering from these diseases. The new knowledge of high altitude physiology that is expected to emerge from the research at Morococha should not only contribute to progress in the vital phase of modern communication represented by aviation, but also aid in the treatment of disease.

### NEW TROPICAL VIRUSES

The New York Laboratories of the International Health Division this year opened a new chapter of Rockefeller Foundation work on diseases of potential public health importance. The new interest centers around a group of 18 tropical viruses discovered by the Foundation's research staff in its pursuit of yellow fever work in East Africa, West Africa, Brazil and Colombia. Of most of these viruses very little is known. They turned up in human blood samples in the course of routine animal inoculation tests for yellow fever virus and also in investigations of wild monkeys and mosquitoes, which play an important part in maintaining jungle reservoirs of yellow fever virus.

While the new program of virus investigations is a direct offshoot of the Foundation's 33 years of experience in studying the yellow fever virus, it represents a fresh approach to the study of disease. Rarely

have laboratory and field workers had an opportunity to isolate a virus first and then start a search for the disease that it causes.

Viral species are numerous, elusive and widespread. Unknown diseases of possible viral origin are constantly turning up. Although some of mankind's oldest afflictions, including smallpox, influenza and the common cold are virus diseases, scientists are lamentably ignorant of many aspects of viruses. It is no exaggeration to say that virology stands today about where bacteriology stood in the early 1900's. Medical science, in a manner of speaking, has stumbled over the novelties of the virus world. For the most part, an undiagnosed infection assumes importance only after it has assumed epidemic proportions or large numbers of cases have reached the physician and the laboratory worker. Generally the symptoms are well known before the organism responsible for the infection has been identified. A great deal of time may be lost in tracking down the organism, examining its properties and investigating possible cures.

Last year, the scientists who isolated the new tropical viruses, one by one over the past decade, wound up their yellow fever work and returned to the home laboratories. From East Africa they brought eight of the unknowns, beginning with the Bwamba and West Nile viruses, which were found as far back as 1937 in the blood of fever-ridden natives. From Brazil there were six, including the Ilhéus virus, which appears to thwart brain development in chick embryos. Three viruses were of Colombian origin,

and the last, the eighteenth, was spotted in 1948 near Kumba in the British Cameroons. Some of them, like the Semliki Forest virus (East Africa), were isolated from batches of wild mosquitoes. The Mengo virus (East Africa) was taken on separate occasions from two different catches of mosquitoes, a wild mongoose, a human being and a rhesus monkey.

Rarely had the men found active cases in human beings, but immunity tests told the story. In almost every village, not only in Uganda, where the Bwamba and West Nile viruses were discovered, but also in Sudan and Western Congo, there were people who were immune to these viruses. The inevitable conclusion was that they had been infected with the diseases at some time in the past. The frequency of immunity in many places pointed to a high prevalence of both diseases.

For the exhaustive kind of investigation that the International Health Division men had in mind, complicated apparatus — ultracentrifuges, fine grained filters and an electron microscope — had to be assembled. Very often new techniques for using the apparatus had to be invented. The electron microscope, which makes use of beams of electrons instead of rays of light, permits the scientist to obtain sharp images of objects measuring as little as one ten-millionth of an inch in width. The best optical microscope visualizes objects only up to one 250,000th of an inch. The virus team at the New York Laboratories, however, ran into difficulty because a specimen must be thoroughly dry before it can be exam-

ined in the electron microscope. The usual practice of air-drying turned out to be unsatisfactory because it left the viruses cluttered up with a hodgepodge of debris. The new technique which had to be evolved makes use of centrifugal force instead of air-drying. As the solution containing the viruses is whirled in an ultracentrifuge, heavier foreign matter is thrown out. The liquid is then spun again, using a special technique, so that finally the viruses are deposited bone-dry on a tiny pinhead screen which can later be inserted in the electron microscope.

As the program gets under way, members of the research team are dividing their forces. One man has elected to examine the physical properties of the viruses, their sizes, shapes, weights, electrical characteristics and chemical components. Another undertakes tests in animals to observe the responses and try to relate the viruses to each other or some known agent. A third member centers his studies on immune responses in order to establish criteria for laboratory diagnosis of each infection. Two regular members of the laboratory staff, who had had valuable experience in studying respiratory viral diseases and rabies, decided to cultivate the tropical viruses in chick embryos to find out how the viruses enter the body and what kind of damage they do.

An international survey to determine the geographical distribution of the 18 viruses is planned. The first step will be to obtain blood samples from normal human populations in various areas and test them for immunity to each of the viruses. Evidence

of the world-wide distribution of at least one of the group of 18 is already at hand. The Mengo virus from East Africa is now known to be closely related if not identical with a virus isolated from a chimpanzee in Florida. Immunity to the Mengo virus was also found in some American soldiers who had contracted a fever while stationed in the Philippine Islands.

As with all research, it is impossible to predict the amount of useful information applicable to human virus disease which may accrue from this undertaking. Thirty-five years ago, when The Rockefeller Foundation launched its attack against yellow fever, very little actually was known of that disease, although at the time it was thought our knowledge was quite complete. It was not until 1927 that the causative virus was isolated by Foundation workers.

Further investigations revealed yellow fever to be a deeply rooted epidemiological problem. New difficulties constantly arose and had to be conquered. The war against yellow fever seemed at first to be a triumphal march against the final stronghold of a disease prevalent in seaports and carried by a mosquito closely associated with human habitation. It turned out to be an infinitely more painful and long-drawn-out campaign against a disease which maintained itself deep in tropical forest reservoirs. It was shown that since coastal towns got their yellow fever from inland jungles, the yellow fever control problem could not begin to be solved unless the great problem of jungle yellow fever was cleared up.

At this point, the laboratory men stepped up their efforts to produce a vaccine so that the lives of the men who went out to fight yellow fever could be protected. The vaccine finally perfected was administered to entire populations in yellow fever-infested areas, and during World War II it gave protection to millions of military personnel. The problem of accidental reintroduction of yellow fever from the permanent forest reservoirs has by no means been solved, and many countries are under the necessity of maintaining permanent control organizations and vaccination services. By now, however, the Foundation's field and laboratory investigations in Brazil, Africa and the United States, which were usually joint undertakings of the Foundation and various governments, have yielded a good understanding of the epidemiology, the diagnosis and the prophylaxis of the disease. Yellow fever is no longer a threat to human populations in the sense that effective control methods are now available wherever and whenever yellow fever again invades urban populations.

### ORGANIZATION CHANGES

The Foundation in 1949 lost several valued members of its staff through retirement and resignation. Dr. David H. Stevens, who directed the Humanities division from its inception, retired December 31. In 1930, after a university career, he relinquished his post as associate dean of the faculties at the University of Chicago to come to the General Education

Board. He became Director for the Humanities in the Foundation in 1932 and served concurrently as Vice-President of the General Education Board during the period 1932-1938.

Dr. Lewis W. Hackett, Associate Director of the International Health Division, who joined the Foundation in April 1914, less than a year after its formal organization, retired December 31, 1949. He began his work in Central America, spent about seven years in Brazil and about 15 years in Europe, returning to South America in 1940. He is known particularly for the studies of malaria in Italy and southern Europe, which he directed. These studies contributed much to the knowledge of malaria in Europe, especially of the *Anopheles maculipennis* mosquito.

Dr. Charles N. Leach joined the staff of the International Health Division in April 1921, and retired as Assistant Director July 31, 1949. He conducted work in public health for the International Health Division in the Far East (Australia, Ceylon and the Philippine Islands) and in Europe, particularly Austria, Czechoslovakia, Hungary and Poland. During the European period he was associated with important investigations on the immunology of diphtheria. He returned to the Philippines in 1941 and was held at the University of Santo Tomás internment center by the Japanese for almost two years, but after recuperation he was again active in planning postwar relief and rehabilitation programs in Europe.

Dr. C. W. Wells, who retired on September 30, 1949, was for about nine years, beginning Septem-

ber 1, 1920, fellowship adviser for the Foundation. He then transferred to the field staff of the International Health Division and spent the greater period of his service in the Caribbean region, especially in the island of Jamaica, where he participated in planning, developing and implementing control procedures against tuberculosis in that island. He was especially interested in studies on the immunizing efficacy of a vaccine prepared of heat-killed tubercle bacilli. The office of the Surgeon General of the Army and the United Nations Relief and Rehabilitation Administration availed themselves in 1943 and 1944 of Dr. Wells' expert knowledge of tuberculosis and the Caribbean region.

Mr. Thomas B. Appleget served as Vice-President of the Foundation for a period of 20 years, from 1929 until his resignation in 1949 to become Vice-President in Charge of Public Relations at Brown University.

Dr. John P. Fox resigned from the field staff of the International Health Division in 1949 to accept the position of Professor of Epidemiology in the Department of Health and Tropical Medicine at the Tulane University School of Medicine.

Dr. D. F. Milam was granted a leave of absence for the year 1949 to enable him to serve as National Director of the Planned Parenthood Federation of America, Inc. He resigned from the staff of the International Health Division as of December 31, 1949.

New appointments during 1949 were as follows: Lindsley F. Kimball, Vice-President; Charles B.

Fahs, Director for the Humanities, elected December 6, 1949, to succeed Dr. Stevens (Dr. Fahs was Associate Director from January 1, 1949 to December 31, 1949); Chadbourne Gilpatrick, Assistant Director for the Humanities; William Farnsworth Loomis, Assistant Director for the Natural Sciences; Paul C. Mangelsdorf, Professor of Botany, Harvard University, Consultant for Agriculture; Jesse Parker Perry, Jr., Administrative Assistant, and Arthur C. Smith, temporary Assistant Entomologist, on the field staff of the Mexican Agricultural Program.

Marston Bates, a staff member of the International Health Division, was appointed to the position of Special Assistant to the President, in connection with developing interests in the field of human ecology; Dr. Robert S. Morison, formerly Assistant Director, became Associate Director for the Medical Sciences, beginning January 1, 1949; and Miss Janet M. Paine, Assistant to the Director for the Social Sciences, was appointed Assistant Secretary of the Foundation, December 6, 1949.

Changes in the Trustees were as follows: Robert A. Lovett was elected Trustee and a member of the Executive Committee, May 20, 1949. John S. Dickey resigned from the Executive Committee May 20, 1949, and John J. McCloy resigned as Trustee, September 23, 1949.

Effective January 1, 1949, Gordon M. Fair and Dr. Thomas Parran began their terms as Scientific Directors of the International Health Division to replace Dr. Charles H. Best and Dr. Hugh J. Mor-

gan, whose terms expired December 31, 1948. Dr. Hugh J. Morgan was reappointed and Dr. Dean A. Clark was appointed Scientific Director in December 1949 to serve until December 31, 1952, to replace Dr. Eugene L. Bishop and Dr. Rolla E. Dyer.

#### APPLICATIONS DECLINED DURING 1949

The number of applications to the Foundation for aid has been increasing yearly since the end of the war. In 1949, 3,017 applications were declined as compared with 2,702 in 1948, 2,510 in 1947, 1,839 in 1946 and 1,028 in 1945. The largest number of applications declined in any one category was 1,133, for fellowships and travel and training grants, 37.5 per cent of the total. Many of these applications represented projects of interest to the Foundation but were declined because other opportunities seemed more promising. The great majority, however, were declined because they fell outside the areas of work in which the Foundation is attempting to be of service.

The Foundation does not make gifts or loans to individuals, finance patents or altruistic movements involving private profit, contribute to the building or maintenance of churches, hospitals or other local organizations, or support campaigns to influence public opinion.

The applications which were declined during 1949 may be classified under the following headings:

charitable agencies or programs, 42; conferences and meetings, 76; continued aid to previously supported projects, 44; cures, remedies, investigation of theories and inventions, 90; development of cultural and educational institutions and projects, 381; European refugees, 56; fellowships, travel and training grants, 1,133; local institutions (including churches, hospitals, museums and schools), 255; personal aid, 119; public health projects, 36; publication projects, 184; research projects and various other activities in the creative arts, 498; and miscellaneous, 103.



## **REPORT OF THE SECRETARY**



## SECRETARY'S REPORT

THE members and Trustees of The Rockefeller Foundation during the year 1949 were:

WALTER W. STEWART,	<i>Chairman</i>
WINTHROP W. ALDRICH	ROBERT A. LOVETT <sup>1</sup>
CHESTER I. BARNARD	JOHN J. McCLOY <sup>2</sup>
KARL T. COMPTON	HENRY ALLEN MOE
JOHN S. DICKEY	WILLIAM I. MYERS
HAROLD W. DODDS	THOMAS PARRAN, M.D.
JOHN FOSTER DULLES	JOHN D. ROCKEFELLER, 3RD
DOUGLAS S. FREEMAN	ROBERT G. SPROUL
HERBERT S. GASSER, M.D.	ARTHUR HAYS SULZBERGER
WALTER S. GIFFORD	HAROLD H. SWIFT
ROBERT F. LOEB, M.D.	HENRY P. VAN DUSEN

The officers of the Foundation were:

WALTER W. STEWART,	<i>Chairman of the Board of Trustees</i>
CHESTER I. BARNARD,	<i>President</i>
THOMAS B. APPLEGET,	<i>Vice-President<sup>3</sup></i>
LINDSLEY F. KIMBALL,	<i>Vice-President<sup>4</sup></i>
FLORA M. RHIND,	<i>Secretary</i>
EDWARD ROBINSON,	<i>Treasurer</i>
GEORGE J. BEAL,	<i>Comptroller</i>
CHAUNCEY BELKNAP,	<i>Counsel</i>
VANDERBILT WEBB,	<i>Counsel</i>
GEORGE K. STRODE, M.D.,	<i>Director for the International Health Division</i>
ALAN GREGG, M.D.,	<i>Director for the Medical Sciences</i>
WARREN WEAVER,	<i>Director for the Natural Sciences</i>
JOSEPH H. WILLITS,	<i>Director for the Social Sciences</i>
DAVID H. STEVENS,	<i>Director for the Humanities<sup>6</sup></i>

<sup>1</sup> Elected May 20, 1949.

<sup>2</sup> Resigned September 23, 1949.

<sup>3</sup> Resigned May 31, 1949.

<sup>4</sup> Elected April 6, 1949.

<sup>6</sup> Retired December 31, 1949.

The following were members of the Executive Committee during the year:

THE PRESIDENT, *Chairman*

JOHN S. DICKEY<sup>1</sup>

JOHN D. ROCKEFELLER, 3RD

JOHN FOSTER DULLES

WALTER W. STEWART

ROBERT F. LOEB, M.D.

WALTER S. GIFFORD, Alternate

ROBERT A. LOVETT<sup>2</sup>

Member

HENRY ALLEN MOE

HENRY P. VAN DUSEN, Alternate

Member

The following served as scientific directors of the International Health Division of the Foundation during 1949:

EUGENE L. BISHOP, M.D.

WILTON L. HALVERSON, M.D.

ROLLA E. DYER, M.D.

KENNETH F. MAXCY, M.D.

GORDON M. FAIR

THOMAS PARRAN, M.D.

THE PRESIDENT

THE DIRECTOR OF THE DIVISION

### MEETINGS

During 1949 regular meetings of The Rockefeller Foundation were held on April 6, and December 6 and 7, and a special meeting on May 20. Eight meetings of the Executive Committee were held during the year to take actions within general policies approved by the trustees.

### FINANCIAL STATEMENT

A summary of the Appropriations Accounts of the Foundation for the year 1949 and a statement of its Principal Fund follow:

<sup>1</sup> Resigned from Executive Committee May 20, 1949.

<sup>2</sup> Elected May 20, 1949.

## SUMMARY OF APPROPRIATIONS ACCOUNTS

FUNDS AVAILABLE	FUNDS APPROPRIATED
Balance from 1948..... \$7,396,044	Appropriations
Income for 1948..... 10,985,524	Public Health..... \$1,850,000
Unexpended balances of appropriations allowed to lapse and refunds on prior year grants.. 808,599	Medical Sciences.... 1,545,935
	Natural Sciences.... 2,110,835
	Social Sciences..... 1,796,625
	Humanities..... 1,181,580
	Miscellaneous..... 1,134,500
	Administration
	Scientific Divisions.. 1,042,512
	General..... 374,441
	<hr/>
	\$11,036,428
	Less appropriation for which funds were pre- viously authorized... 150,000
	<hr/>
	\$10,886,428
	Authorization for later appropriation by the Executive Committee 198,696
	<hr/>
	\$11,085,124
	Balance available for ap- propriation in 1950.. 8,105,043
<hr/>	<hr/>
<b>\$19,190,167</b>	<b>\$19,190,167</b>

## PRINCIPAL FUND

Book value, December 31, 1948.....	\$114,883,971
Add	
Legacy from Estate of William O. Wakenight..... 423	
Book value, December 31, 1949.....	\$114,884,394



## **INTERNATIONAL HEALTH DIVISION**

## INTERNATIONAL HEALTH DIVISION

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<sup>1</sup> Retirement effective December 31, 1949.

<sup>2</sup> On leave, serving as Director of the Pan American Sanitary Bureau.

<sup>3</sup> Retirement effective July 31, 1949.

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<sup>1</sup> Resignation effective September 30, 1949.

<sup>2</sup> On leave from the International Health Division during 1949 to serve as National Director of the Planned Parenthood Federation of America, Inc.; resignation effective December 31, 1949.

<sup>3</sup> Retirement effective September 30, 1949.



## INTERNATIONAL HEALTH DIVISION

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## INTERNATIONAL HEALTH DIVISION

### NEW YORK LABORATORIES

**I**N the work of the International Health Division, the laboratories located at the Rockefeller Institute for Medical Research, New York, play an integral part. The Division throughout its career has often encountered situations where the effective control of a disease called for basic additional knowledge such as cannot be obtained by field investigations or in field laboratories. These fundamental problems require study in a well-equipped laboratory by a highly trained technical staff. It was for this purpose that the laboratories in New York were created.

The New York Laboratories of the International Health Division have been in continuous operation since 1928. During the period from 1928 through 1948 some \$2,500,000 was spent on these laboratories. This includes \$200,000 paid out in 1946, 1947 and 1948 for the conditioning and installation of new quarters. Excluding this latter expenditure, the amount spent during the 21 year period was \$2,286,-086, or an average of \$108,861 per year. The average yearly expense for the last ten years has been \$155,615.

One achievement in which these laboratories shared was the perfection of a yellow fever vaccine. The

Rockefeller Foundation work on yellow fever both in the field and in the International Health Division laboratories has now drawn to a close. Virus studies at present center upon some of the many tropical viruses which were discovered in Africa and South America in the course of the yellow fever campaign. A description of this work has been given on pages 63-68 in an earlier section of this report.

Another research task of the same rank as the virus work has to do with malaria. The International Health Division has for many years been engaged in widespread malaria control. Most of this work has been done in the field and has been directed against the mosquito which carries the malaria organism. Some research on mosquitoes has also been done in the laboratory. The chief thrust of present laboratory activities concerns the malaria organism known as *Plasmodium gallinaceum*, with the ultimate aim of working on *Plasmodium vivax*. There are two common malarial infections in man — *P. vivax* and *Plasmodium falciparum*. Adequate chemotherapeutic agents are available for the prophylaxis, suppression and cure of the disease caused by *P. falciparum*. *P. vivax* infection can be suppressed, but no satisfactory prophylactic or curative agent is available.

Of the two ways of combating malaria one attacks the mosquito and the other, through chemotherapy, tries to reach the malaria organism direct. This organism leads an extremely complicated life. The plasmodium passes the first stage of its life within the mosquito. Then comes the second section of its life

cycle, which is passed in the human body, partly outside and partly inside the red blood corpuscles.

At the New York Laboratories there is now under way a thorough study of the metabolism of *P. gallinaceum* both in the chicken and in the mosquito. Fresh approaches to such studies are available. Some of these have to do with new and refined techniques for studying respiration of organisms as minute as the plasmodium, others concern the use of tracer mediums such as the radioactive isotope of phosphorus; still others go deeply into the genetic aspects of the mosquito, seeking to ascertain whether it is possible to develop a strain of mosquitoes resistant to infection with a malaria parasite.

From the various studies comprising this concentrated attack it is hoped that there may be developed a drug against *P. vivax* more efficacious than quinine or any of its present-day substitutes. Despite the vast number of compounds tested by routine screening procedures during the war years, medical men are still without an effective, nontoxic prophylactic and curative agent against vivax malaria. The above studies are intended to provide a rational approach to the search for such a remedy.

In connection with the further study of a group of tropical viruses isolated during the course of epidemiological research on yellow fever in South America and Africa, of which mention has already been made, a certain amount of field work is still going forward. The attention given to these virus diseases by the laboratory is in keeping with the established

policy of coordinating the functions of these laboratories with the work of the field stations. This work on the new viruses follows an extensive period of investigation of the respiratory viruses. The work on respiratory viruses has now been terminated, first, because this field is now extensively covered by other laboratories in the United States and in other countries as well, and, second, because the research on the tropical viruses offered a more unique and promising line of investigation.

The program for the study of the tropical viruses, which was begun during the first quarter of 1949, involves physical characteristics, including size and morphology as determined by filtration, centrifugation and electron microscopy; antigenic and immunological characteristics divulged by neutralization and complement fixation tests; pathogenicity for animals; cultivation and behavior in embryonated eggs; and histopathological reactions induced in animals and embryonated eggs. Besides the application of the more or less established disciplines and techniques, efforts will be made to discover new methods for recognition of the presence and behavior of viruses in infected animals and eggs. In this connection use is made of radioactive isotopes. Much is still to be learned concerning the mechanism of virus-antibody reactions and the factors concerned in insect transmission of virus diseases. It is possible that some of the new viruses may prove unusually well adapted to such studies.

### YELLOW FEVER RESEARCH INSTITUTE, LAGOS, NIGERIA

In 1943 the Yellow Fever Research Institute in Lagos, Nigeria, British West Africa, was established jointly by The Rockefeller Foundation and the British West African Colonies as a successor to the Foundation's West Africa Yellow Fever Commission, which ceased operations in 1934. Its purpose was to undertake a broad program consisting of 1) testing and distribution of yellow fever vaccine, 2) training of personnel in the techniques of work with viruses both in the laboratory and in the field, 3) expansion of facilities as personnel and equipment were added, 4) investigation of jungle or rural yellow fever among human beings and animals, and 5) investigation and research on other diseases in West Africa.

The Yellow Fever Institute in Lagos occupies about 13 acres and includes a total of 19 major buildings. During the last six years the institute in Lagos has carried out numerous investigations.

Some three years after establishment of the institute a detailed study of an outbreak of yellow fever was made at Ogbomosho. At that time the virus of yellow fever was isolated from 33 individuals and three times from *Aedes aegypti* mosquitoes. This investigation showed conclusively that the African in Nigeria tolerates yellow fever very well: the morbidity rate among the nonimmune population is

very high, the mortality rate very low, very likely less than two per cent.

Considerable research has been done on both the vertical and horizontal distribution of mosquitoes. Platforms were built in a large tree and catches were made at ground level and at several heights up to about 50 feet above the ground. The mosquitoes captured at each different level were collected every hour. It was found that *Aedes africanus* were caught almost exclusively at the high levels while *Anopheles gambiae* were caught almost entirely at ground level. After identification the mosquitoes were ground and the suspension injected into white Swiss mice intracerebrally in order to see if the mosquitoes were carrying yellow fever virus. Records were kept of the hourly catches and biting cycles were plotted; the temperature and humidity were recorded hourly.

Another group of studies included research on the horizontal range of flight and the life span of mosquitoes and on the effects of microclimatic variations on their biting cycles. In experiments requiring marked mosquitoes, introduction of radioactive material into the water surrounding mosquito larvae proved to be simpler than the former procedures of dusting and spraying with bronzing powder, which required the handling of adult mosquitoes. Radioactive material absorbed by a mosquito in the larval stage persists in the body of the insect throughout its adult life. The presence or absence of radioactive substances can be easily detected by the Geiger counter. The isotope technique is well suited to mos-

quitoes reared under laboratory conditions or to those whose breeding places are known.

Considerable attention was given at the institute to the development from the 17-D strain of yellow fever virus of a vaccine to be administered by the scratch technique, the low cost of which makes it practical for mass vaccinations. Yellow fever vaccine for administration by the scratch technique was originally developed by French scientists from the dried brain tissue of mice infected with a neurotropic strain of yellow fever virus. At the institute, whole egg embryos are inoculated with the 17-D strain of virus on the seventh or eighth day of incubation. After four additional days of incubation the embryos are removed and ground or homogenized with gum arabic in distilled water to make the so-called vaccine pulp. This pulp is easy to use in desiccated form. It can also be used in combination with smallpox vaccine. When registration lists are prepared beforehand and the persons to be vaccinated ready in a group, a vaccinator with two technical helpers can by the new method vaccinate five persons per minute.

Studies at the institute have confirmed the view that among nonhuman vertebrates the monkey is the chief if not the only reservoir of jungle yellow fever virus. The percentage of monkeys found to be positive (i.e., immune to yellow fever) varied from a few per cent to as high as 30 per cent; in general the higher percentages have been found near the coast. Many of the monkeys raid farms and have fairly close contact with human habitations, and the chain of

infection may be human to mosquito to monkey. There is evidence to indicate that the reverse may occur in the sparsely populated areas, particularly among persons engaged in work in or adjacent to the forest — timber cutters, hunters, farmers. Both Uganda and some areas in South America each have at least one species of mosquito which lives almost exclusively in the forest canopy and can transmit yellow fever and thus carry it from monkey to monkey. They also will bite humans and hence can infect them, but they do not go into the houses and are seldom encountered at ground level. However, cutting down trees or climbing them does bring a person into contact with these mosquitoes — *A. africanus* in the case of Uganda and *Haemagogus spegazzini* in South America.

An important event in 1949 from the yellow fever research point of view was the death in Lagos from yellow fever of two British seamen, neither of whom had been vaccinated against yellow fever. These men arrived in the latter part of April 1949 on a ship which had set out from Hull, England, in February. The ship arrived in Lagos six days after leaving Sapele and Burutu, African seaports. The men were hospitalized in Lagos and died after five or six days of illness. The diagnosis was confirmed by the isolation of yellow fever virus from the blood and by post-mortem examinations. These two tragic cases illustrate that yellow fever is an ever-present threat, that it may be present in a locality without the knowledge of public health officials and that all persons going to

the coast of West Africa should be vaccinated against yellow fever.

Recently work on rabies has been initiated at the institute, and a strain has been isolated from a human case and from a dog as well. Investigations have been started to examine and test animals captured in the fields and forest for the presence of rabies and also to test their susceptibility. Portions of the human strain were inoculated into various primates and rodents. These experiments in general suggested that there is a certain degree of resistance to such experimental infection.

#### YELLOW FEVER RESEARCH INSTITUTE, ENTEBBE, UGANDA

The International Health Division has, since 1936, as a joint venture with the Uganda government, maintained a Yellow Fever Research Institute at Entebbe, British East Africa. At the close of 1949 the International Health Division withdrew from participation in this institute. This action was in keeping with the Division's policy of turning field projects over to local governments when the original objectives in organization, development and orientation of program have been realized. At the end of 1949 the Colonial Medical Research Service is assuming responsibility for the staffing and the activities of the institute, henceforth to be known as the Virus Research Institute. Present plans for the Virus Research Institute include investigation of East African

viruses and rickettsial diseases as well as continued study of yellow fever.

The Yellow Fever Research Institute was established in 1936 to investigate the epidemiology of yellow fever in East Africa. Contributions for the maintenance of this work came jointly from The Rockefeller Foundation and the governments of Uganda and other East African territories. The objectives set forth at the start have in large measure been attained. Yellow fever infections in human beings in Africa are, as a rule, light and often escape detection. Nevertheless it has been shown that yellow fever is endemic in Uganda and that the disease is maintained in forested areas by a monkey-mosquito cycle. The presence of the yellow fever virus has been unequivocably established by isolating it from the human being and by finding it in the wild-caught mosquito. Two species of mosquitoes, *Aedes simpsoni* and *Aedes africanus*, have been identified as vectors. *A. africanus* is the carrier of the sylvan disease among monkeys, and *A. simpsoni* serves as a vector for human beings. A study of the habits and habitats of these insects is in complete accord with the epidemiological role that each of these insects plays. In the course of these investigations a considerable mass of data on the mosquito fauna of Uganda has been gathered together.

Through protection tests carried out at the institute and through surveys made in the regions of the East and South, it has been possible to outline the borders of an extensive area which is the home of

indigenous yellow fever. This area extends from the Red Sea coast of Eritrea and the coasts of Kenya and Tanganyika in the East to a southernmost point well within the borders of Bechuanaland. Although no means of interrupting the sylvan cycle of yellow fever is yet known, vaccination of the human population and mosquito control in populated centers and along lines of communication are now available as means of preventing spread of the disease in man.

During the course of the 13 years' work by International Health Division staff men in East Africa, viruses other than yellow fever were encountered on 28 occasions. Six strains proved to be Rift Valley fever virus, on which a considerable amount of work was done. Six others, later found to be identical with each other, were designated Mengo virus. Subsequently these turned out to be the same as encephalomyocarditis virus, first isolated in the United States. Nine strains, all from human beings and all identical with each other, were designated Bwamba fever virus. Two other strains, identical with each other, and five additional strains, each immunologically distinct from the others and from all other viruses with which they have been compared, are, like Bwamba fever virus, believed to be hitherto unknown. Limited surveys of immunity in East Africa have shown that infection with three of these agents — Bwamba fever, West Nile and Semliki Forest viruses — is quite common in man. Indications are that some of these viruses may have complex epidemiological cycles similar to that of yellow fever.

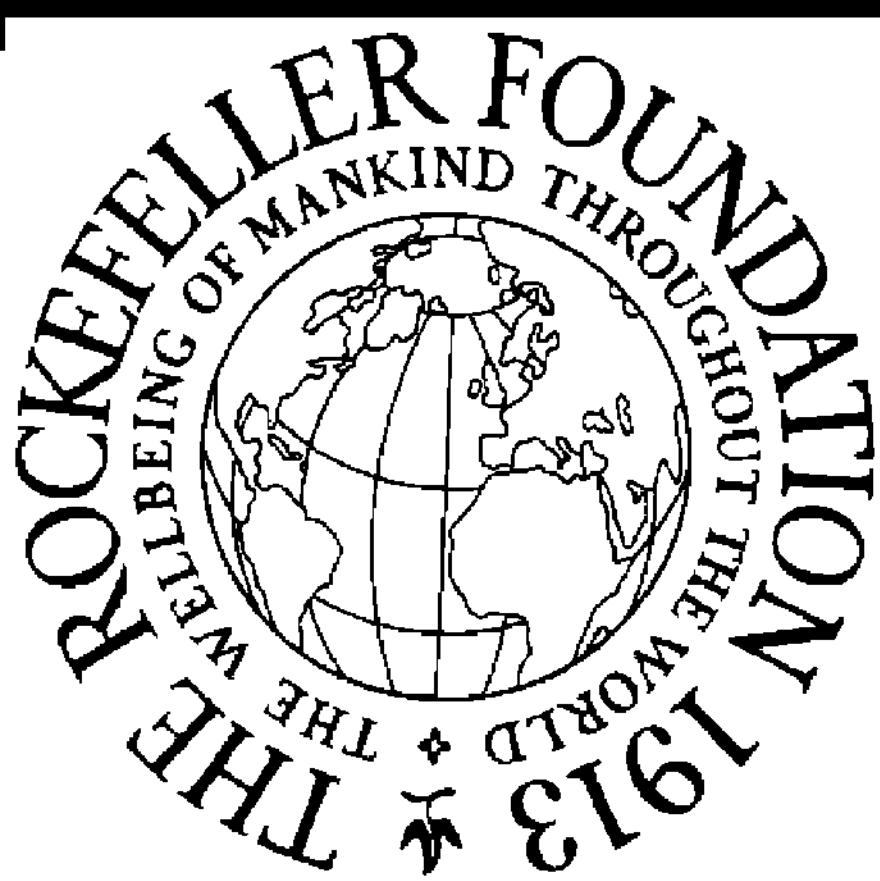
and may affect both man and wild animals on occasion. The East African viruses are part of the group of 18 tropical viruses now being studied intensively in the New York Laboratories of the International Health Division.

#### DISEASE CONTROL PROGRAM

The campaign for the study and control of yellow fever by the International Health Division of The Rockefeller Foundation terminated at the end of 1949. Begun in 1916, it has been conducted in three continents, North America, South America and Africa.

When The Rockefeller Foundation launched its program of yellow fever studies the disease was known to occur in both the New and the Old Worlds. However, it was not until 1927 that Foundation workers isolated the causative virus, thereby obtaining conclusive proof that the disease was one and the same in both continents and laying the basis for profound alterations in our tactics regarding yellow fever. In succeeding years staff workers have obtained a fairly complete understanding of the epidemiology, the diagnosis and the prophylaxis of the disease. Their studies were possible only because of the close liaison between the central laboratories in New York and the several field units in South America and Africa.

The experience gained from yellow fever research has confirmed the International Health Division in the belief that a program of control of specific



## Photograph Excised Here

Dr. Lewis W. Hackett speaking at the unveiling of a bronze plaque commemorating the public health work of The Rockefeller Foundation in Brazil. This ceremony took place on May 3, 1949, during the inauguration of the Doctor Hackett Health Center at Capela Nova do Betim, Minas Gerais, Brazil



## Photograph Excised Here

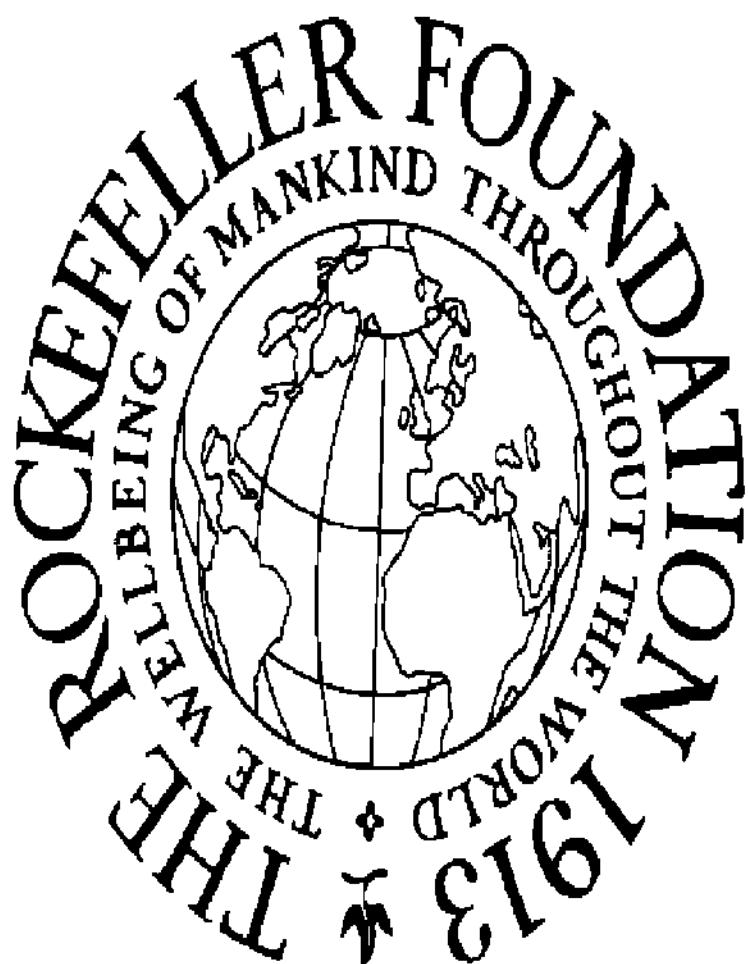
The plaque reads: "On this site in 1916 the beneficent Rockefeller Foundation launched its public health work in Brazil. The Brazilian Hygiene Society has erected this plaque to commemorate the beginning of the Foundation's significant influence in promoting public health in Brazil and in protecting the life and health of our people"



## Photograph Excised Here

One of the insect control squads  
participating in experimental  
studies of insecticides in the  
Province of Latina, Italy

A shepherd's dwelling  
is sprayed as part  
of the Sardinian  
malaria control project



## Photograph Excised Here

diseases is feasible and that it is desirable to continue such disease control operations on the two fronts of home laboratories and the field units.

Malaria, though a less dramatic disease than yellow fever, is of great importance because of its depressant influence on the economic welfare of peoples, particularly those who till the soil and provide food for the world. Since the early twenties this disease has engaged the attention of the Foundation. Studies have been carried on all over the world and, as noted, a concerted effort is now being made in the central laboratories to enlarge our knowledge of the malaria parasite. The field projects in malariology have likewise been concerned with the accumulation of useful knowledge and especially with the critical evaluation of current control procedures. The new insecticides, though full of promise, are not yet wholly understood, and their efficiency in reducing malaria cannot be taken for granted. To obtain further knowledge, the Foundation is supporting studies in Italy, India, Mexico, Tobago and Peru. Sardinia is the scene of an extensive project making full use of former experience gained by The Rockefeller Foundation. In this island efforts concentrate on combating the indigenous vector mosquito. The mosquito population has now been reduced close to the threshold of recognition, though not yet to the threshold of survival. The result, however, is that malaria transmission has ceased to exist. Further details on this work have been given in a previous section of this volume. (See pages 35-40.) The by-products of malaria control bring large

benefits to the island. The heavy burden which the people of Sardinia have borne because of this incapacitating disease has been lifted, and development of the island's resources is free to go forward as never before.

### WORK IN EUROPE

Two major activities of the International Health Division in Europe for the year were: 1) a health survey undertaken by the International Health Division on behalf of the Italian government and paid for by funds left over from the United Nations Relief and Rehabilitation Administration (UNRRA) and by the Economic Cooperation Administration (ECA); and 2) the Sardinian malaria eradication campaign, which was a continuation of the 1948 work. Other activities included the provision of 20 fellowships and 15 travel grants to individuals from the European region and help toward the inauguration of new chairs of public health engineering at the Imperial College of Technology, London, and at the Faculty of Engineering of the University of Rome. Aid was also given to the Danish Technical University, Copenhagen, for development of teaching and experimental facilities in public health engineering and to the University of Naples Faculty of Engineering for the teaching of public health engineering. In addition technical literature was supplied to 30 institutions.

On invitation from the Italian government the International Health Division undertook to organize and coordinate a health survey of Italy. The decree

setting up the survey commission was signed May 1, 1949. A thorough-going survey of public health services in Italy was made during the rest of 1949, with the International Health Division acting as coordinator of the project. The International Health Division, in cooperation with the Italian High Commissioner for Public Health, assembled and directed a group of experts to study the present state of public health administration in Italy and to recommend the means for "translating modern health and medical knowledge most fully into service available to citizens, both sick and well." Selected to serve on the commission of survey were a team of outstanding foreign consultants — including four Americans, one Briton and one Dane — and a counterpart team of Italian consultants, under the over-all direction of Dr. John B. Grant, European director for the International Health Division and Professor Gino Bergami, director of the Institute of Nutrition at Rome.

Also supporting the study were the World Health Organization (WHO), which helped defray the lire costs and furnished WHO personnel to the commission, and ECA, which absorbed the dollar costs of the survey. The task of the commission was "to take a broad view of the work of all Italian resources which might contribute to the health and medical care of the nation, to outline a pattern of relationship among them, and to suggest any intensification or curtailment of the activities of any of them which will make their efforts most productive."

Specifically, six areas were studied: the public health organization and its relation to the population;

environmental health services, including housing and town planning; medical care facilities, including hospitals and health centers; training of medical personnel in all categories; legislation and fiscal arrangements affecting the organization of public health; health insurance and social welfare legislation.

After four months of intensive work, the commission turned in a voluminous report which is being studied by the Italian government as the basis for changes in public health administration and practices. The commission made the following major recommendations:

1. Establishment of a ministry of health responsible for assuring unity of direction and adequate development of health and medical services.
2. Pending such establishment, a coordinating inter-ministerial committee should be set up, composed of all ministers directly or indirectly responsible for health and medical activities.
3. Development of present health and medical services at the "periphery," by the establishing of local health centers.
4. An organized program of financial aid to local health activities by the national government, based on a formula that would give special assistance to underprivileged areas, particularly those in southern Italy.
5. Adoption of a national personnel policy that would make public health and medical work a career service, with adequate salary scales and a merit system of promotion.
6. A sound training program for personnel in the public health services and the provision of sufficient schools to ensure an ample supply of trained personnel.

The survey represents a far-sighted, enlightened effort on the part of the Italian government to im-

prove the administration of public health. The implementation of the commission's recommendations would do a great deal to bring Italy abreast of the most advanced examples of sound public health administration.

Under the direction of the International Health Division staff a large-scale control program aimed at eradication of the malaria mosquito is nearing completion in the Island of Sardinia. By Italian government decree a special entity known as the Ente Regionale per la Lotta Anti-Anofelica in Sardegna was created for this project in the national health department. Supplies, transport and lire funds were originally furnished through the Italian government by UNRRA, but the major portion of the lire funds for 1948-49 and 1949-50 have been supplied from the Marshall Plan Italian Lire Fund. The Rockefeller Foundation, besides providing technical and administrative direction to the project, is supplying a dollar budget for purchases made outside Italy.

Eradication is directed primarily against *Anopheles labranchiae*, the only recognized carrier of malaria in Sardinia. This species is indigenous to the island and when the program started was encountered at all altitudes and in every section. The battle has been carried to every breeding or resting place of this mosquito, whether in houses, grottoes or hidden mountain streams. The immediate result is that the transmission of malaria has ceased in Sardinia. The program has paid off in still another way, for in the course of extensive drainage and clearing operations essential

to the larviciding program, many acres of land have been reclaimed for plough or pasture.

While it is too soon to speculate on the long-range effects of the eradication program, the absence of malaria is bound to bring significant changes in both public health and agriculture, perhaps in the whole island economy. From the point of view of over-all economic recovery the eradication of malaria is a valuable, probably an indispensable, first step. To take full advantage of the new land rendered healthy and profitable for human habitation, however, there should follow extensive measures for social, agricultural and industrial rehabilitation.

The experience in Sardinia and other malarious areas has raised a number of questions with regard to the evaluation of malaria control procedures, and some of these are being studied by research organizations in Italy, India, Mexico, Venezuela, Tobago and Peru. The new insecticides still require a great deal of careful observation, and their efficiency in reducing malaria cannot be taken for granted. In Italy, the Malaria Department of the Institute of Health has been officially designated as an insect control department. It was also selected as an international training center by the World Health Organization in 1949. One function of the department is to determine the efficacy of new insecticides in controlling sandflies and ticks, as well as mosquitoes and flies. During the past year research conducted in the Province of Latina, with the aid of Foundation funds, has included tests of gammexane, toxaphene, "118," "497"

and some new Italian insecticides. Of equal importance is the effort to improve control organization so as to render general insect control economically feasible to the average Italian community.

Another Italian research program which is closely related to the work in Sardinia is being carried out in the Institute of Genetics of the University of Pavia. At the present time the identification of many of the different anopheline mosquitoes presents considerable difficulties. The differences are often minute and lead to other difficulties in the studies of habits, favored environment and malaria potential. For example, one species is believed to be a vector in Palestine and a potential vector in Cyprus, but not a vector in Italy. Although the habits of this species in each of these places have many elements in common, and the mosquitoes themselves are apparently identical, it may be that environmental differences have produced changes which are not now apparent. The aim of the research group at Pavia is to elucidate such changes through study of the chromosome patterns in the salivary glands of the mosquitoes. Studies on the cytology of the differentiation of sex in mosquitoes and attempts at the radio-induction of mutations are also planned. In connection with the eradication work in Sardinia, surviving mosquito species will be studied to determine whether or not they tend to mutate in such a way as to take the place, both geographically and medically, of eradicated vectors.

While the general advance of public health practice in Europe during the past 30 years has of neces-

sity required corresponding advancement in sanitary engineering standards, the growth of this latter field has been largely unplanned. The full possibilities of sanitary engineering have by no means been explored. Even in countries with high standards of engineering and cleanliness, engineers often work independently of the health departments and therefore fail to provide the desired levels of health and convenience.

Elsewhere, it has been demonstrated that the attainment of good sanitary conditions is contingent on efficient organization and coordination of the various public health practices. In the United States, for example, public health officials recognize the sanitary engineer as a full-fledged member of the public health team. The contribution which engineers were able to make in the Medical Divisions of the Army and Navy during the past world war further demonstrated the wisdom of integrating the services of specially trained engineers into the public health program; they helped to bring about unprecedented standards in disease and epidemic control.

The International Health Division is supporting the efforts of several European health departments, universities and institutes of hygiene in raising the standards of sanitation in Europe, and thus improving the health and comfort of the people. At the present time certain European countries are endeavoring to establish adequate sanitary engineering sections within health departments and to institute course work and research in the universities. Such training

will provide a source of trained sanitary engineers capable of carrying out field assignments, serve as a source of replacements for key personnel and, in addition, stimulate and stabilize sanitary engineering developments.

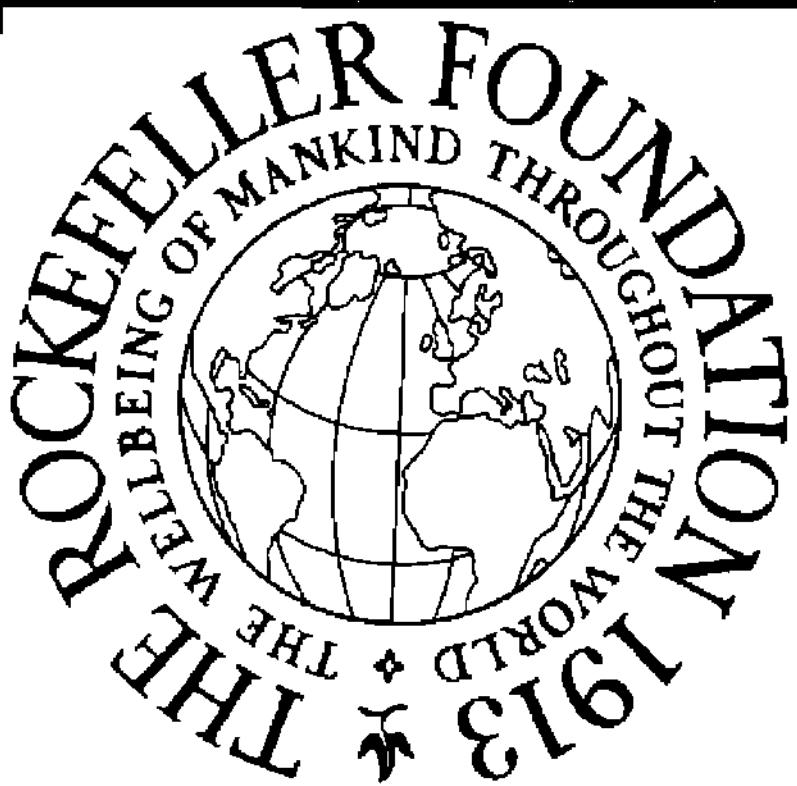
Europe is peculiarly suited to play an active part in sanitary engineering research. Not only does Europe have a large proportion of trained men, but training is largely concentrated in fundamentals such as mathematics, physics and chemistry. In addition, the war has pretty well forced the laboratories to start entirely new programs without any particular reference to what they have done before. Taking these conditions into account, the Foundation a year or two ago recognized the opportunity to support a series of correlated research projects in sanitary science in Europe. By supplying a comparatively small amount of money and advisory service the Foundation felt that it could help to promote a tremendous advance in the theory and practice of sanitation, which would be of benefit to all of the European countries.

The London School of Hygiene and Tropical Medicine is one of the leading institutions of its kind in Europe. For some time, Dr. J. M. Mackintosh, dean of the school, has been developing plans for a new graduate public health engineering course. Since there are definite advantages in establishing such a course in conjunction with a college of engineering, Dr. Mackintosh has enlisted the cooperation of the Imperial College of Science and Technology, which

is also a part of the University of London. In the latter part of 1949 a chair of public health engineering was established in the Imperial College. The engineer selected for this post received an International Health Division fellowship for the academic year 1948-49. The London School proposes to appoint a medical tutor to its staff to coordinate the training offered. In 1949 the International Health Division provided a three-year grant in support of salaries, the development of laboratory and library facilities and other expenses connected with the establishment of the new course.

With a limited enrollment and a careful selection of students, the two schools expect to train a group of competent public health engineers who can take the lead in interpreting certain phases of science and technology related to public welfare. The proximity of such organizations as the London School of Economics and Political Science, the London University School of Town Planning, the Building Research Station, the Water Pollution Research Laboratory, the National Physical Laboratory, the Pest Infestation Laboratory, the Ministry of Works Research Group and the Colonial Department Medical Research Group offers a unique opportunity for the development of a public health engineering department of international significance.

Two Italian universities have also taken steps to promote the teaching of public health engineering. In order to stimulate work in this field the Italian Sanitation Mission of the Unitarian Service Com-



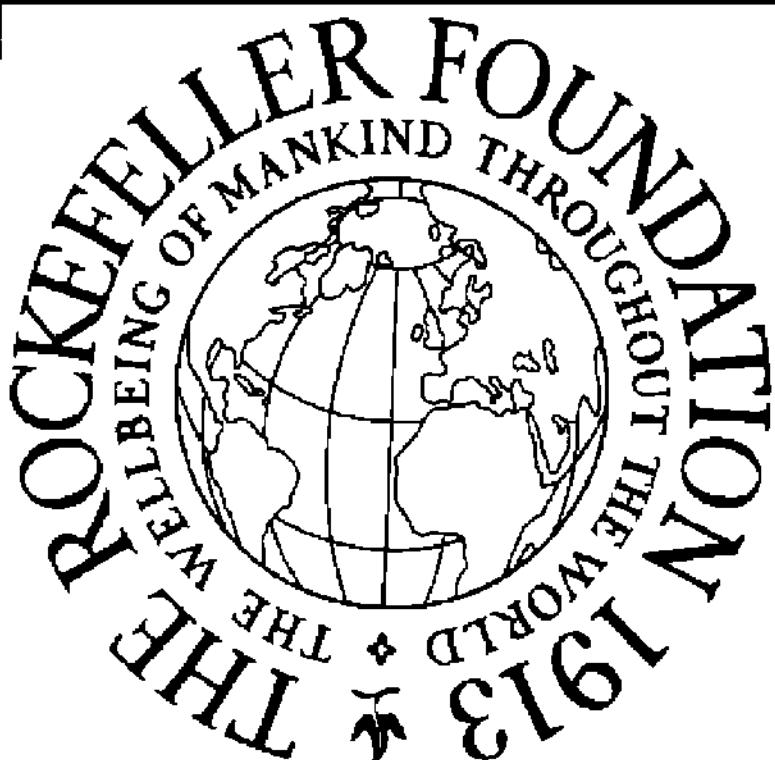
## Photograph Excised Here

A rural tuberculosis clinic in Williamson County, Tennessee,  
sponsored by the State Department of Public Health

The Manitoba Bureau of Maternal and Child Hygiene and Nutrition is helping to  
introduce new services in maternity and nursery units in hospitals throughout the province

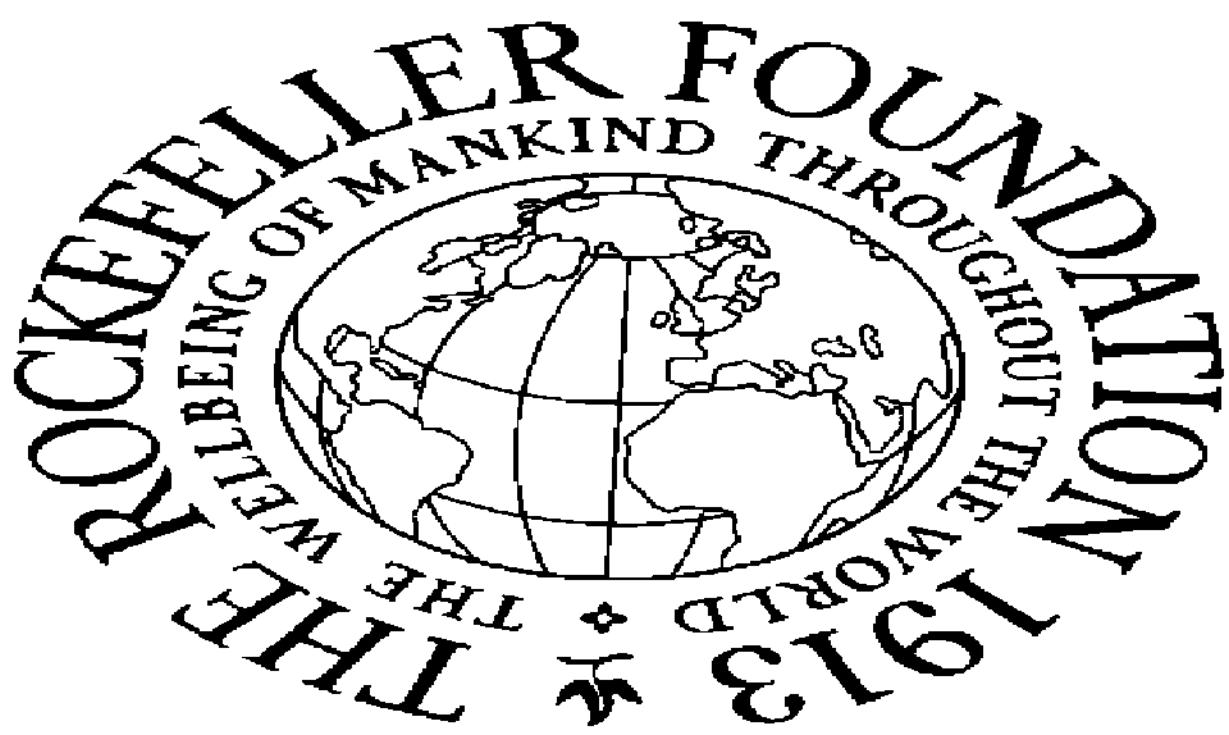


## Photograph Excised Here



Photograph Excised Here

The installation of latrines is  
a basic step in the prevention  
of water-borne diseases.  
A boring crew works inside  
a house in Sindbis, Egypt



Photograph Excised Here

mittee has awarded several fellowships to young Italian engineers for training in the United States. Two of these, one from the University of Rome and the other from the University of Naples, were asked to join the teaching staffs of their universities on their return.

After consultation with Professor Filippo Neri, dean of the Faculty of Engineering of the University of Rome, and Professor Domenico Marotta, director of the Superior Institute of Hygiene in Rome, the International Health Division in 1949 made available a small grant to develop a department of public health engineering at the Faculty of Engineering. The funds will help to defray the cost of equipment, teaching aids and salaries. The development of this project is particularly opportune because a recent law has established training for provincial health officers to be offered at the Superior Institute. A cooperative arrangement may be expected to fill the need for training medical students in modern public health engineering and instructing students of engineering in the medical and biological aspects of public health.

At the University of Naples a small group of men in the hydraulic division of the civil engineering department have carried out a number of experimental projects over the past 20 years. They have published papers on sewage treatment and water purification, and in addition have designed water supply systems, filtration plants and sewage treatment plants for several Italian communities. Although a graduate course in public health engineering has already been

established by the University of Naples, laboratory and library facilities are inadequate. A small grant from the International Health Division is helping to remedy this deficiency and place the course on a sound basis.

Teaching of public health engineering in Denmark has recently been expanded at the Danish Technical University in Copenhagen. The new professor of public health engineering, who received a travel grant from the International Health Division in 1949, is an outstanding authority in his field. His work has received wide recognition in other European countries and also in the United States. In addition to his university post, he serves as consultant on environmental sanitation to the government of Denmark. To assist him in strengthening teaching and experimental facilities in the newly established Department of Public Health Engineering at the Technical University in Copenhagen, the International Health Division provided a modest grant in 1949. These funds will enable the department to institute laboratory demonstrations and investigations, comparable to those in the United States but adjusted to conditions in Denmark.

#### FAR EAST

As noted in the President's Review, on page 5 of this report, the Foundation has during the year withdrawn from its activities in China. Present Far

Eastern headquarters of The Rockefeller Foundation are in Bangalore, India.

Malaria is a serious public health problem in Mysore State, South India. Of its total eight million people, probably half are handicapped by this disease. Thirty-six per cent of all deaths are attributed to malaria, and it seems likely that for every fatality there are at least 100 malaria sufferers. This year the International Health Division renewed its support for malaria studies in Mysore State. Some 20 years ago a Foundation representative carried out in this region basic studies of malaria in cooperation with state health authorities. At that time a former International Health Division fellow became head of the state malaria control. In the past year he has made a thorough study of malaria control projects in the Mediterranean area and Ceylon on an International Health Division travel grant. It is now planned to develop a state-wide malaria control service, supported by a training program and by expanded research facilities. The service is to be financed by state funds. An International Health Division sanitary engineering representative who is assisting with the organization and training of a malaria engineering staff is also helping to develop suitable engineering techniques for this area.

In the new country of Pakistan, the government has taken steps to develop a malaria research and training center in Karachi. The present need for key items of equipment is being relieved through a Rocke-

feller Foundation grant for the purchase and shipment of books and apparatus.

### MEXICO, CENTRAL AND SOUTH AMERICA

In Mexico the International Health Division cooperates with the Department of Health and Welfare by contributing to a number of public health activities that are of interest from the research point of view. One of these has to do with the new mosquito insecticides. Malaria surveys throughout the State of Veracruz, carried out jointly since 1946 by the International Health Division and the Mexican government, have thrown a great deal of light on malaria as a public health problem in this state. Communities are surveyed for the amount of malaria present, then studied both entomologically and from an engineering standpoint. If the problem is found to be of sufficient magnitude to merit attack, a control method is formulated. In most instances this control work has centered around DDT spraying, supplemented sometimes by antilarval work and engineering projects.

There has been difficulty in obtaining accurate measurements of results achieved by DDT. Some of the observations in Mexico concerning DDT are at variance with experience gained elsewhere. The United States Public Health Service group at Savannah, Georgia, found that DDT apparently lost its effectiveness in a few months when sprayed on adobe. Careful tests were carried out, therefore, on a

variety of Mexican building materials sprayed with known quantities of DDT, and also on the specific effect that DDT has on the Mexican mosquito, *Anopheles pseudopunctipennis*. Considerable thought and work is being given to finding a way that will give scientists a more accurate index of what is actually achieved through use of DDT.

In the Caribbean region the International Health Division maintains cooperative activities in the British West Indies, Colombia, the Dominican Republic and Venezuela. In the British West Indies a malaria control program has been undertaken in Tobago, an island of 1,400 square miles and 30,000 inhabitants. An effort is made to spray all malaria mosquito breeding places at least twice a year. The results thus far have been unusually good. Malaria incidence has been reduced to extremely low levels. Adult malaria mosquitoes are rare. While there can be no pronouncement as to whether malaria has been eradicated from this island, it is certain that for the present at least the disease has been reduced to a point where it is no longer a serious problem. Since potential breeding places continued to exist, during 1949 authorities on the island, in cooperation with a Foundation consultant, planned extensive drainage projects.

In the Dominican Republic a general health survey was terminated on June 30, 1949. A report of the findings over the past two years, prepared by the Minister of Health and Social Assistance, covers such topics as medical education, public health administration, malaria, hookworm and nutrition. Hook-

worm and malaria aggravated by nutritional deficiencies are prevalent. The government of the Dominican Republic, acting on recommendations made in this report, in 1949 set up a Division of Endemic Diseases for the study and control of hook-worm and yaws. Headquarters have been established in La Vega.

In Venezuela the Malaria Division of the Health Department is carrying out investigations on residual spraying against malaria mosquitoes. A special feature of this work is that attention is paid to household pests other than the mosquitoes and to insects of medical importance such as triatomids, *Aedes aegypti* and domestic flies.

In Colombia a contract has been signed with The Rockefeller Foundation for aid in organizing and installing the National School of Hygiene in a large building in Bogotá formerly occupied by the National School of Nursing. The Foundation representative is acting as a consultant. It is expected that the first courses in the new school will begin early in 1950.

In Chile the International Health Division began active work in collaboration with the national Department of Health in 1942. The first cooperative project was to set up a local health demonstration unit in Santiago to serve as a center where health personnel could be trained. This health center, Quinta Normal, is setting the pace for other centers in the country. It has been especially active in a campaign to secure a safe water supply. Much has been

done in developing a community spirit. In 1949 the health center began to give BCG tuberculosis vaccine to infants, preschool children and school children. This vaccination is done on a voluntary basis. Its successful administration depends upon adequate preparatory educational work. The Quinta Normal is now financed almost entirely by Chilean funds. The same applies to the School of Public Health in Santiago, of which Quinta Normal has been the training area since 1943.

The School of Public Health now occupies a prominent place in the public health field. Its influence is felt beyond the borders of Chile. A course in hospital administration is to be included in the curriculum in 1950. There is close cooperation with the Medical School of the University of Chile, the national Department of Health and the Bacteriological Institute.

The Rural Health Service at Aconcagua, although only two years old, has created interest both within and outside of Chile. One of its chief activities has been the development of maternal and infant welfare services in rural districts.

The Rockefeller Foundation in Bolivia is cooperating with the Division of Rural Endemic Diseases, which is a part of the Ministry of Health. This division carries out a number of services dealing with yellow fever, malaria, plague, typhus and hookworm. The Rockefeller Foundation is making a substantial contribution to this work. Yellow fever vaccination

has continued in areas where jungle yellow fever occurs. Some 19,000 persons were vaccinated up to the end of October 1949.

In connection with typhus there has been carried out some original work in delousing procedures. From experiments it became evident that beds and blankets as well as persons must be treated with DDT and that a single treatment is not enough, although two treatments at intervals of a week seem to give good results. In the program of using DDT against typhus almost 1,000 persons have been given DDT treatment in Bolivia.

The yellow fever program of The Rockefeller Foundation in Brazil, which began in 1923, has during the 27 years of its progress touched upon all aspects of the epidemiology and control of that disease. In 1949 the Foundation terminated its yellow fever work in Brazil and the laboratory building, equipment and Brazilian personnel were officially turned over to the Oswaldo Cruz Institute at Rio de Janeiro on December 31.

On May 3, 1949, a memorial plaque was unveiled at Capela Nova do Betim, Minas Gerais, to commemorate the work of the first medical commission that was sent by The Rockefeller Foundation to Brazil. Dr. Richard M. Pearce, Dr. John A. Ferrell and Dr. Bailey K. Ashford sailed from New York in January 1916 to establish their first post at Capela Nova in the State of Minas Gerais; Dr. Lewis W. Hackett, at that time the representative of the International Health Board in Brazil, was put in charge

of the first four field demonstrations in hookworm control. It was most appropriate, therefore, that Dr. Hackett himself was able to give the address for the unveiling of that memorial plaque.

In the above report special attention has been paid to the aims, purposes, general plan and the scope of work of the International Health Division. Details on the research work carried out by staff members both in laboratories and in field stations are reserved for a special report printed separately and available on request. See also the section on fellowships and grants in aid in this volume which discusses briefly the current fellowship activities of the International Health Division.



# **THE MEDICAL SCIENCES**

## THE MEDICAL SCIENCES STAFF

During 1949

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ALAN GREGG, M.D.

*Associate Directors*

ROBERT S. MORISON, M.D.  
WADE W. OLIVER, M.D.

*Assistant Director*

ROBERT R. STRUTHERS, M.D.

# THE MEDICAL SCIENCES

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## THE MEDICAL SCIENCES

**P**SYCHIATRY, neurology and physiology continued as the major fields of interest of the Medical Sciences in 1949. A total of \$1,545,935 was allocated by the division during the year, mostly to projects within those categories. As last year, there were a number of grants to institutions in this country and abroad for research in fundamental neurophysiology. Three appropriations were in the field of endocrinology.

A pioneer school for training skilled psychiatric aides of professional caliber was established by the Menninger Foundation with the help of The Rockefeller Foundation, and aid was extended to three schools for support of teaching and research in their departments of psychiatry.

The 1949 grants reveal a certain emphasis on the study of various aspects of healthy human activity. Several appropriations were made to advance the potentialities of psychiatry and psychology in promoting human happiness, both individual and collective. The University of California received a substantial grant to help found a new institute that will concentrate on studying markedly happy and successful persons. Support was renewed for the

research on normal growth and development at the Child Research Council of Denver and for the studies in sex psychology and physiology sponsored by the National Research Council. Support was given to the Tavistock Institute of Human Relations for its work in utilizing the principles of clinical psychiatry and psychology to solve group problems, particularly in industry.

Other projects to which support was given include work in rehabilitation of neurological patients at New York University; development of the history of medicine and related subjects at Johns Hopkins University; a program of research at the University of Chicago on treatment of less serious personality disorders; and a plan to provide Japanese medical schools with recent medical literature. The division also administered a large number of fellowships and grants in aid, which are discussed in a special section of this report.

PSYCHIATRY, NEUROLOGY AND PHYSIOLOGY  
UNIVERSITY OF CALIFORNIA  
INSTITUTE FOR PERSONALITY ASSESSMENT  
AND RESEARCH

In line with the view that as much may be learned from the study of successful people as from investigating the deficiencies of the unsuccessful, the University of California, Berkeley, this year established an Institute for Personality Assessment and Research under the direction of Dr. Donald W. MacKinnon.

At this institute psychological assessment of individuals forms the basis both for fundamental research into personality organization and development and for important practical activities, such as selecting personnel, evaluating the results of counseling and psychotherapy and improving intergroup relations.

Dr. MacKinnon and his colleagues particularly want to develop ways of identifying those personality characteristics which are involved in adjusting to our modern industrial society. Dr. MacKinnon had a considerable experience under the Office of Strategic Services during the last war in selecting prospective intelligence agents, and several other staff members also participated in that work. In the course of these studies many ingenious testing procedures were devised. But they had several drawbacks. The urgency of the military situation made it necessary to apply tests without waiting to submit them to thorough analysis and also prevented adequate follow up of the careers of the men chosen. Hence the validity of many of the procedures, as well as their theoretical foundations, must now be re-examined. This the institute proposes to do.

In order to secure as subjects properly motivated, normal and supranormal individuals who would be available for follow-up study, the institute operates in part as a center for assessing applicants for positions or for admission to the professional schools of the university. Thus, while the abnormal are not excluded, the normal and superior individuals are in the focus of attention. Several investigators, using

a variety of techniques, cooperate in the study of the same individuals over a three or four-day period, during which the subjects live and have their meals at the center. This approach makes possible consideration of numerous variables in diverse social and working situations and also permits study of group structures and attitudes.

Special care is given to determining just which defense mechanisms result in comfortable or at least effective adjustments, since past research has shown that many successful persons display the same basic anxieties which are pointed to as causes of illness by psychiatrists whose experience is entirely clinical. It may be that some of psychiatry's basic assumptions require revision — revision that psychiatrists cannot make because of the primary necessity to relieve the immediate distress of those who consult them. The institute also offers advanced students opportunities for study and research in the fields of human motivation, personality and certain areas of social psychology.

The University of California has furnished funds for the building to house the institute and for a maintenance budget. The Rockefeller Foundation has granted \$100,000, available for three years, for salaries, equipment and supplies.

#### LONG ISLAND COLLEGE OF MEDICINE PSYCHIATRY

The sum of \$20,000 was granted by the Foundation to the Long Island College of Medicine for develop-

ment of the Department of Psychiatry under the direction of Dr. Howard W. Potter during 1949. The affiliation between the school and the Kings County Hospital, which has a 400-bed psychiatric hospital, has been strengthened, and there are good prospects for the further development of teaching and clinical services in psychiatry. In addition psychiatric service for the medical and surgical departments of the hospital is receiving new stress with a view toward eventual support of such service by the municipal authorities.

The Long Island College of Medicine has been selected by the State of New York as the nucleus of a state-supported medical school. The financial stability of the school and of the Department of Psychiatry is thus assured. The present grant not only permitted prompt establishment of the new program but helps to set an appropriate level for future support of the department.

#### HARVARD UNIVERSITY RESEARCH IN EPILEPSY

Epilepsy, which varies from a malady of frightening severity to a mild and easily controllable disability, has been an enigma for centuries. Much of the present increasing acceptance of epilepsy as a "natural" disease rather than a supernatural and awesome affliction has been the result of unceasing efforts at public education. To this Dr. William G. Lennox of the Harvard Medical School and his colleagues have devoted themselves with notable suc-

cess. They have sought not only to develop new diagnostic and therapeutic tools to place in the hands of physicians and train new workers in the field, but also to impress both medical men and lay persons with the realization that epilepsy, like many another disease, deserves and will ultimately yield to intensive research. Dr. Lennox participated in the formation of The League Against Epilepsy, organized to promote better understanding and treatment of the disease.

For the past 12 years Dr. Lennox has directed research in epilepsy at the Harvard Medical School, the Boston City Hospital and the Boston Children's Hospital. In this work he has attempted to combine laboratory investigation with a sociological approach, taking into account the human problems that confront the patient, his family, friends and employer. Out of this study have come clarification of the classification and diagnosis of convulsive disorders, the establishment of electroencephalography as an essential tool in the study of epilepsy and the appraisal of many valuable therapeutic drugs.

The removal of his laboratories four years ago to the Boston Children's Hospital and the establishment of a clinic there made it possible for Dr. Lennox and his group to direct most of their energies to patients in whom the disease is only beginning and in whom the possibilities for control and adjustment are therefore greatest. A grant of \$30,000 for two years beginning in July 1949 carries forward 12 years'

support by The Rockefeller Foundation and is mainly toward salaries of the research staff.

#### TAVISTOCK INSTITUTE OF HUMAN RELATIONS PSYCHIATRY IN INDUSTRIAL MANAGEMENT

In the politico-economic crisis today facing Great Britain, problems of industrial management loom larger than ever before. One of the most important, if not the most important, component of these problems concerns improvement of human relations in industry. This is the particular field of interest of the Tavistock Institute of Human Relations, London, a recently formed organization that has taken over the research program of the Tavistock Clinic. The latter now operates only in the field of clinical psychiatry. It is generally agreed at the institute that the economic uncertainties confronting England cannot be resolved without taking into account many problems of human attitude and feeling. The staff at the institute are therefore experimenting with the application of the principles of individual or personality psychology to the functioning of groups. This idea was suggested by the success of several members of the Tavistock Clinic in working out urgent practical questions of military morale and working efficiency during the recent war; transfer of the method to difficulties of the civilian world is proving promising, although difficult.

The institute staff includes members from the fields of psychology, psychiatry, economics, anthropology,

education and industry, so that it is well equipped to fulfill its intention of functioning as an institution of applied social science, making use of the conventions and practices of medical psychology and the tenets and principles of sociology. Since it aims not only to develop research but to meet recognized needs of the community and aid in solving actual problems, it has organized its work in three phases: research, training and application.

Research includes the development of methods for studying group behavior and the changing of group attitudes. A new journal, *Human Relations*, was established recently by the Tavistock Institute together with the Department of Group Dynamics at the University of Michigan in order to define more clearly this young and as yet relatively abstract field. The training program arranges informal seminars in personal and social psychology and provides opportunities for formal work in psychoanalysis, including a personal training analysis. And, of course, all the work of the institute may be considered training in that it continually furnishes new experiences and situations for the participants. Under the heading of application are numerous projects carried out in conjunction with industrial firms. They include work on industrial morale, personnel techniques, intramanagement relationships and the relationship of home and community life to on-the-job behavior. In addition, the institute collaborates with journalists and writers to keep the public informed about progress in the social sciences.

Various business and manufacturing firms finance projects in which they are involved. But funds for study and controlled evaluation of the work in progress, necessary for the evolution of generally applicable principles, must be sought elsewhere. The Rockefeller Foundation has given assistance to the Tavistock Clinic for research in neurophysiology and psychosomatic medicine since 1936. In 1949 an appropriation of \$121,200 over a period of three years was made for support of the Tavistock Institute of Human Relations.

#### PRINCETON UNIVERSITY PSYCHOLOGY OF MOTION PERCEPTION

Current studies in the physiology and psychology of visual perception show in some degree the impact of the pioneer work of Professor Adelbert Ames, Jr. Professor Ames' own studies developed out of his investigations in the field of physiological optics at Dartmouth College, Hanover, New Hampshire. The Rockefeller Foundation supported these basic studies through grants totaling \$250,000 over a period of 11 years. Although he retired from Dartmouth in 1947, Professor Ames has continued to carry out an active and productive research program on the nature and origin of visual perceptions with a privately supported group known as The Hanover Institute.

These investigations indicate that assumptions derived from prior experience affect us more in forming our perceptions of static objects than the mere size, shape or position of the objects themselves. Such

findings quite naturally led to questions about perception of moving objects. Exactly why and how do stationary objects sometimes seem to move and moving objects seem to stand still? At present Professor Ames is collaborating in research on the quantitative aspects of perception with a group in the Department of Psychology at Princeton University. In 1948 The Rockefeller Foundation appropriated \$45,000 over a three-year period to support the project at Princeton. An additional grant of \$25,000 was made in 1949 to aid Professor Ames' work during the year and make possible closer cooperation between the groups at Hanover and Princeton.

#### MENNINGER FOUNDATION SCHOOL FOR PSYCHIATRIC AIDES

One of the paradoxes in the care of the mentally ill is that the least trained person — the psychiatric aide — is usually in the position to exert the most influence on the course of treatment. Originally, aides were introduced into mental hospital wards to take care of housekeeping details and to maintain order. Authorities now recognize that since the psychiatric aide or attendant spends more time with the patient than anyone else, he is of great potential value in aiding the patient's recovery. Unfortunately, little effort has as yet been made to develop training programs for this key group of workers or to improve their status on the psychiatric team and their wages.

In 1947 the Menninger Foundation, with a grant in aid from The Rockefeller Foundation, began an

extensive study of this situation and the ways in which it might be remedied. As a result of the findings, plans have been made to establish a school to train competent and skilled aides who will be able to occupy positions of leadership in hospitals throughout the country and aid in raising standards for this category of personnel. The Rockefeller Foundation is helping to get this project off to a start with a three-year grant of \$70,575.

The Kansas legislature has voted sufficient funds to establish a psychiatric training center at the Topeka State Hospital, where the school will be located. Necessary classrooms and clinical facilities will be provided by the hospital, major teaching by the Menninger Foundation. A class of 25 students, selected by the Menninger authorities, will enter every six months for a twelve-month course. Approximately 75 per cent of the time will be devoted to practical clinical training with particular attention to developing the maturity and emotional balance of the student. For the first three years there will be no tuition fees, and students will receive \$150 a month from the hospital for the work they do while in training.

The training of a certain number of competent psychiatric aides represents but one step in solving the over-all problem. But it is hoped that the existence of this group of trained personnel will stimulate hospital officials to demand a higher grade of attendant and to improve their status and compensation. This in turn should make possible continuance of the school on a tuition basis, with the hospitals paying

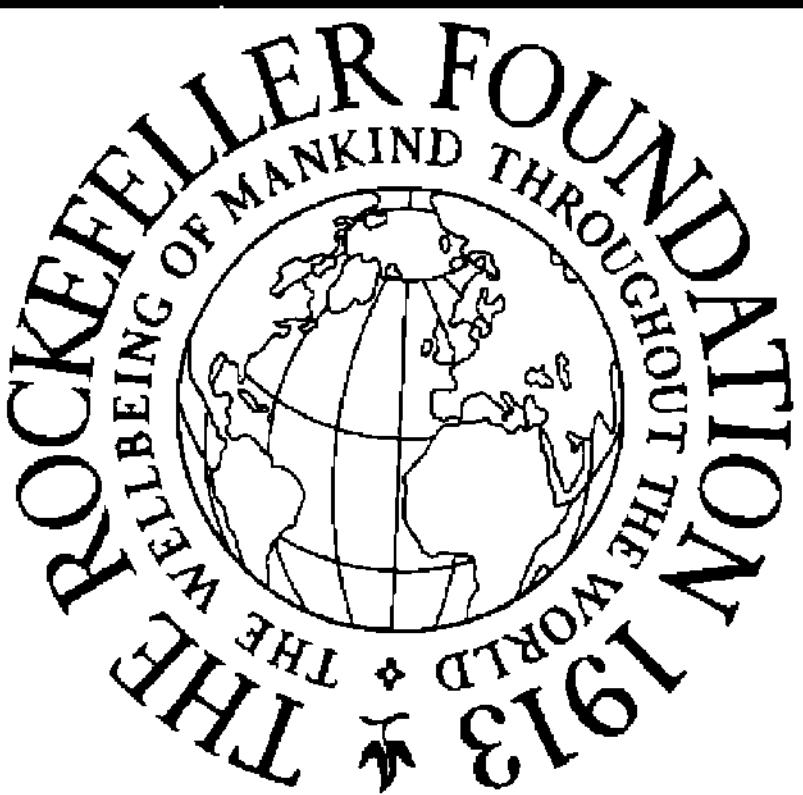
their students while in attendance as part of their inservice training, and could eventually lead to the establishment of other similar schools.

#### NEW YORK UNIVERSITY PHARMACOLOGY

A one-year grant of \$1,000 was made in 1949 to New York University for support of the research of Dr. Otto Loewi, research professor of pharmacology at the College of Medicine. A former Nobel prize winner and discoverer of the chemical mediation of nerve impulses, Dr. Loewi came to this country from the University of Graz under the displaced scholar program to which the Foundation contributed. Since his arrival he has continued to make valuable contributions to the knowledge of the way in which drugs act. His present research is along three general lines: 1) continued study of the interaction between various substances which either depress or stimulate the heart; 2) an investigation of the curious fact that sodium fluoride increases the heartbeat although its only known biochemical effect is to depress enzyme action; and 3) an investigation of the mechanism by which the heart destroys nucleotides, which are components of the acid found in the nucleus of cells. The Foundation grant is toward the salary of a part-time technician and some expendable supplies for these studies.

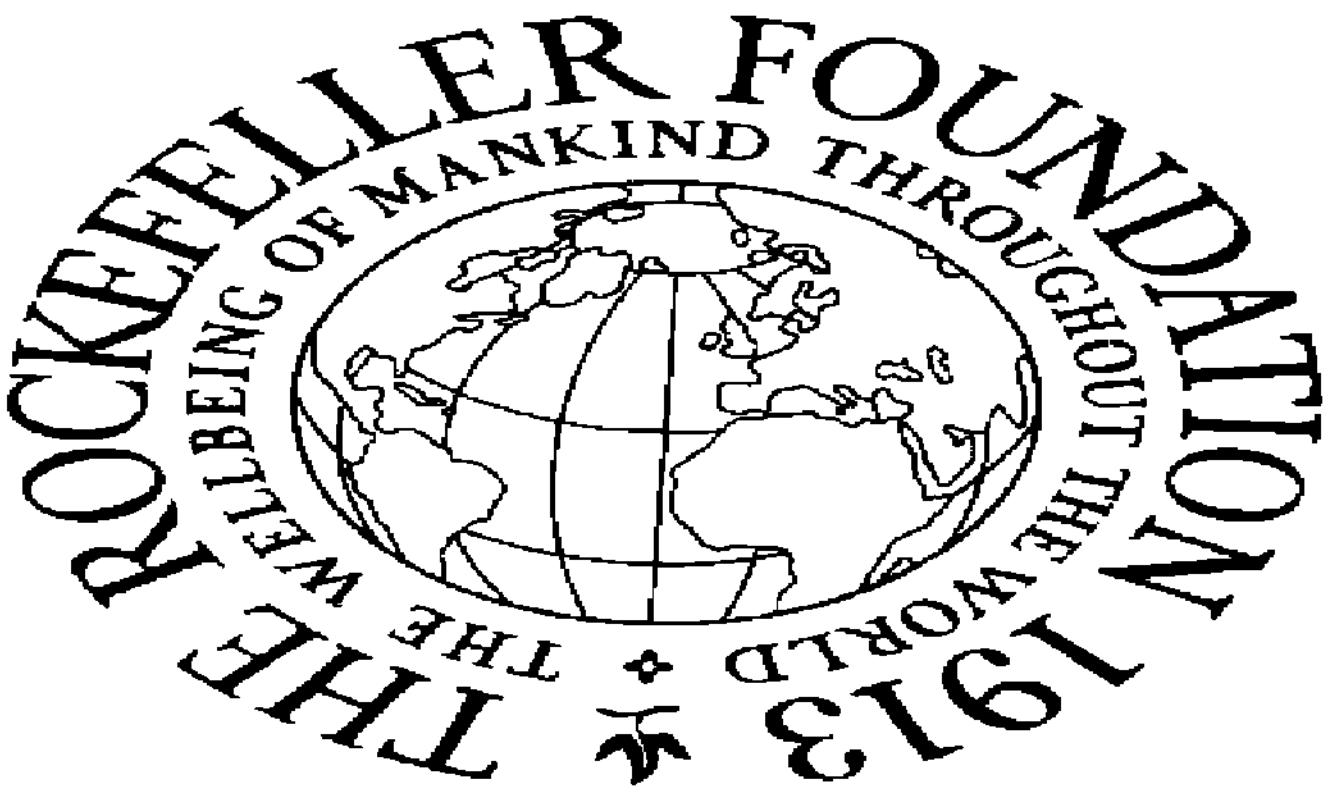
#### INSTITUTE OF ANDEAN BIOLOGY HIGH ALTITUDE PHYSIOLOGY

The Institute of Andean Biology, a part of the Medical Faculty of the University of San Marcos, Lima,

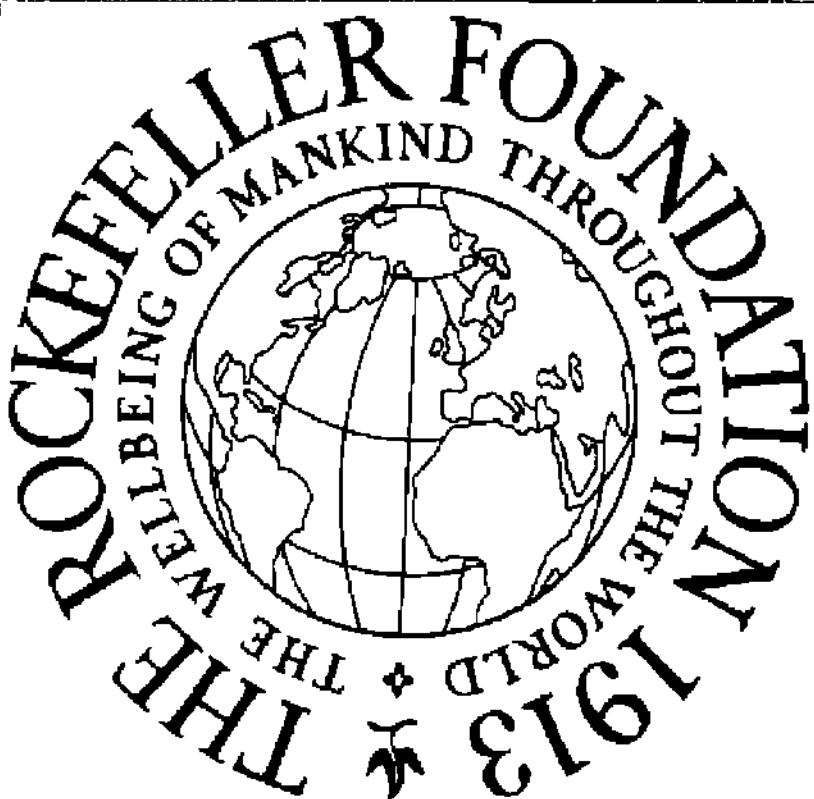


Photograph Excised Here

The Allan Memorial Institute of the Department of Psychiatry, McGill University.  
Below, technicians in the gerontologic laboratory



Photograph Excised Here



## Photograph Excised Here

The director of the school for psychiatric aides at the Menninger Foundation, Topeka, Kansas, lecturing before a group of students

Members of the Department of Psychology at the University of Chicago hold discussion meetings regularly as part of their research program in nondirective psychotherapy



## Photograph Excised Here

Peru, is a medical research institution devoted chiefly to the study of the effects of high altitude environment on the human body. Recently, with government funds, it completed a new laboratory in Morococha, in the Andes, so that it might extend its program of research. The new laboratory, directed by Dr. Alberto Hurtado, a former Rockefeller Foundation fellow, is situated at an altitude of 14,900 feet, which makes it the highest laboratory in the world and a potential international center for research in the field of aviation and high altitude research. The Rockefeller Foundation has given support to the institute since 1934. In 1949 a further grant of \$50,000, available until the end of 1951, was made to permit the purchase in the United States of equipment for the laboratory at Morococha.

With the continued progress of aviation the field of high altitude physiology takes on increasing significance. More must be known about the adaptation of the human and animal system to high altitudes and the effects of these altitudes, subjects now recognized as forming part of the new science of physiologic climatology. The location of the Morococha laboratory is uniquely suitable for this purpose; the few existing similar laboratories are at heights of only 10,000 feet or less, which physiologists agree are below the level of greatest physiological significance today. Since Morococha has a permanent population of about 4,000 persons and is only 93 miles from Lima, which is at sea level, the laboratory is in a position to investigate not only the effects of a low pressure environment on human beings and animals born and raised under such conditions, but also the adaptive

changes undergone by individuals coming from sea level to such a rarefied height.

At high altitudes the air is under much less atmospheric pressure than at sea level and hence is much less dense. This means that a given volume of it contains far less oxygen; in other words, there is less oxygen in each breath a person takes. But the body continues to require an adequate oxygen supply and all the mechanisms for extracting oxygen from the air breathed are therefore multiplied or speeded up. What happens to the individual who transfers from a place of low altitude to a great elevation, be it on an Andean plateau or 15,000 feet up in a plane, is related directly or indirectly to this need for oxygen. Unfortunately, before the body adjusts to the lowered oxygen concentration of the air, severe symptoms may appear. In some instances they persist for a long time and acclimatization never occurs. Fertility may be reduced. The mechanisms which accomplish adjustment need elucidation as the first step toward understanding acclimatization.

Among the problems receiving study at the institute is the determination of the extreme respiratory, circulatory and metabolic variations occurring at high altitudes. Which of them, judged pathologic in persons at sea level, are normal for those living at high altitudes? Normal soldiers, for instance, show an unusual type of "coronary wave" in their electrocardiograms at 15,000 feet. Another series of investigations under way follows two general outlines. In one, sea level men are the subjects and the climates at different altitudes are the variables; in the other, a

specific climate is the constant and subjects from different altitudes are the variables. Research in genetics and in veterinary medicine, in cooperation with the Genetics Laboratory and the Faculty of Veterinary Medicine of the university, is also in progress. The results of the expanded program at the Institute of Andean Biology should prove of interest and importance to physiologists everywhere. Clinicians concerned with diseases characterized by anoxia, or deficient oxygen supply to the tissues, also stand to gain new knowledge.

#### UNIVERSITY OF AARHUS PSYCHIATRY

Because of its small geographic area and the relative homogeneity of its population Denmark presents unusual opportunities for the study of some aspects of mental disease less commonly observed in large countries with heterogeneous populations. Among the institutions anxious to avail themselves of these opportunities is the Medical School at the University of Aarhus. The school is closely affiliated with a well staffed 700-bed state mental hospital. It also directs several outpatient departments connected with the general municipal hospital. Basic equipment is available for research and teaching in the organic and the psychological phases of mental diseases. The school is now seeking expansion of both teaching and research in psychiatry.

The professor of psychiatry at the school, Dr. Erik Strömgren, has planned advances in these two directions. He wishes to introduce the principles of

dynamic psychology to his students. He also intends to make an extensive study of the relationship of genetic to environmental factors in the pathogenesis of manic depressive insanity, and a number of skilled investigators will collaborate with him in this work.

The Rockefeller Foundation in 1949 allocated \$25,960 over a five-year period to the University of Aarhus for support of research and teaching in psychiatry under Dr. Strömgren.

#### UNIVERSITY OF CHICAGO PSYCHOTHERAPY

Care, treatment and advice for troubled people is at present provided in a variety of ways. These include the formalized activities of medical psychiatrists, the somewhat less easily defined procedures of clinical psychologists and many other forms of counseling, such as that given by personnel managers, college deans and the like. Two things, however, hamper progress in this branch of mental hygiene: the demand for psychotherapy and counseling far outruns the number of persons qualified to administer them, and the practice of psychotherapy has now gone far beyond any properly validated theoretical foundations. A current research project at the University of Chicago, directed by Dr. James G. Miller, seeks to help repair these weaknesses.

Since the training of medical psychiatrists takes many years, today's psychiatrists alone cannot alleviate the shortage of personnel within a reasonable period. Nor can it be established *a priori* that formal

medical psychiatry is the only or even the best way of dealing with all personal difficulties. These considerations have stimulated the exploration of other procedures. The group in the Department of Psychology at Chicago associated with Dr. Carl Rogers have spent many years developing the method known as non-directive counseling.

The adherents of this school hold that the psychotherapist should not give direct advice as to the solution of the real life problems of his clients nor seek to unravel deep-seated conflicts, but rather that the counselor should guide the client into solving his own difficulties. They rely mainly on the establishment of a cordial, understanding relationship between the therapist and the client. Since all types of psychotherapy make use of this technique in some degree, it is especially important that its dynamics be studied carefully.

The group at Chicago is composed of persons trained in psychotherapy and in the techniques of experimental psychology. Two staff members are physicians, and in any case in which the client thinks or the counselor suspects that the situation may involve a medical problem, these men are consulted and the proper course of action then followed. For nearly ten years voice recordings have been made of interviews with clients. They serve as the basis for the formulation of analytical methods, and their object is to correlate events in the interview with changes in the observable behavior or subjective feelings of the client. A prominent feature of the

work consists in the attempt to introduce quantitative methodology into the appraisal of psychotherapeutic processes and in devising methods for studying them.

The University of Chicago supplies space, basic equipment and major salaries for the project. The Rockefeller Foundation has granted \$45,000 over a two-year period to permit expansion of the study; the funds are primarily for salaries of additional research associates, equipment and travel expenses.

#### UNIVERSITY OF OREGON PHYSIOLOGY OF PAIN

At the University of Oregon Medical School, Portland, research workers in the Department of Surgery this year began a comprehensive investigation of the problem of pain. Although pain is perhaps the clinical phenomenon most familiar to laymen, there is as yet little clear understanding of the basic mechanisms involved in its various expressions. Part of this is due to the fact that pain is almost entirely subjective. Dr. William K. Livingston, chairman of the Department of Surgery, has organized the project at Oregon with this circumstance in mind. Under his direction, practicing neurologists and surgeons have combined their efforts with physiologists and anatomists in an integrated clinical and laboratory study of pain.

Since human beings, who alone possess the ability to report on their experiences, are the best subjects for study, the investigation centers about patients with chronic pain. The department operates what

may be called a pain clinic, to which such patients come. The aim of the clinic, however, is to find the how and why of particular kinds of pain, rather than to treat large numbers of persons. Therefore, the group concentrates on a relatively small number of selected cases. Each receives a thorough clinical workup followed by intensive laboratory tests, notably electronic determinations of different aspects of nerve function.

There is a good deal of clinical evidence that chronic pain affects and is affected by more than the nervous system. By way of the nervous system, pain produces disturbances in blood vessels, sweat glands and skeletal muscles, and these in turn exert an effect upon the pain. With the use of a number of electronic recording techniques Dr. Livingston and his colleagues are attempting to provide graphic demonstrations of the abnormal patterns of electrical activity in the skin, blood vessels and muscles that accompany the disturbances. Analysis of these may shed light on the clinical findings and furnish clues to therapy.

Dr. Livingston and his colleagues are devoting particular attention to the peculiar examples of persistent pain which sometimes follow industrial accidents or war wounds. Dr. Livingston first became interested in the problem in the course of his practice in industrial and traumatic surgery. During the last war he was in charge of a special unit for the study and treatment of cases of persistent pain which came to him from the Pacific theater of operations. Ordin-

narily pain disappears when the condition responsible for it no longer exists. In a fortunately small percentage of cases, however, the pain continues even though the injury has long since healed. The extreme form of this disability, known as Weir Mitchell's causalgia, is severely incapacitating. No presently known physiological mechanisms suffice to explain causalgia, and the malady has aroused the sympathy and the curiosity of many medical men.

The Rockefeller Foundation has made a number of small grants to the University of Oregon Medical School for research in neuroanatomy and neurophysiology since 1935. The present project, with its synthesis of clinical and physiological investigative methods, should yield results of value to practicing physicians and research workers alike. A grant of \$30,000 for two years has been made by the Foundation in support of the study.

#### NEW YORK UNIVERSITY NEUROLOGY

The recent war produced in young and vigorous men handicaps ordinarily associated with the more advanced in age. Fortunately both military efficiency and a public sense of moral obligation called for prompt remedial action, and large scale programs to develop and carry out methods of rehabilitation got under way. The rehabilitation program of the air forces was headed by Dr. Howard A. Rusk. In the course of their efforts Dr. Rusk and his coworkers

devised procedures of almost spectacular effectiveness. Their ability to shorten the convalescence of recently injured airmen was a valuable military asset. But still more significant, they were able to free some veterans bedridden by World War I from forgotten wards and return them to active life, showing that with the proper approach and methods there is hope even where there has been despair. Dr. Rusk and Eugene L. Taylor have described the evolution of rehabilitation as the "third phase of medical care" in a book, *New Hope for the Handicapped*, published this year.

For the past two years Dr. Rusk has been adapting the techniques developed in the air forces program to civilian practice at New York University College of Medicine, where he is director of the Department of Physical Medicine and Rehabilitation. He and his colleagues have devoted most of their attention to restoring function to persons handicapped by accidental injury or chronic orthopedic disease such as arthritis. They have found that with the right combination of treatment, including physical medicine, physical and emotional retraining, help in psychosocial adjustment and vocational guidance, a large percentage of these individuals can be taught to walk, take care of themselves and, in many instances, live full and productive lives.

Many of the procedures promise comparable usefulness in the rehabilitation of patients incapacitated by previous or chronic neurological disease. Medical science has thus far been unable to discover

the cause or prevent the progress or sequels of many disabling neurological disorders. Since incapacitated neurological patients have always taxed heavily the resources of families and of voluntary and public welfare organizations as well, the rehabilitation of these patients would produce benefits reaching beyond the primary aim of such therapy — the improvement in the physical and mental status of the patients.

This year New York University College of Medicine established an interdepartmental project in the rehabilitation of neurological patients under the direction of Dr. Rusk and Dr. S. Bernard Wortis, chairman of the combined Departments of Psychiatry and Neurology. Its purpose is to study problems in physical and emotional training, to correlate specific findings in the various neurological conditions and to evaluate these findings in terms of training opportunities and necessities. The investigators then intend to draw up a simple handbook of dynamic therapeutics in neurological disorders, giving a full outline of the therapy, training and general psychological management of the neurologically disabled. Such a book, based on clinical experience, should be useful to general practitioners, rehabilitation departments in hospitals and practicing neurologists. In all likelihood the study will also reveal new areas for basic physiological research and help define the fundamental problems in neurological rehabilitation. The Rockefeller Foundation contribution to this

project is in the form of a \$37,200 grant, available over a period of two years.

#### KAROLINSKA INSTITUTE NEUROPHYSIOLOGY

The Karolinska Institute, the medical school of the University of Stockholm, while not as large as several other European institutions, enjoys an excellent reputation throughout the medical world for the high standards of teaching and research that it maintains. The institute is particularly noted for its work in neurophysiology and is an important training center for young European scientists.

Professor Ragnar Granit, a former Rockefeller Foundation fellow, directs the neurophysiology laboratories in an extensive program of research on the electrical signs of activity in the nervous system and specialized sense organs. Although major emphasis has been on the basic physiology of nerve tissue, the results of some of the investigations have proved of considerable practical value. Professor Granit's work on electrical activity in cells of the retina, for instance, is not only a classic contribution to fundamental knowledge of the eye, but also serves as the basis for a new method of clinical diagnosis. At present a general study on the interaction of nerve impulses in the spinal cord and in the nerves branching out from it is in progress.

The Rockefeller Foundation has contributed funds to assist Dr. Granit's work for a number of years,

first at the University of Helsinki and since 1941 at the Karolinska Institute. The 1949 grant of \$20,000 to the institute extends support of neurophysiological research under the direction of Professor Granit for another four years.

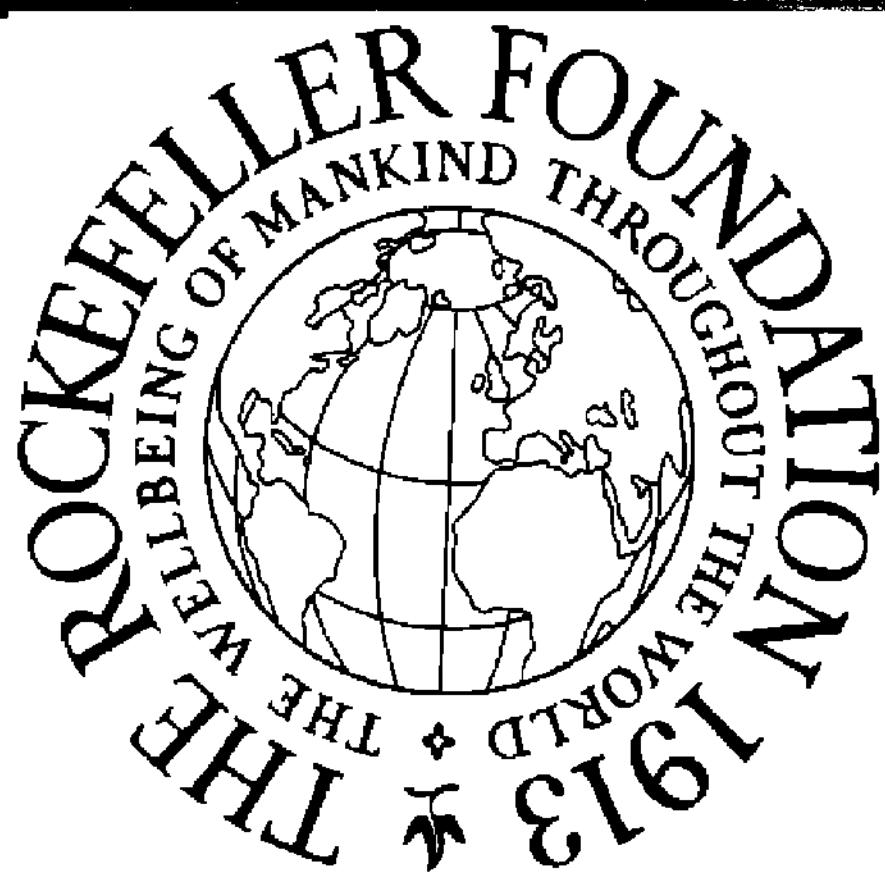
#### McGILL UNIVERSITY PSYCHIATRY

The Department of Psychiatry at McGill University, Montreal, was established in 1943 with the aid of a five-year grant from the Foundation. It has since become an integral unit of the medical school, with firm and important connections in the surrounding community, particularly in industry.

Under the chairmanship of Dr. D. Ewen Cameron the department has developed several ingenious methods of dealing with the large rush of patients which always confronts a new clinic. One of these, a system of out-patient treatment whereby even gravely ill persons receive ward treatment during the day and are returned to their homes in the evening, has had considerable success. It will probably have some influence on other clinics responsible for the care of many disturbed people. The department has also been instrumental in setting up the Industrial Relations Center at McGill, operated through an executive committee of which Dr. Cameron is a member.

In addition, a teaching program for undergraduate and graduate medical students has been developed. Psychiatrists are scarce in Canada, as in the United

The experimental monkey station near Algiers, operated by the Collège de France and the Algerian government

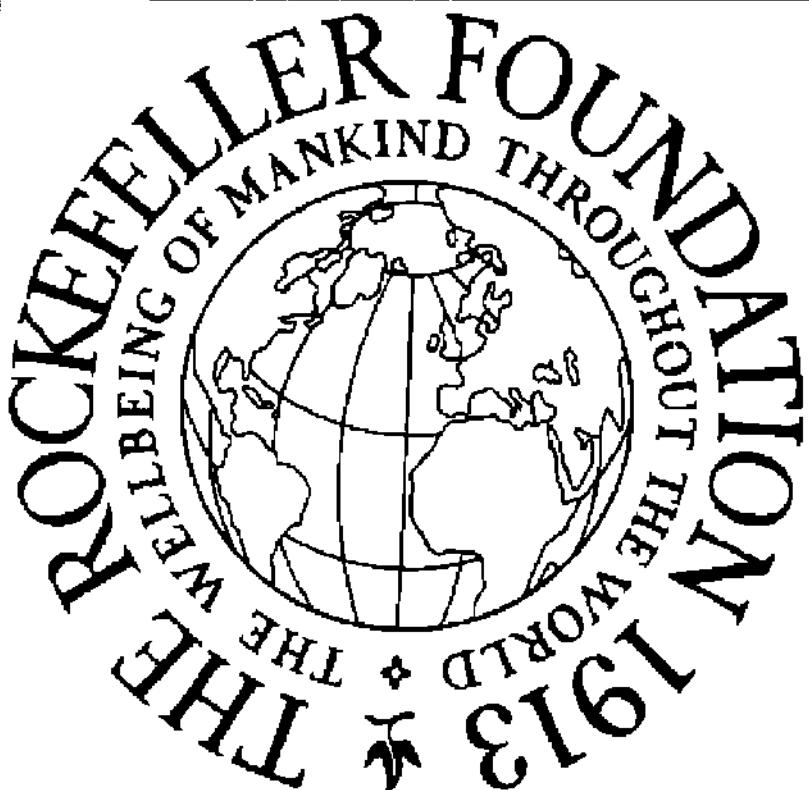


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The Morococha laboratory of  
the Institute for Andean Biology



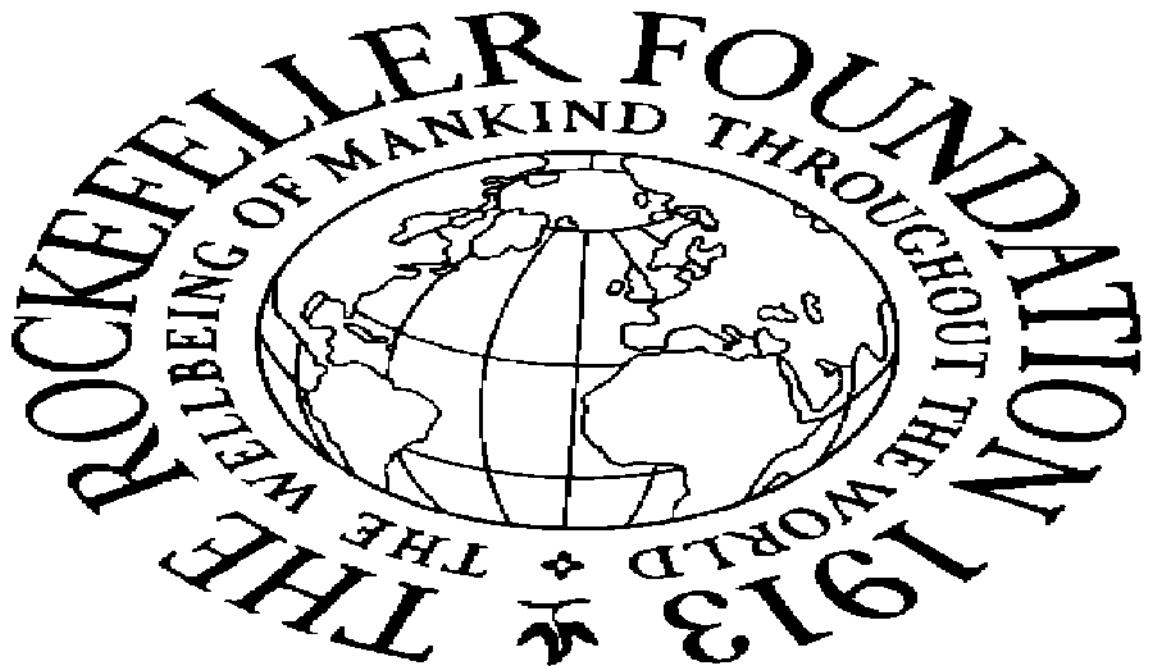
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## Photograph Excised Here

An electroencephalograph in the University of Toronto's new Laboratory of Experimental Clinical Neurology

The Technical Department of the Karolinska Institute, showing some special electrical apparatus under construction for the institute's neurophysiology laboratory



## Photograph Excised Here

States. The department at McGill, one of three full-time departments in Canada, is now an important center for their training. Students receive a broad view of their field and enjoy the benefits of instruction not restricted to any one school of thought. They may also avail themselves of laboratories for research in biochemistry, endocrinology and neurophysiology as they affect psychiatry. To help make possible the continued growth of the department at McGill, The Rockefeller Foundation has granted the sum of \$120,000, available over a five-year period.

#### CHILD RESEARCH COUNCIL OF DENVER CHILD DEVELOPMENT

Since 1939 The Rockefeller Foundation has appropriated a total of \$205,480 to the Child Research Council of Denver, Colorado, for research studies in child growth and development under the direction of Dr. Alfred H. Washburn. The current grant of \$125,000 continues support over a five-year period ending September 30, 1953.

The staff of researchers at Denver includes pediatricians, anatomists, dentists, physiologists, radiologists, biochemists, psychologists, psychiatrists and social workers. The extent, quality and degree of correlation between their various types of observations have helped considerably to increase our understanding of normal growth and development patterns. However, the value of research of this type depends critically upon the length of time it can be continued. Human growth and development

is a long-term process; for optimum results its study must be similarly timed. For this a stable and permanent staff is of importance. The Foundation therefore decided to place its support of the Child Research Council on a forward basis. In 1949 a grant was made for work during the year beginning October 1, 1953.

#### UNIVERSITY OF TORONTO NEUROLOGY

In 1949 The Rockefeller Foundation aided expansion of the program in neurology, neurosurgery and psychiatry at the University of Toronto Faculty of Medicine with a four-year grant of \$32,000 for the establishment of a laboratory of experimental clinical neurology at the Toronto General Hospital. The new laboratory, under the direction of Dr. John Scott, working closely with the clinical and teaching departments, will enable these departments to offer more complete service.

The laboratory supplies clinical consultation in the two valuable diagnostic procedures of electroencephalography and electromyography. The electroencephalogram, a graphic recording of the electrical currents resulting from the action of the brain cells, frequently reveals the nature, extent and location of brain lesions and abnormalities. Electromyography attempts to locate and assess disturbances of function by analyzing the electrical records of muscular activity.

The other principal function of the new laboratory is fundamental research on the physiology of the nervous system, particularly in relation to the practical application of electroencephalography and electromyography. Some investigations involving the use of experimental animals are to be carried out in collaboration with the Department of Physiologic Hygiene and Biophysics.

#### NATIONAL INSTITUTE OF CARDIOLOGY NEUROPHYSIOLOGY

The National Institute of Cardiology, Mexico City, which this year received a grant of \$35,000 over a five-year period from The Rockefeller Foundation, is one of the outstanding medical research institutes in the Western Hemisphere. The director, Dr. Ignacio Chavez, also holds the post of professor of clinical medicine at the Faculty of Medicine of the National University. The institute has an extensive outpatient department, a hospital of 120 beds and a wide range of facilities for the treatment and study of disorders of the heart and circulatory system. Although it is a private organization, the institute draws some of its support from the Mexican Secretariat of Health, and its laboratories and clinics provide training in cardiology for medical students at the National University. Dr. Arturo Rosenblueth, formerly assistant professor of physiology at Harvard Medical School, has returned to Mexico, his native land, to head the Department of Physiology and Pharma-

cology at the institute and take charge of an active and diversified research program.

The Rockefeller Foundation made appropriations to the institute in 1945 and 1946 in aid of physiological and pharmacological research. In 1947 a five-year grant to the Massachusetts Institute of Technology helped establish a project in mathematical biology to be conducted jointly with the Institute of Cardiology. Under the direction of Dr. Rosenblueth and Dr. Norbert Wiener of the Massachusetts Institute this project is now in full swing. In addition to pharmacological and electrophysiological studies of the heart, the laboratory is engaged in analysis of the fundamental properties of peripheral nerves. Other work includes an investigation of the mechanisms that produce clonus, or muscular spasm characterized by alternating rigidity and relaxation, and a study of the dynamics of integration among the myriad elements of the central nervous system. Dr. Wiener and Dr. Rosenblueth are preparing a book on this latter subject.

During the past few years the caliber and the volume of research at the institute have attracted the interest and attention of scientists in both North and South America. To meet the growing demands made upon it the institute has begun to enlarge its training program for young Latin American investigators and teachers. The 1949 Foundation grant is for the purchase of additional equipment and to help meet increased laboratory expenses involved in this

expansion of research and teaching activities under the direction of Dr. Rosenblueth.

### ENDOCRINOLOGY

#### NATIONAL RESEARCH COUNCIL RESEARCH IN PROBLEMS OF SEX

The Committee for Research in Problems of Sex of the National Research Council has since 1931 been screening and assessing research projects in its field. With Rockefeller Foundation funds totaling \$1,205,000 over the past 18 years, it has supported and given advisory supervision to a large number of carefully selected research undertakings. The progress that has been made in recent years in our understanding of the endocrine glands, the physiology of reproduction and human sex behavior is due in considerable measure to the efforts of this committee.

The Foundation in 1949 renewed its assistance to the committee with a grant of \$80,000 a year for three years. One-half of this amount, or \$120,000, has been set aside for the work of Dr. Alfred C. Kinsey and his colleagues at the Institute of Sex Research of Indiana University. These studies have brought an important aspect of human life into the arena of frank and open discussion. The research findings have stimulated thought about the soundness and the validity of some of the concepts on which our legal, medical and sociological systems are founded. An increase in our knowledge of human sex behavior is important

to the understanding of man's total behavior; it also has special bearing on the consideration of population problems. Foundation support is helping to provide additional personnel to carry out more comprehensive analysis of past records and of records now being collected.

The remaining \$120,000 is to be allocated by the committee over the three-year period to new or continuing research projects concerned more broadly with the phenomena of sex and reproduction in vertebrates and invertebrates. At the present time 12 studies receive support from the committee. The subjects of these investigations include the neural and hormonal basis of sexual behavior in vertebrates; the fertilization, transport through the Fallopian tubes and uterine implantation of the mammalian egg; the role of the hypothalamic region of the brain in sex physiology; sexual differentiation in unicellular animals; the metabolism and physiology of the ovarian hormone, progesterone; chemical and functional aspects of the male reproductive tract; genetic aspects of male homosexuality; physiology of spermatozoa; and the effect of endocrine glands on sex determination and development.

#### MASSACHUSETTS GENERAL HOSPITAL ENDOCRINOLOGY

The research program in endocrinology and metabolism directed by Dr. Fuller Albright at the Massachusetts General Hospital in Boston has received

assistance from The Rockefeller Foundation since 1935. In the intervening years numerous papers reporting research on a variety of topics have appeared in medical journals. In 1948 Dr. Albright, in collaboration with Dr. E. C. Reifenstein, published a book on the subject of *Parathyroid Glands and Metabolic Bone Disease*.

Dr. Albright for the last few years has been interested in the growth hormone and the function of the outer tissue layer, or cortex, of the adrenal gland. His present work, a development of previous inquiries, concerns itself with the effect of the steroid hormones on body protoplasm as indicated by metabolic studies, with particular attention directed toward the role of the adrenal cortex.

Dr. Albright's researches in the past have contributed importantly to both clinical and theoretical endocrinology; his present studies have significance for psychiatry as well as physiology. The Foundation has allocated the sum of \$12,000 to Massachusetts General Hospital to continue its support of the program directed by Dr. Albright for another three years.

COLLÈGE DE FRANCE  
EXPERIMENTAL ENDOCRINOLOGY

Among the most valuable experimental animals in medicine are those most closely related to man — the apes and monkeys. This is especially true in the field of endocrinology, a complex subject that is

most rewardingly studied in living animals, and in animals as similar to man in their physiology as possible, as are monkeys. From work with these primates much of direct application and value in human medicine may be derived.

In an attempt to facilitate such research the government of Algeria has collaborated with the Collège de France to establish an experimental monkey station under more or less natural environmental conditions in the Sidi-Ferruch forest, 30 miles from Algiers.

The chief of the station will be Professor Robert Courrier of the college, a leading endocrinologist, who will direct a group of workers in endocrinological studies. The group is particularly interested in the biological effects of the hormones secreted by the sex glands and the adrenal glands. Although the emphasis at the station will be on endocrinology, plans have been made for other distinguished scientists to send members of their staffs to Algeria to work on problems of experimental surgery and neurophysiology, and the Pasteur Institute of Algeria will use the colony for its research in tropical parasitology.

The Algerian government is convinced that a first class experimental station can be maintained by a colonial government. It has provided about 32 acres of land, a budget sufficient to meet the initial needs of the organization and physical plant and has indicated its interest in continuing support. The Foundation's grant of \$20,000 over a three-year

period is for the purchase of equipment and supplies available only in the United States.

### MEDICAL EDUCATION

#### JOHNS HOPKINS UNIVERSITY HISTORY OF MEDICINE

The Institute of the History of Medicine at Johns Hopkins University School of Medicine, Baltimore, the only one of its kind in the United States, is considered by many persons now to be the leading center for medical history in the world. In addition to the history of medicine in the strict sense of the term, the institute is known for its work in the economics and sociology of medicine, including the collection, comparison and critical appraisal of plans for medical care. The School of Medicine has recently broadened its scope to include instruction in those subjects; there are now introductory and advanced courses on the history and the social aspects of the practice, research and teaching of medicine. This range of activities, together with the possession of a unique and still expanding library, enables the institute to serve as a valuable research and training center for both historians and those interested in the sociological and economic aspects of medicine.

The chair in the history of medicine, presently held by Dr. Richard Shryock, was established in 1926 with a gift from the General Education Board. The Board furnished further endowment and a

five-year supporting grant in 1930. The Rockefeller Foundation has contributed to the support of the institute since 1935, and in 1949 granted \$90,000 for aid over a three-year period.

#### FORSYTH DENTAL INFIRMARY FOR CHILDREN DENTAL EDUCATION

In 1947 The Rockefeller Foundation appropriated \$12,000 to the Forsyth Dental Infirmary for Children, Boston, to be used toward the expenses of Dr. A. LeRoy Johnson while acting as unofficial consultant in dental education and research to schools of dentistry in the United States and in Canada.

The project was undertaken in the hope that the visits and advice of a nonofficial but thoroughly informed and widely traveled adviser would awaken the interest of educators in the problem of improving the present state of dental training. During the past two years Dr. Johnson, formerly dean of the Harvard School of Dental Medicine, has been able to accomplish much of this aim.

Dr. Johnson has made personal visits on invitation to almost every dental school on the North American continent. In the course of them he discussed with responsible administrative officers both general problems of dental education and the particular difficulties each school faced. In addition to these individual talks three group conferences have been held — at Princeton, New Jersey, Denver, Colorado, and Great Barrington, Massachusetts — which were attended by university presidents, medical deans and dental teachers. One of the main subjects considered at the

individual and the group meetings was the reorganization of teaching in the basic sciences during the first two years of training, with a view toward placing this instruction on a properly professional and scientifically realistic basis, such as exists in medical schools. This alone could greatly improve the quality of dental education and help it to achieve the equal status with medical education that it should rightfully have. Dr. Johnson also spoke with and encouraged a number of young men who are attempting to develop research in dental medicine.

As was to be expected, few concrete results have come of this activity within such a short time. However, a number of schools have scheduled constructive changes in their curricula and are planning to establish their programs on new and sounder bases. Most important, the interest of the proper authorities in taking measures to raise the standards of dental education has been aroused and will probably soon be able to proceed on its own initiative. Meanwhile, The Rockefeller Foundation has provided an additional \$6,000 for support of Dr. Johnson's work during 1949, and aid from the Carnegie Corporation and the John and Mary R. Markle Foundation, the other contributors to the first two years of the program, was also renewed.

#### BOOKS AND JOURNALS FOR JAPANESE MEDICAL SCHOOLS

Lack of recent medical literature is today a pressing deficiency of Japanese medical schools. Japanese medical education in general suffers from a rather

cumbersome structure. The efforts of the Japanese Council on Medical Education, directed by Dr. Yoshio Kusama, to improve the organization and effectiveness of medical school work in Japan are seriously handicapped by this shortage. To alleviate it, The Rockefeller Foundation has set aside the sum of \$30,000 for purchase and shipment of a selected list of medical books and periodicals to some 20 medical schools in Japan. Responsibility for the allocation and distribution of the material rests with the council, which has the cooperation of the Civil Information and Education Section of the Supreme Command, Allied Powers. In addition the council is promoting the development of efficient library services in order to facilitate active circulation of the books and journals.

**MEDICAL LIBRARY ASSOCIATION  
TRAVELING FELLOWSHIPS**

Shortage of medical literature, and inadequate distribution of what literature there is, at present retard the development of modern medical research and teaching in large areas of the world. Supplying additional material alone cannot solve the problem; such material cannot be put to effective use until the relatively primitive state of library organization is improved. At present, foreign medical schools frequently lack a central library. Instead they have several collections of books scattered more or less at random throughout the departments and institutes comprising the university. No single individual is responsible for knowing where these books are, for

making arrangements for their loan or for seeing that they get circulated as they should.

The Medical Library Association, which represents the medical librarians of the United States, has been trying to ameliorate this situation. It has been active in the United States in helping to define proper medical library procedure and in encouraging interchanges of information and material among medical libraries. It is now extending its services to libraries in other countries. Its Committee on International and National Cooperation set up a plan for exchanging duplicates between medical libraries in this country and abroad. Believing that trained personnel have a key role to play in advancing library services, the association last year began a traveling fellowship program for Latin American librarians with the aid of a small grant from The Rockefeller Foundation.

Medical librarians and general library schools in this country have cooperated enthusiastically with the association's program, and the first group of fellows reported that they had had stimulating and informative experiences. The association is now extending this activity to include persons from countries other than those in Latin America. Administrative expenses are borne entirely by the association and a Foundation grant of \$10,000 covers stipends and incidental expenses for three or four fellowships during 1949. The problem of bettering library service abroad is a large one, but a few well trained librarians working in strategic centers can do much to demonstrate the advantages of modern library systems and thus stimulate development along proper lines.



## **THE NATURAL SCIENCES**

# THE NATURAL SCIENCES STAFF

During 1949

*Director*

WARREN WEAVER

*Associate Director*

HARRY M. MILLER, JR.

*Assistant Directors*

WILLIAM F. LOOMIS <sup>1</sup>

GERARD R. POMERAT

<sup>1</sup> Appointment effective October 10, 1949.

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## THE NATURAL SCIENCES

THE 53 appropriations made by the Natural Sciences division of The Rockefeller Foundation in 1949 totaled \$2,110,835. Grants to universities and other institutions to assist research in experimental biology formed the largest single group in point of both number and amount of money expended, there being 31 awards aggregating \$879,210 in this category. Projects in genetics figured prominently among these grants. Latin American agricultural activities accounted for the second biggest group; the sum of \$549,625 was allocated for work in this field by means of 13 grants. Included in these were two appropriations, which together came to \$326,125, for the Mexican Agricultural Program and a grant of \$40,000 for the inauguration of a cooperative operating program in agriculture in Colombia. There were also six grants in various other fields of the natural sciences for a total of \$193,000. Of the remaining \$489,000, the grant-in-aid fund for 1950 took \$250,000, fellowships in the natural sciences to be administered by the Foundation during 1950 took \$175,000 and \$64,000 went to the National Research Council for 1950 fellowships in the natural sciences (see pages 351-354). A grant for research on alcohol-

ism, although not made with divisional funds, appears in this section, as it pertains to work in the natural sciences alone.

### EXPERIMENTAL BIOLOGY

#### WASHINGTON UNIVERSITY RESEARCH IN BIOCHEMISTRY

The study of diseases involving carbohydrate metabolism and the investigation of phenomena involving transportation and storage of sugar in the body both depend vitally on an understanding of the chemical events which take place. Thanks to the pioneer researches of Professor Carl F. Cori and his wife, Professor Gerty T. Cori, of Washington University, St. Louis, Missouri, an important key to these events has been provided. The Coris were responsible for elucidating the glucose-glycogen cycle in the animal body, an achievement which won them the 1947 Nobel prize in medicine.

Glucose is the form in which sugar is carried in the bloodstream and is transported from one part of the body to another; glycogen, or body starch, is the form in which the body stores sugar. The glucose-glycogen cycle is the mechanism by which glucose is converted into glycogen, or glycogen into glucose, according to the body's need. One of the most important aspects of the Coris' work in explaining this two-way process was their discovery of glucose-1-phosphate, a derivative of glucose. The body utilizes this intermediary

substance, which is now commonly referred to as the Cori ester, to form glycogen. Subsequently the Coris isolated and crystallized phosphorylase, the muscle enzyme which actually controls the conversion of glucose into glycogen.

At present the Coris are continuing to carry out a forceful and dynamic program of research. About 25 people are actively engaged in scientific work in the Department of Biological Chemistry at Washington, which Professor Carl Cori directs. The department receives scientists from all over the world for training in enzyme research. In order to help Professor Cori maintain a balanced and stable program, The Rockefeller Foundation in 1949 made a grant of \$50,000 to Washington University. This money will be available to Professor Cori over a five-year period.

#### SMITH COLLEGE GENETICS EXPERIMENT STATION

Under the direction of Professor Albert F. Blakeslee, the Genetics Experiment Station at Smith College, Northampton, Massachusetts, is carrying out a program of both research and teaching in plant genetics. Smith, in collaboration with three neighboring colleges, Mount Holyoke, Amherst and the University of Massachusetts, has organized the Four College Genetics Conference, which holds two meetings a year at each institution. The same four schools in 1949 established the Four College Research Conference on Growth and Differentiation. This group,

which is limited to active research workers who have received grants in support of their research, provides an opportunity for discussion and criticism of the work of the participating investigators.

Workers at the station are conducting several cytogenetic studies in various species of herbaceous plants belonging to the genus *Datura*. Studies are also under way on the factors inhibiting hybridization between different datura species. In this latter regard Professor Blakeslee and his colleagues are investigating tumors of the immature seed, or ovule. Apparently, in cases of incompatible hybridization, the ovular tissue surrounding the hybrid embryo behaves differently than that surrounding an ordinary embryo. Sometimes the tissue proliferates uncontrollably and the ovular tumor invades the embryo sac, killing the young hybrid. Professor Blakeslee is also conducting research on lima beans in cooperation with Boston University School of Medicine. It was found at Boston University that there are three types of lima beans. The extract of one has no effect on human red blood cells; one variety agglutinates all types of human red blood cells; the third agglutinates only cells of the A and the AB groups. The Genetics Experiment Station is testing out the heredity of these three types of beans.

Research directed by Professor Blakeslee at Smith has received Foundation help in the form of grants in aid since 1942. In 1949 a one-year grant of \$8,000 was made to Smith to provide research assistance

and day labor in the greenhouse for the program headed by Professor Blakeslee.

#### UNIVERSITY OF OXFORD X-RAY CRYSTALLOGRAPHY

The Laboratory of Chemical Crystallography at the University of Oxford is one of Great Britain's leading centers for research in the highly specialized and difficult field of X-ray crystallography. The laboratory, which is directed by Dr. Dorothy Crowfoot Hodgkin, is also noted for the caliber of the young investigators it has trained in the complicated techniques of determining by X-ray study the accurate structural formulas of complex crystalline substances.

Past research revolved around ascertaining the structure of antibacterial polypeptides, including penicillin. At present a number of projects are in progress dealing with the X-ray analysis of large molecules of importance in biology and medicine. Among these are the study of certain details of steroid structure which are still chemically undecided; research on the structure of vitamin B<sub>12</sub>; precise X-ray analysis of peptides containing complex open-chain hydrocarbon groups; and further investigation and interpretation of proteins such as insulin and the gramicidins in light of the first three studies. Interesting new materials turned up in other laboratories will also continue to be examined.

The Rockefeller Foundation has given aid to Dr. Hodgkin's researches since 1940. Support was con-

tinued in 1949 with a three-year grant of \$6,060 to the University of Oxford to be used toward stipends for research assistants or in-training students under Dr. Hodgkin's direction.

UNIVERSITY OF TEXAS  
DROSOPHILA GENETICS

For over ten years a group of zoologists directed by Professor John T. Patterson at the University of Texas, Austin, have been making a detailed study of the fruit fly, *drosophila*, from the standpoint of both physiological and genetic characteristics. The over-all purpose is to gain additional knowledge about the development of new species. *Drosophila* is an extremely valuable subject for basic research in genetics because it reproduces quickly and because it is small and easily maintained in captivity. Furthermore the different species present striking variations in size, coloration, wing structure and many other morphological and physiological characteristics.

The first phase of the work is more or less complete. The group has built up an extensive living collection of *drosophila* species and has amassed a great deal of precise data on these species. Cultures of 50 different hybrids are being grown. In addition, a large body of information has been accumulated on the growth and distribution peculiarities of many other species which cannot successfully be maintained in the laboratory. Members of the group published a total of 17 papers last year.

At present efforts are concentrated on integrating all the evidence that has been gathered. Closely re-

lated species will be compared for their physical and genetic differences, their particular food and climate requirements, their growth and reproductive characteristics and their ability to establish and maintain new mutant types. An attempt will be made to duplicate existing populations through new hybrid crosses. In this way it may be possible to explain how the existing types evolved.

Rockefeller Foundation support for Dr. Patterson's project was continued in 1949 with a three-year grant of \$30,000.

#### UNIVERSITY OF GLASGOW EXPERIMENTAL BIOLOGY

In the interests of expanding and improving its research programs in the natural sciences, the University of Glasgow, Scotland, recently made provision for the establishment of an electron microscope unit at the university. The electron microscope facilities are to be utilized by the Departments of Biochemistry, Physiology and Genetics, and by the Department of Physical Chemistry in particular. In this last department the new unit will be an integral part of the program for modernizing the X-ray crystallography laboratory directed by Professor J. M. Robertson. Professor Robertson is anxious to extend his studies of complex molecules to include even more intricate structures, such as proteins and viruses, which are of biological interest. For this purpose, an electron microscope is of great value. Much important information can be obtained by correlating results obtained through X-ray dif-

fraction analyses with data procured by electron microscope examination of the same material. The Rockefeller Foundation in 1949 granted \$11,000 to the University of Glasgow over a two-year period toward the purchase, mostly in this country, of equipment needed for the electron microscope unit and for other projects in the natural sciences.

**UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY**

A few miles above the Mexican border, on the coast of Southern California, is the Scripps Institution of Oceanography. Its ten laboratory buildings, together with the residences and gardens of staff members, occupy a large tract of land along La Jolla Bay that was first set aside for marine biological research in 1908. In 1912 the original organization became part of the University of California and took its present name; today nearly half of the senior staff members also hold academic posts on the university faculty. Its program has been broadened to include the physics, chemistry and geology of the sea, as well as its biology, and the institution has developed into a leading center for oceanographic research.

One of the major research programs at the institution is that of the Division of Biochemistry. Under the direction of Professor Denis L. Fox, a former Rockefeller Foundation fellow, the work of this division has centered on the comparative biochemistry of marine organisms with special emphasis on the study of the biochromes — the pigments of living matter.

Dr. Fox and his coworkers are interested in the biochemistry of these pigments rather than their function in protective coloration. More particularly, the project aims at revealing the role, if any, which pigments play in the processes of metabolism. A group of pigments known as carotenoids have been selected as the subjects for these investigations.

The carotenoids are red, orange and yellow in color and occur almost universally throughout the living world. For example, carotenoids give color to carrots, to egg yolks, to goldfish and to the plumage of many birds. A cooked lobster is red because heat destroys the protein part of the dark greenish protein-carotenoid pigment in the lobster shell; the carotenoid, in this instance a substance known as astaxanthin, remains unchanged, and the lobster turns red. There are many kinds of carotenoids, but they all may be classified as carotenes, xanthophylls or acidogenic carotenoids. Only plants are capable of synthesizing carotenoids; animals must obtain them from the food they eat. Some animals, like the lobster, may exhibit a high degree of specificity in regard to assimilation and utilization of carotenoids from their food; others, including man, show no selectivity and can assimilate all types. But carotenoids in one form or another are essential for normal maintenance of nearly all animal organisms and must be obtained in the diet. Human beings, for instance, require carotenoids for the formation of a pigment called visual purple; the perception of light depends on the presence of this pigment in the retina of the eye.

The investigations of Dr. Fox and his colleagues over the past two years have included studies on the effect of different diets upon the carotenoids found in certain animals and fishes; the quantities and nature of unusual biochromes in marine invertebrates; the spectroscopic characteristics of the animal carotenoid, astaxanthin; the histological and biochromic aspects of retinal structures; and the changes in retinal structures induced by different light stimuli and different dietary pigments.

One current investigation is concerned with the osmotic function of the skin, that is to say, the skin in its capacity as a membranous barrier between the internal and external environments of an animal. This series of experiments makes use of the goby, a small fish with an extremely slimy skin. The goby is remarkable in its ability to adjust itself to either fresh or salt water, an adjustment in which the primary factor is the skin's ability to regulate its osmotic function. At Scripps gobies are kept in three environments: a very salty brine, seawater and brackish water containing very little salt. In each of these waters one group of fish is fed a diet deficient in all carotenoids except vitamin A, one group receives no carotenoids other than carotene and a third is given only xanthophyll. The eventual effect of these dietary deprivations on the ability of the goby to adjust to the different environments should provide some clues to the possible role of the carotenoids in the osmotic functioning of the skin.

A number of additional projects have been planned by the Division of Biochemistry. Among these are

research on the chemical nature, distribution and seasonal quantities of finely particulate matter in the sea, especially in relation to the fluctuations in the size of marine harvests utilizable by man; quantities of extracted carotenoids as potential indices of seasonal organic production in the sea; and the chemical fate and degradation products of chlorophylls (the green pigments of plants) and carotenoids at the agency of marine microorganisms, both those requiring free oxygen and those that exist without it.

This kind of research has an important relation to problems of nutrition, population and exhaustion of natural food producing resources, and may also furnish new information on a fundamental biological question — the sensitive relation and reaction of the organism to its internal and external environments. To continue support of the program in progress at Scripps under the direction of Dr. Fox, The Rockefeller Foundation in 1949 granted \$29,000, available for four years, to the University of California.

#### UNIVERSITY OF OXFORD ORGANIC CHEMISTRY

Rockefeller Foundation aid for organic chemistry research at the Dyson Perrins Laboratory of the University of Oxford, England, has been in effect since 1939. The current grant, available until the end of September 1951, is for expenses of research under the direction of Sir Robert Robinson. This work, in which Sir Robert directs the efforts of more than 50 associates and senior students, is aimed primarily at elucidating the nature and structure of biologically

significant molecules. In order to carry out their program with maximum efficiency, Sir Robert and his coworkers need an elaborate and recently developed piece of equipment at present manufactured only in the United States. This is an infrared spectrophotometer. With modern infrared spectrophotoscopic methods, analysis and routine identification of complex organic substances is greatly simplified. In order that Sir Robert's laboratory might obtain such an instrument in spite of difficulties due to the dollar shortage in Great Britain, The Rockefeller Foundation in 1949 granted the sum of \$14,000 to the University of Oxford for use during the period ending September 1950.

#### UNIVERSITY OF PITTSBURGH PROTEIN CHEMISTRY

An appropriation of \$15,000, available for three years, was made by The Rockefeller Foundation in 1949 to the University of Pittsburgh for research in the chemistry of proteins. Dr. Klaus Hofmann, a former Rockefeller Foundation fellow and now professor of organic chemistry at the university, is in charge of the program. Dr. Hofmann has long been interested in proteolytic enzymes, the chemical agents which activate the breakdown of proteins and which may, under certain conditions, also activate protein synthesis. At present he and his colleagues are investigating the exact role of these enzymes in the scheme of protein chemistry.

The basic constituents of protein are organic substances known as amino acids. Protein molecules

are large and complicated, but essentially they may be thought of as aggregations of amino acids bound together chemically in what is known as a peptide link. The comparatively simple molecules formed by the condensation of two or more amino acids are known as peptides, which are thought to be the intermediary stage between the amino acids and the proteins. Dr. Hofmann and his coworkers, starting with single amino acids, have developed a method of synthesizing a tripeptide (i.e., one whose molecules contain three amino acids) and a polymerized n-fold tripeptide, each of whose molecules is made up of many identical tripeptide molecules linked together chemically. The exact structure of these substances is known. The group under Dr. Hofmann now hopes to develop this work with proteolytic enzymes and extend it to molecules of far greater complexity.

#### UNIVERSITY OF COPENHAGEN EXPERIMENTAL BIOLOGY

Since the end of hostilities in Europe, authorities at the University of Copenhagen, Denmark, have sought to strengthen research at the university in the fields of biochemistry, neurophysiology, embryology and genetics. Toward this end they have developed new and special institutes or departments, created new professorships for four young Danish scientists and furnished these men with more adequate equipment and research assistance. The four men, all former Rockefeller Foundation fellows, are Dr. Herman Kalckar, Dr. Fritz Buchthal, Dr. Mogens Westergaard and Dr. Holger Brondsted.

Dr. Kalckar, director of the new Institute of Special Biochemical Research at the university, works primarily on purine compounds and their derivatives, the role of adenylic acid in muscle physiology and the control of blood pressure. The research of Dr. Buchthal, who directs the Institute of Neurophysiology established by the university in 1945, centers on quantitative aspects of nerve and muscle action. Dr. Westergaard was recently appointed to the first chair of genetics at the university, and in 1948 Dr. Brondsted was named full professor of embryology and given charge of a new department.

The Danish government and the Carlsberg Foundation are cooperating with the university in promoting this expanded program of experimental biology. A 1949 grant of The Rockefeller Foundation furnished \$31,500, available for three years, for equipment, personnel and other expenses in connection with the program.

#### UNIVERSITY OF ROCHESTER MICROPHOTOMETRIC STUDIES

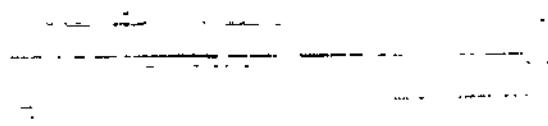
One of the basic ways of telling what any material is made of and how it is made is to pass a suitable kind of light through the material and then study what wave lengths of light are absorbed. This procedure, which uses visible light in some cases and ultraviolet or infrared in others, is called absorption spectrophotometry. If the method is applied to very small objects or parts of objects, it is called micro-spectrophotometry.

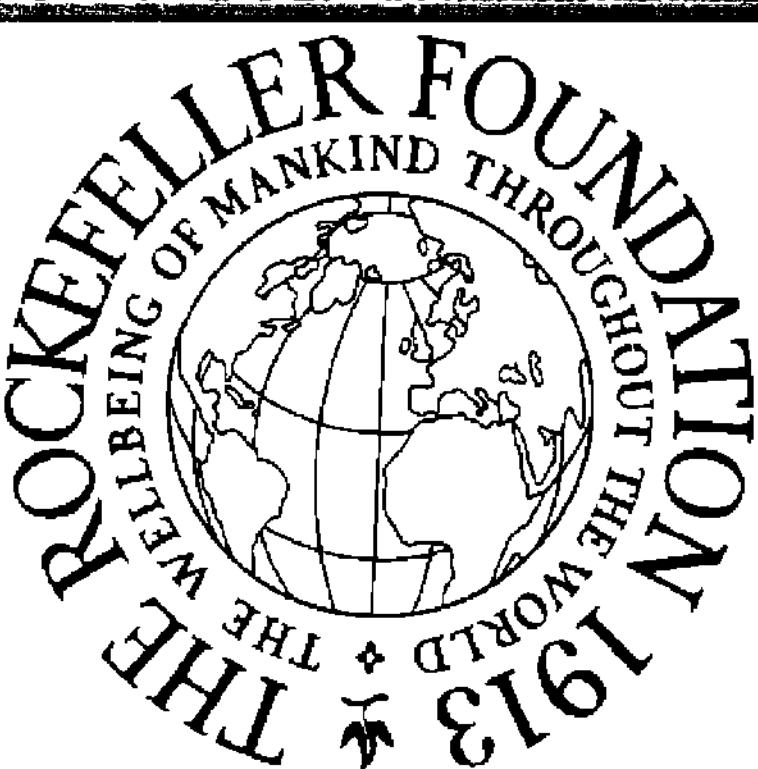


Photograph Excised Here



The genetics laboratory at the University of Texas





## Photograph Excised Here

Drosophila are used to develop basic information needed for the program in poultry genetics at Purdue University

Chromatography is one of the techniques used at the Scripps Institution of Oceanography in studying the pigments found in marine organisms



## Photograph Excised Here

Microspectrophotometry can be employed with great value in the study of biological materials less than a thousandth of a millimeter in diameter. The minute constituents of cells and even of chromosomes can be identified and measured, as can the chemical components of many protein materials. It has been possible, for instance, to study the changes in protein concentration that take place in the nucleus and cytoplasm of nerve cells as a result of the functioning of the cells. But there is still a vast unexplored field of methodology and research topics in relation to microspectrophotometry.

In an effort to advance microspectrophotometry the University of Rochester, New York, in 1949 began a program designed to improve the optical techniques involved and to apply these new methods and instruments to basic biological problems. The university is in a particularly favorable position to undertake such a program because of the close relationship its Institute of Optics maintains with the research departments of leading firms in the optical industry located in Rochester. Moreover, the director of the project, Dr. Theodore Dunham, Jr., combines expert training in optical science with his medical background and interest in fundamental biology.

At present this is a project in basic science. However, the university hopes eventually to expand the program to include investigation in clinical medical fields, where knowledge of the detailed structure and functioning of individual cells can shed much light. The Rockefeller Foundation in 1949 granted \$75,000,

available for three years, to the University of Rochester to help get the program started.

#### UNIVERSITY OF NOTTINGHAM RESEARCH IN BIOCHEMISTRY

At the University of Nottingham, England, the properties of protein molecules, particularly those found in nucleic acids, are being investigated by a group in the Department of Chemistry under the direction of Professor D. O. Jordan. Studies are under way on the structure of yeast ribonucleic acid, on its behavior and on the chemical bond between nucleic acid and proteins. Successful implementation of this work, which seeks to take advantage of the latest techniques of monomolecular chemistry, requires the use of a specialized ultracentrifuge manufactured only in the United States. The Rockefeller Foundation granted the sum of \$16,250, available for one year, to the University of Nottingham for the purchase of this essential piece of apparatus for Professor Jordan's laboratory.

#### STANFORD UNIVERSITY BIOCHEMICAL GENETICS

Over the last ten years significant advances have been made in the field of biochemical genetics. During that time, for instance, it was established, and it is now very generally recognized, that organisms inherit their individual capacities to elaborate certain enzyme systems, and hence that they inherit their abilities to carry out the chemical reactions controlled

by the enzyme systems in question. Each specific enzyme system in turn seems to be under the control of a single gene.

Much of this recent progress originated at Stanford University, Palo Alto, California, where extensive work in biochemical genetics continues to figure in the over-all scheme of biological research. Professor Edward L. Tatum was recently placed in charge of all research in biochemical genetics and has organized a broad program of investigation of gene action in microorganisms. The specific objective of his program is to analyze more fully than has been done heretofore the relations between genes and biochemical activity. The studies he has planned will make use of mutant strains of a variety of microorganisms, including bacteria, yeasts, molds, algae and protozoa. Eventually Professor Tatum hopes to arrive at an explanation of the genetic and biochemical behavior of organisms in terms of the influence of genes on the enzymes controlling particular intracellular biochemical reactions.

Work of this nature, in addition to shedding new light on the fundamental question of how genes operate, has important bearing on a wide range of biological, chemical and medical problems. It provides new tools for other types of genetic research and useful techniques for the chemical assay of biological material. And the concept of the inheritance of enzyme systems, with its implication of individual metabolic patterns, reaches far beyond genetics alone and enters into the consideration of such subjects as

alcoholism, celiac disease and diabetes. The Rockefeller Foundation has been assisting biological research at Stanford for a number of years. In 1949 a grant of \$25,000, available for four years, was made to the university for support of research in biochemical genetics under the direction of Professor Tatum.

#### UNIVERSITY OF UPSALA BIOCHEMICAL INSTITUTE

The University of Upsala, Sweden, aided by the Swedish government, is at present in the process of constructing a new building to house its Biochemical Institute, now located in the same quarters as the Institute of Physical Chemistry. Professor Arne Tiselius, the 1948 Nobel Laureate in chemistry, heads the Biochemical Institute, which was established by the university in 1946 as a separate unit.

The permanent staff of the Biochemical Institute numbers about 20 persons. Under the direction of Professor Tiselius, who is a former Rockefeller Foundation fellow, this staff is carrying out an extensive program of research in biochemistry and biophysics. The aim is to discover the chemical and physico-chemical basis for biological specificity and biochemical activity of various substances in the living organism. Special attention has been given to the development and improvement of methods for isolating and characterizing proteins and polysaccharides. Professor Tiselius was awarded the Nobel prize for his discoveries in biochemistry and for his invention of a complicated analytic instrument now known as the

Tiselius apparatus. This makes use of the technique of electrophoresis, also developed by Professor Tiselius, in which the electrical properties of molecules are determined by study of the way in which an electrical force causes the molecules to move through a liquid. The method has become a widely used and valuable research tool. The group at Upsala are trying to extend its use to substances of progressively lower molecular weight.

A number of other studies are also under way. Plasma proteins, antibodies, hormones and viruses are being investigated by means of spectrographic adsorption analyses. Bacterial flagellae are a relatively recent interest of the institute. These whip-like threads arising from the surface of bacteria are the finest visible protein fibers in nature. Chemical and roentgenographic techniques are employed in their study at Upsala in an effort to relate structure and chemical composition.

For many years Professor Tiselius' work has been aided by the Foundation through grants to the university for research under Professor The Svedberg, the director of the Institute for Physical Chemistry. In 1949 The Rockefeller Foundation made a grant of \$100,000, available for two years, to the University of Upsala to assist the research program directed by Professor Tiselius. The funds are primarily for the purchase in the United States of elaborate and specialized equipment to be installed in the new home of the Biochemical Institute. These instruments, most of which can be obtained only in this country

and which are in addition to the general equipment furnished by the Swedish government, include such devices as centrifuges, spectrophotometers, polarimeters, electrical meters and microanalytic apparatus.

### PURDUE UNIVERSITY GENETICS

At Purdue University, Lafayette, Indiana, headquarters were recently established for an extensive project in poultry breeding sponsored by the Bureau of Animal Husbandry, Agricultural Research Administration, United States Department of Agriculture. This is one of the regional projects organized under the Flannagan-Hope Act of 1946. A three-year grant of \$15,000 was made to Purdue by The Rockefeller Foundation in 1949 for fundamental genetic research connected with the program. Professor Don C. Warren is in charge of the work at Purdue and also serves in a general advisory capacity for all the other regional poultry breeding projects.

The basic purpose of the Purdue project is to determine to what extent it may be possible to apply to poultry breeding the concepts and techniques of hybridization. Utilization of hybrid vigor has had revolutionary effects in improving corn varieties and could have similar value in poultry improvement. However, many of the procedures employed by plant breeders, although in general guided by theory, are largely empirical in character. Fundamental genetic theory on several important points, for instance, the inheritance of yield, is lacking. In order to correct

this deficiency and obtain some of the information he needs, Professor Warren, with the aid of the Foundation's grant, has set up a drosophila pilot breeding plant. With this fruit fly, which produces 25 generations within a single year, it is possible to get quickly and cheaply data on the potentially most effective systems of breeding for hybrid vigor. The principles arrived at through drosophila experimentation should prove applicable not only to poultry breeding but also to problems of improvement of any domesticated animals or plants.

KAROLINSKA INSTITUTE  
INSTITUTE FOR CELL RESEARCH

More and more it is coming to be recognized that complex biological problems can be investigated fruitfully with the precision techniques and tools of physics and chemistry. One of the world's leading institutions for research of this kind is the Karolinska Institute, Stockholm, where a new Institute for Cell Research was recently established.

The head of the new institute is Professor Torbjörn O. Caspersson, whose past studies on the acids found in cell nuclei have been assisted by the Foundation. In his new laboratories Professor Caspersson is directing a group of young scientists engaged in an active research program. Their program is concerned mainly with identification of cell constituents by means of very soft X rays; spectroscopic study of proteins using ultraviolet and infrared light; ultra-microanalysis of cellular metabolism; and continuing

investigations of the natural synthesis of proteins and their precursors, the polynucleotides. In 1949 a five-year grant of \$35,000 from The Rockefeller Foundation was made to the Karolinska Institute for purchase of additional equipment needed in this work and for general expenses.

#### CORNELL UNIVERSITY ENZYME CHEMISTRY

A 1949 grant from The Rockefeller Foundation provided \$30,000, available over a five-year period, to Cornell University, Ithaca, New York, for research in enzyme chemistry under the direction of Professor James B. Sumner. Professor Sumner, who directs the Laboratory of Enzyme Chemistry of the College of Agriculture at the university, was awarded the 1946 Nobel prize in chemistry for achieving the first crystallization of an enzyme. Among his other accomplishments are the production of antiurease, the first proven antienzyme, the isolation of the first hemagglutinin, or substance which causes red blood corpuscles to clump together, and the isolation from cow, lamb and horse liver of crystalline catalase, an enzyme which specifically decomposes hydrogen peroxide.

The main concerns of the group at Cornell headed by Professor Sumner are to improve methods of isolating and purifying enzymes, to devise and improve methods of estimating enzyme activity and to investigate the connection between the various enzymes and physiological function. Specific projects

currently under way include research on the mechanism of insulin action, on the deleterious effects of ammonium citrate and urease in rats and on certain phosphorylases found in vegetables. These last enzymes are important in carbohydrate metabolism. The Foundation grant for the most part is to furnish salaries for the research assistants engaged in these studies with Professor Sumner.

#### UNIVERSITY OF COPENHAGEN BIOLOGICAL USES OF ISOTOPES

During the past few years Professor Niels Bohr, Professor P. Brandt Rehberg, Professor August Krogh and Professor Georg Hevesy of the University of Copenhagen, Denmark, have been directing the work of a group of young investigators at the university's Institute of Theoretical Physics and its Laboratory of Zoophysiology. This joint biology, physics and chemistry project is concerned mainly with the biological uses of isotopes. Radioactive isotope tracers have been employed for study of such problems as the active and passive transport of ions across living membranes, and the influence of hormones upon this process; the diffusion of ions in tissues placed within an electrical field; estimations of the life span of blood corpuscles in the hen and in man; distribution of potassium in living materials; and determination of blood volumes in various animals under different conditions of health and disease.

The staff of the Laboratory of Zoophysiology last year gave a series of four special courses on the use

of isotopes in biology, chemistry and medicine which was attended by a total of more than 50 persons. Formal seminars on these subjects are regularly held at the laboratory. The University of Copenhagen is building a new Institute of Nerve and Muscle Physiology with one floor devoted to biomedical isotope teaching and research. Plans have also been made to add a full course on isotope techniques to the university curriculum. The project has had Rockefeller Foundation support since 1935. Aid was continued in 1949 with a two-year grant of \$17,000.

#### DUKE UNIVERSITY PHYSICAL BIOCHEMISTRY

For a number of years now Duke University School of Medicine, Durham, North Carolina, has been the scene of a research program in the physical biochemistry of proteins directed by Professor Hans Neurath, which stresses the physico-chemical approach to biochemical problems. Professor Neurath's program makes use of a wide variety of methods, with emphasis on physical techniques such as ultracentrifugation, diffusion and electrophoresis. Immunological and serological methods, enzymatic methods, preparative methods for isolating proteins from tissues or fluids and diverse procedures of analytic and synthetic organic chemistry are also employed. The problem common to all these different kinds of investigations carried out by the group under Professor Neurath is the structure and properties of proteins. The group is interested in proteins taken

singly and also in the protein combinations which occur in tissues and body fluids. Representative examples of proteins under study are the proteins found in blood serum, the proteolytic enzymes and their specific substrates, insulin, antibodies and the muscle proteins.

Among the projects now in progress or planned for the immediate future are:

1. A study on the isolation, mode of action and specificity of crystalline proteolytic enzymes.
2. Studies on the relation of the chemical modification of insulin to its hormonal activity.
3. Investigation of muscle proteins and their relation to muscular contraction.
4. Peptide synthesis.
5. Systematic studies on physical methods of chemical analysis.

The program is conducted in Duke's new research building, where all the necessary major research equipment is at hand. Rockefeller Foundation support, which began in 1939, was renewed in 1949 with a grant of \$100,000. The money is available until the end of June 1956, and is intended to serve as a supplement for Professor Neurath's departmental budget and to enable him to pursue basic new leads as these develop.

#### UNIVERSITY OF UTRECHT BIOCHEMISTRY AND BIOPHYSICS

The Rockefeller Foundation in 1949 made a six-year grant of \$22,000 to the University of Utrecht,

Netherlands, for a cooperative research program in biochemistry and biophysics. The project, which was begun in 1934 with Foundation assistance, is carried out as a joint undertaking between biologists and chemists of the Laboratory of Microbiology at the Technical High School in Delft and physicists at the Institute of Physics of the University of Utrecht. Professor A. J. Kluyver of Delft and Professor J. M. Milatz of Utrecht share the responsibility of directing the work.

This program of interdisciplinary collaboration in the natural sciences has produced an excellent series of studies in spectroscopic biology. These have dealt mainly with the mechanisms underlying light production in photoluminescent organisms and with the influence of light on such phenomena as phototropism and photosynthesis. The project has provided an opportunity to apply the exact and quantitative techniques of physics to the complex problems of living organisms. It also enables a number of young investigators to receive valuable training in the theory and methods of biophysics.

#### UNIVERSITY OF UPSALA RESEARCH IN PHYSIOLOGY

The physiology research of Professor Torsten Teorell of the University of Upsala, Sweden, has received a certain amount of support from The Rockefeller Foundation starting in 1936. In the years since then Professor Teorell, who is a former Rockefeller Foundation fellow, has developed at Upsala a small

institute of physiology. The institute specializes in extensive studies on the surface chemistry of living tissues, the permeability responses of red blood cells, the mechanism of gastric juice secretion and on the nature of nerve impulse transmission. Rockefeller Foundation aid to this program was continued in 1949 with an appropriation of \$5,400, available for three years. As in the past, the grant is largely for supplementing the salaries of technical assistants.

#### UNIVERSITY OF GRAZ BIOLOGY OF THE BEES

Professor Karl von Frisch of the University of Graz, Austria, has for many years devoted himself to an intensive study of the behavior of bees. A great deal of work has been done concerning the social organization of ant colonies and the ways in which ants convey information to one another. But the ant, essentially a two-dimensional creature, travels over a surface. Bees, on the other hand, fly about in the air, and this three-dimensional existence makes their problem of communication much more difficult and correspondingly more interesting. Professor von Frisch has discovered some of the intricate and precise methods used by bees to indicate to their fellows where food is to be found. Apparently, the variations in the dance performed by the bees upon returning to the hive furnish the necessary details of distance and direction. Continuation of Professor von Frisch's research was assisted in 1949 by a grant of \$25,000 to the University of Graz from The Rockefeller Founda-

tion. Of this sum, which is available for three years, \$10,000 is for repairs of laboratory space and the remainder for research expenses.

#### AUCKLAND UNIVERSITY COLLEGE CHEMISTRY OF NATURAL PRODUCTS

The Rockefeller Foundation in 1949 made a two-year grant of \$13,000 to Auckland University College of the University of New Zealand for investigations on the chemistry of substances occurring naturally in New Zealand. The dominion has a singular flora and fauna; of the 2,000 plants and trees growing there, 1,500 grow nowhere else in the world, not even in Australia. At Auckland a research team under Professor L. H. Briggs is isolating various compounds from these plants, elucidating their constitution and synthesizing them where possible. The group also searches continually for new compounds, some of which turn out to be quite unique, and looks for possible uses for these compounds. A variety of spectroscopic, chromatographic and polarographic techniques are already used in this work. However, much additional information of value can be obtained by examining the infrared spectra of the materials in question. The Foundation grant is to enable Dr. Briggs to obtain the necessary single beam infrared spectrophotometer and some accessory apparatus.

#### UNIVERSITY OF NORTH CAROLINA INSTITUTE OF STATISTICS

A two-year grant of \$27,000 from The Rockefeller Foundation went to the University of North Carolina

in 1949 for research in mathematical and experimental genetics under the auspices of the university's Institute of Statistics. Largely through the support and stimulation of the General Education Board, the institute has built up strong programs of research and training in theoretical and applied mathematical statistics along several lines, including economics, marketing and meteorology. More recently, in conjunction with the North Carolina State College of Agriculture, the institute has developed an interest in genetics. In 1949 it embarked on a new program.

The institute hopes to be able, through a combination of field work and mathematical techniques, to help put modern plant breeding methods on a more effective and rational basis than at present. This involves two approaches. The first is entirely theoretical and concerns the solution of significant mathematical problems in quantitative genetics. The answers will be used in the second, or experimental, phase of the project. In this, various genetic theories will be tested and the results of mathematical studies will be applied to problems of breeding specific organisms. The Foundation's grant is intended toward salaries and equipment for both aspects of the program.

#### UNIVERSITY OF CAMBRIDGE CHEMISTRY OF LIVING SUBSTANCES

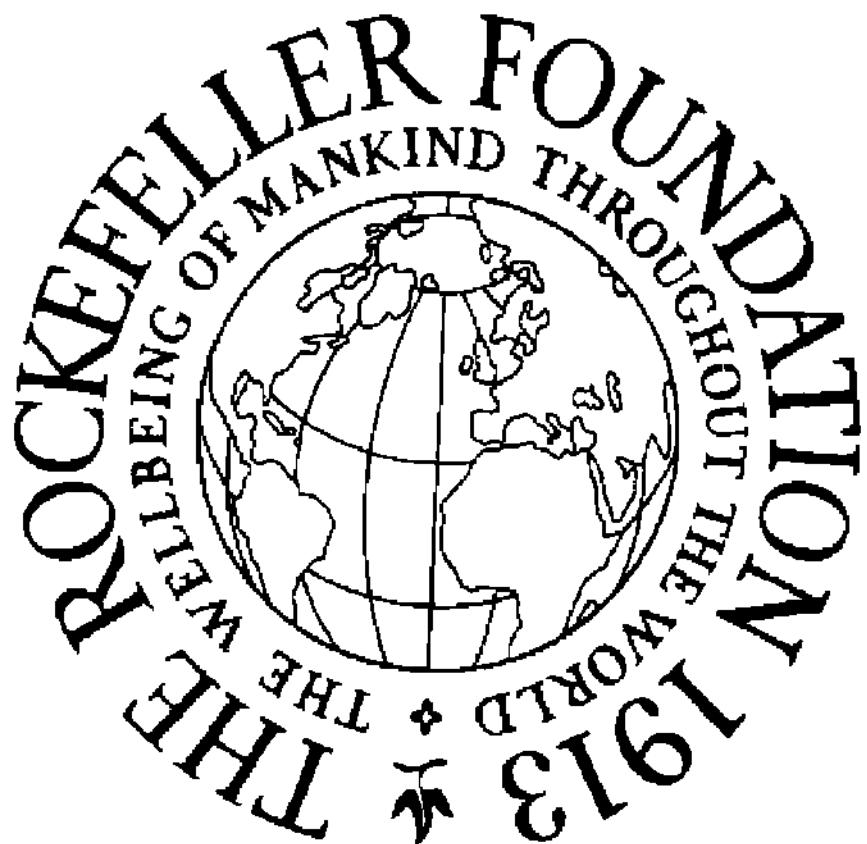
Under the leadership of Professor Alexander R. Todd an active program of research is conducted at the University Chemical Laboratory of the University of Cambridge, England. In 1948 Dr. Todd and his coworkers succeeded in synthesizing adenosine tri-

phosphate, an important coenzyme, thereby definitively establishing its structure. This substance is a key activator of the metabolic transfer of phosphates in biological systems. Chief interests of the group under Dr. Todd are the chemistry of nucleic acids, the role of various nucleotide coenzymes, the synthesis of nucleotides, the study of substances essential to the growth of certain organisms parasitic on higher plants, and work on insect pigments, on various natural drugs and antibiotics and on the anti-pernicious anemia factor (vitamin B<sub>12</sub>). All of these endeavors reflect the belief of Dr. Todd and his colleagues in the desirability of establishing firm rapport and cooperation between the disciplines of organic chemistry and biochemistry.

The currently acute dollar shortage in Great Britain has handicapped the University Chemical Laboratory in its efforts to obtain essential equipment available only in the United States. In order to permit the purchase of specialized apparatus, use of which will be shared by the Department of Colloid Chemistry at the university, The Rockefeller Foundation in 1949 made a grant of \$15,000, available until the end of February 1950, to the University of Cambridge.

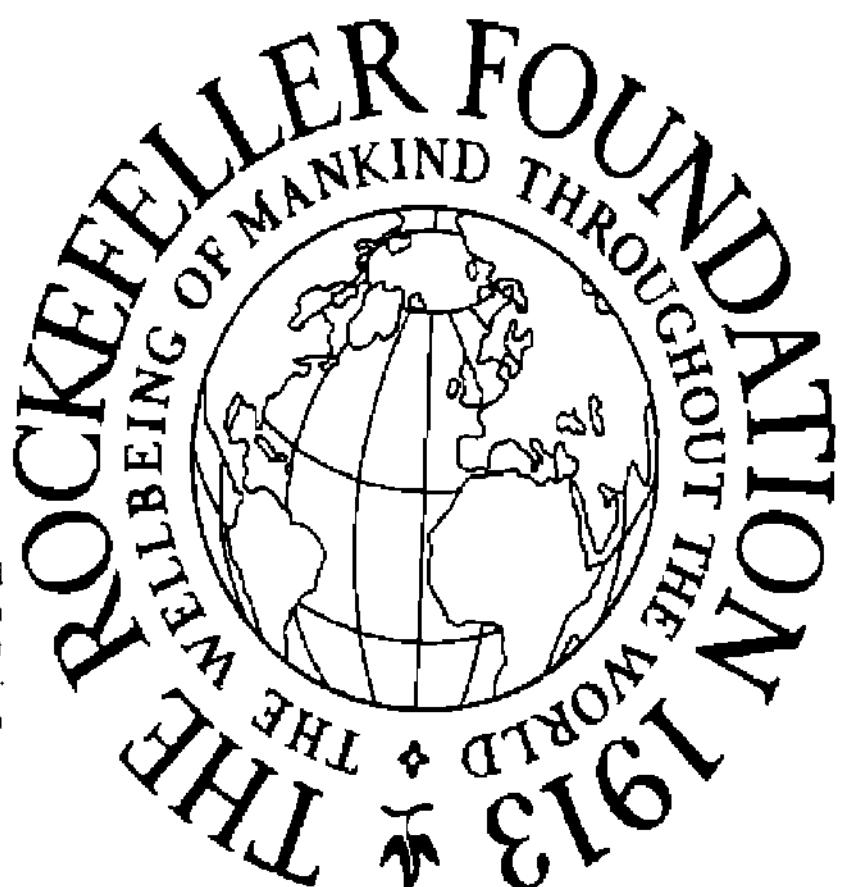
#### UNIVERSITY OF BRAZIL INSTITUTE OF BIOPHYSICS

The Institute of Biophysics at the University of Brazil, Rio de Janeiro, was created in 1945 by a special law of the Brazilian Congress. Dr. Carlos Chagas, Jr., professor of biophysics at the university's Faculty



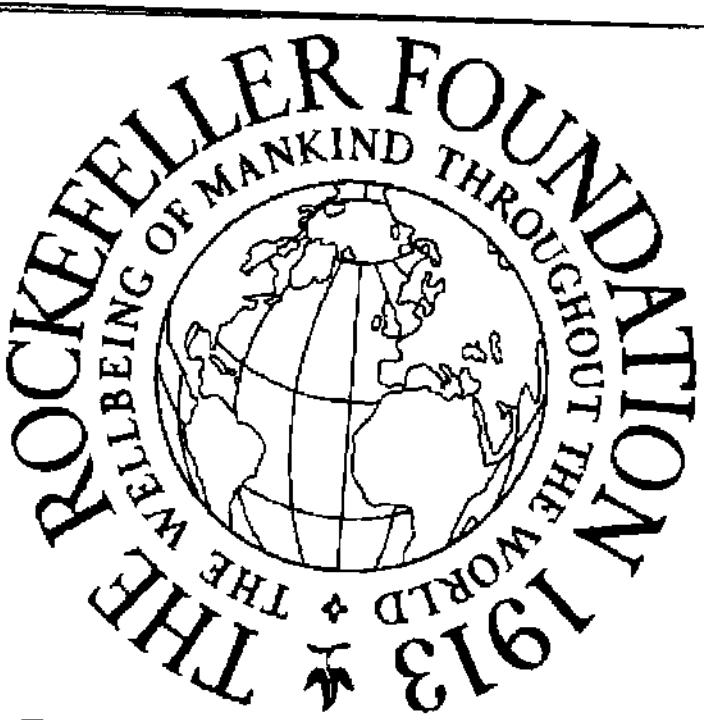
Photograph Excised Here

Working with a  
microspectrograph at the  
Institute for Cell Research  
of the Karolinska Institute



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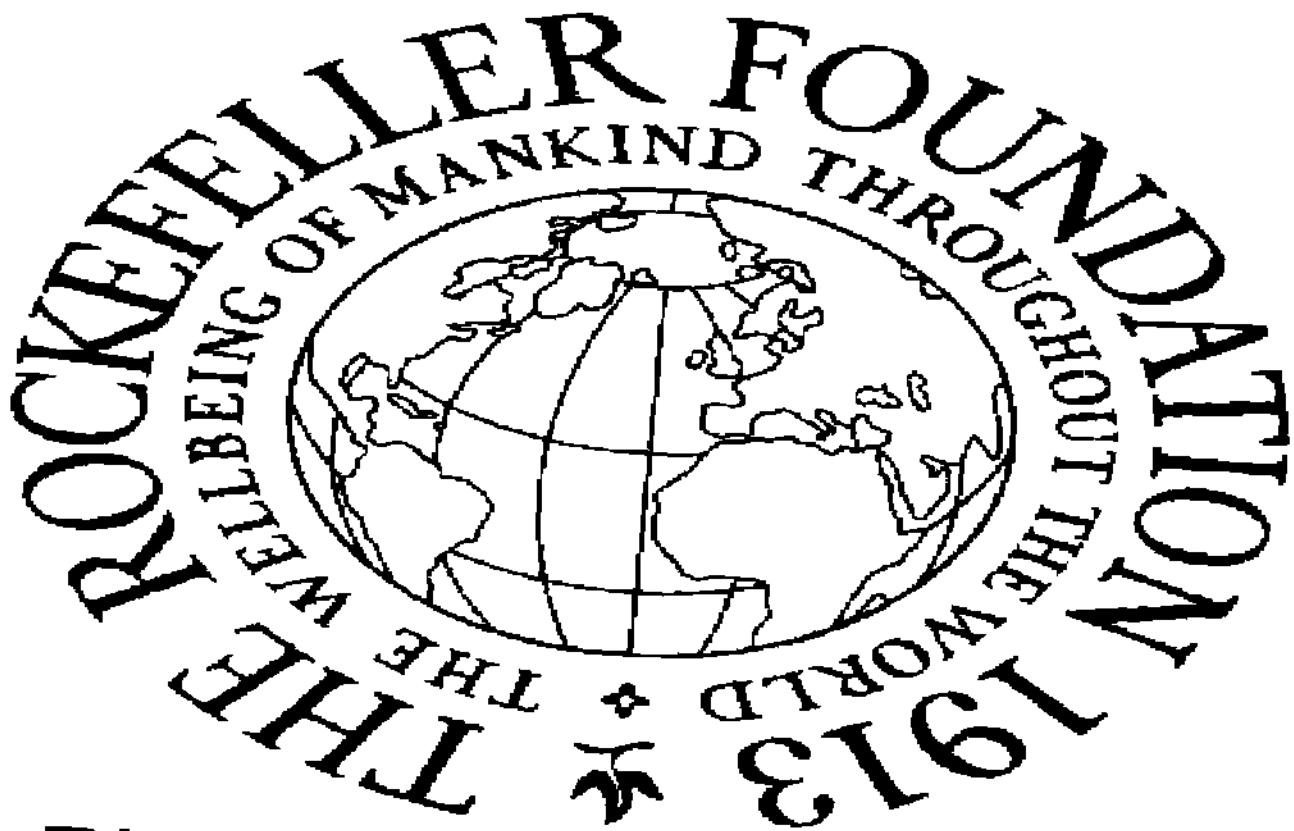
Preparation of corn seed  
for storage in connection with  
statistical genetic investigations at  
the Institute of Statistics of the  
University of North Carolina



Photograph Excised Here

A constant temperature room in the Institute of General Zoology at the University of Copenhagen makes possible controlled investigations on the mammalian egg

A corner of a laboratory in the Institute of Cytophysiology at the University of Copenhagen



Photograph Excised Here

of Medicine, is director of the institute. The staff, six of whom have had training experience in the United States or Europe, numbers about 15 persons. In addition, several interested medical students work in the laboratories. Some of these students are volunteers, others receive small stipends.

An active research program is under way at the institute. Among the current projects are studies in various phases of protein chemistry; electrophysiology of the cerebral cortex; cultivation of protozoa in tissue cultures; chemistry of the cell; physiological generation of electricity; physiology of the electric eel; and the effects produced on cells by X rays of long wave length and low penetrating power. Future plans look to the expansion of this program through establishment of full-time posts for senior staff members.

The institute draws most of its support from Brazilian sources. Under a 1949 grant from The Rockefeller Foundation, \$12,000 was made available to the University of Brazil for use by the institute over a period of three years. The funds are to be used principally for consumable supplies, such as chemicals, glassware, experimental animals and feeds, minor items of equipment and repair parts for existing apparatus.

#### NORTHWESTERN UNIVERSITY PHYSICAL CHEMISTRY OF PROTEINS

One important approach to the complicated problems of protein chemistry consists in study of the way in which ions, or small, electrically charged groups

of atoms, attach themselves to the external surface of the relatively huge globular proteins, such as serum albumin and the blood globulins. These phenomena are significant because they indirectly yield information concerning the structure of the globular proteins themselves. In addition they have direct bearing on biology and medicine, since they affect the function or dysfunction of many natural metabolic systems, including fundamental enzyme systems. At Northwestern University, Evanston, Illinois, Professor Irving M. Klotz of the Department of Chemistry is directing a research program in this specialized physical aspect of protein chemistry. In 1949 The Rockefeller Foundation followed up a 1947 grant in aid of Dr. Klotz' work with a grant of \$27,000 to Northwestern for another three years' support.

As a result of investigations completed so far, Dr. Klotz and his colleagues have been able to identify some of the amino acid residues in proteins which facilitate binding of ions. They have also developed methods of determining the strength of the ion-protein bond and the number of small ions bound by a single giant protein molecule. There remains the interesting question of determining the configurational relationships of the residues around the central site of attachment of the ion; future studies will focus on this phase of protein structure.

Two main lines of attack have been selected. The first features comparison of the binding of functional protein groups with chemically identical but structurally dissimilar, negatively charged ions placed in

various known positions. The second type of study will compare the binding properties of naturally occurring proteins which have been modified in a known fashion by mild chemical reagents. It is thus possible to leave the framework of the protein intact while changing its electrical character and the nature of the groups available for binding. After sufficient fundamental information has been obtained, the group hopes to be able to modify a protein so that it will show a strong affinity for any given type of ion.

Excellent research facilities and equipment for this work are provided by Northwestern. The Foundation grant is largely for salaries of additional research workers and in small measure for consumable supplies and reagents.

**MINISTRY OF PUBLIC HEALTH, URUGUAY  
RESEARCH INSTITUTE OF BIOLOGICAL SCIENCES**

In 1949 the Research Institute of Biological Sciences in Montevideo, Uruguay, moved into a new and specially designed building of its own. This move highlighted the transformation of the modest laboratory established in 1927 for Professor Clemente Estable into a modern and flourishing research institution. Dr. Estable continues to direct the staff, many of whom are associated with the University of Montevideo as teachers or graduate students, in an active research program.

During the course of its development the institute organized seven departments: general biology, cytology and histophysiology; zoology and hydro-

biology; comparative physiology; histopathology and bacteriology; comparative anatomy, histology and embryology; biochemistry; and photo-techniques. In 1949 an eighth and new department was established to carry out work on the ultrastructures of cells. This new department, which is headed by Dr. Eduardo DeRobertis, a former Rockefeller Foundation fellow, is concerned with the structural arrangement of the very minutest particles within cells. Dr. DeRobertis has been working on the fine structure of nerve cells with the aid of the electron microscope. He plans to extend his research along several lines and obtain further information on the fundamentals of biomolecular organization and the function of nerve tissue.

In past years The Rockefeller Foundation contributed funds toward the construction and equipment of the institute's new building; further aid was granted in 1949 through an appropriation of \$35,000 to the Ministry of Public Health in Montevideo for use by the institute. The money is intended mainly for equipment and expenses connected with the research of the new department of ultrastructures of cells over a three-year period.

#### UNIVERSITY OF CALIFORNIA BIOCHEMISTRY OF PROTEINS

The University of California, Berkeley, in 1949 received a three-year grant of \$15,000 from The Rockefeller Foundation for continued support of research in biochemistry at the medical school under

the direction of Professor David M. Greenberg. Dr. Greenberg's work is concerned mainly with the biochemistry of proteins. During the past few years he and his associates have been conducting an investigation of the enzymatic nature of protein synthesis and the metabolism of amino acids containing C<sup>14</sup>, a traceable, radioactive form of carbon. They found that amino acids are incorporated into the protein of homogeneous, noncellular tissue preparations as well as into the protein of cellular tissue, and thus obtained a method with which to pursue the problem of biological protein synthesis outside of living tissue.

The group under Dr. Greenberg also observed that acellular liver preparations, in addition to being able to incorporate glycine, an amino acid, into protein, can transform glycine into serine, another amino acid. It was further observed that some of the serine is then incorporated into the fatty fraction of the liver preparation, probably through transformation of the serine into serine phosphatide. Work on the characterization of the enzyme system responsible for the transformation is now in progress.

Other current projects being conducted with funds provided by the Foundation grant include research on the metabolic reactions of acetates and several amino acids labeled with radioactive carbon; study of the formation and metabolic turnover of intracellular iron porphyrin compounds using radioactive iron (porphyrins form the basis of plant and animal respiratory pigments); and purification, physico-chemical characterization and investigation of the bio-

logical properties of the enzyme known as liver arginase, which splits the amino acid arginine into simpler substances.

UNIVERSITY OF TEXAS  
BIOCHEMICAL GENETICS

A few years ago at the University of Texas, a group of scientists headed by Professor Wilson S. Stone found that the naturally occurring mutation rate of microorganisms was increased if the organism was grown in a medium previously irradiated with ultraviolet light. Their discovery, interesting enough in itself, also provided them with the basis for new experimental techniques which are being used to investigate the mechanism of chemically induced mutations.

Among their findings are the facts that the temperature at which the medium is irradiated has a profound effect on its mutagenic properties, while wide variation in nutrient and in hydrogen ion concentration has little influence on spontaneous mutation, except when a few specific amino acids and vitamins are restricted. Temperatures below the optimum for growth of a particular organism increase spontaneous mutation only slightly; temperatures above the optimum produce a marked increase. In one case mutation seems to be connected with enzyme inhibition. Dr. Stone and his colleagues have also succeeded in obtaining mutants of soil bacteria which, unlike the normally occurring organisms, do not fix the free nitrogen of the air, that is to say,

they do not transform it into nitrogenous compounds. These mutants are now being used to study the mechanism of nitrogen fixation.

For the future Professor Stone and his associates propose to determine by a variety of exact analytic methods the minute chemical changes induced in a medium of known composition when it is subjected to irradiation. Results of such experiments may help to explain how these chemical modifications favor the development of mutant organisms capable of adapting to a new environment. It may also be possible to find out just how the adaptation occurs, whether it is through a different, genetically determined enzyme system or through a genetic reorganization of an existing enzyme pattern which renders the pattern capable of functioning with substances not present in the unmodified medium.

Rockefeller Foundation support of this program in biochemical genetics at the University of Texas was continued in 1949 with a grant of \$12,000, available for two years.

CORNELL UNIVERSITY  
ELECTRON MICROSCOPE LABORATORY

With the electron microscope, one of the important new tools which physics research has furnished to biology, scientists have been able to see clearly viruses, colloidal particles and other structures not visible under even the most powerful of conventional microscopes. The Rockefeller Foundation has for a long time been interested in helping develop this tool

and in aiding the creation of centers for recruiting and training advanced personnel in the field of electron microscopy. In 1949 the sum of \$45,000, available over a six-year period, was appropriated to Cornell University for assistance in establishing a new all-university Electron Microscope Laboratory there.

Cornell has five principal objectives in mind in setting up the new laboratory, which is to be operated officially as part of the Engineering Physics Department. Briefly, these are:

1. To provide within the Engineering Physics Department graduate and advanced undergraduate training in electron optics and electron microscopy.
2. To conduct fundamental research in electron microscopy and to develop new and improved techniques which will enlarge the useful scope of the instrument, especially in fields as yet untouched.
3. To provide collaborative help and facilities for electron microscopy studies in the biological and health science departments throughout the university, e.g., the Departments of Animal and Plant Biology, Bacteriology and Nutrition. These departments have contributed toward the capital costs of the laboratory.
4. To provide collaborative help and facilities to further current research in the physics of the solid state and in problems relating to engineering materials.
5. Possibly to provide short training courses for non-university personnel in the latest uses and techniques of electron microscopy.

The work of the laboratory will be of two varieties. In one the microscope will be used as a research tool; in the other a second instrument will itself be the

subject of research. Of the \$45,000 grant from The Rockefeller Foundation, \$15,000 is for the second microscope and \$30,000 is toward the salary of the professor in charge of the new laboratory.

#### IOWA STATE COLLEGE PHYSIOLOGICAL GENETICS

The program in physiological genetics at Iowa State College, Ames, has been proceeding along two related lines: study of the mechanisms underlying innate resistance or sensitivity to disease and research aimed at establishing the genetic explanation of hybrid vigor. Since both of these problems concern inherited responses, the work has involved a large number of long-term, carefully controlled breeding experiments. Under the direction of Professor John W. Gowen natural resistance to disease (in this case typhoid fever) is being studied in mice and in fowl; hybrid vigor is being investigated in drosophila.

The host to an infectious disease may defend itself in a variety of ways against an invading pathogen and thus develop what is termed an acquired resistance. Natural resistance, on the other hand, is an attribute of the individual which is characteristically present before there has been any contact with the disease. The work at Ames has shown that the factors responsible for acquired resistance or immunity are not identical with those responsible for natural resistance. The results indicate, rather, that natural resistance depends on the body cells, whose proportions and functions are under genetic control, and

that natural resistance is therefore determined by the animal's inheritance. Dr. Gowen and his colleagues believe that particular genetic combinations produce variations in several factors important in the organism's biological defense against invasion.

The increase in the number of white cells circulating in the blood may vary significantly in susceptible and resistant animal strains; the physiologic activity of the cells also differs. In response to the presence of bacterial toxins, liver cells of resistant strains may exhibit a protective kind of behavior not found in susceptible strains. Furthermore, resistant animals tend to vary favorably in their temperature controlling reactions, their blood hydrogen ion responses and their general metabolic behavior. In a sense it may be stated that in natural resistance what is inherited is the capacity to meet the crisis by developing a sufficiently effective acquired resistance.

The reasons why hybrid inheritance should lead to increased vigor and productivity are not yet clear. However, Professor Gowen and his group are inclined to the view that the answer lies in the existence of specific genes or gene arrangements for vigor, and not in physiological factors in the extranuclear protoplasm contributed by the mother at the time of fertilization. Work is also going forward on the genetic basis of virulence in disease-causing organisms in relation to host resistance and on the genes controlling sex determination. In the latter instance an important stride was made in isolating five new major genes. One of these directly affects the male-female sex ratio in

the offspring; understanding of its action might possibly permit deliberate determination of sex in breeding experiments.

The college is constructing a new animal isolation and testing laboratory for Professor Gowen's program. Aid from The Rockefeller Foundation was continued in 1949 with a three-year grant of \$18,000.

## AGRICULTURE

### MEXICAN AGRICULTURAL PROGRAM

Now rounding out its seventh year of operation, the operating agricultural program conducted jointly by The Rockefeller Foundation and the Mexican government has made considerable progress in furthering the development of agriculture in Mexico. It has demonstrated that modern science and technology, judiciously applied, can be a prime mover in raising a nation's level of existence. For when there is growth at the core of an economy — which in the case of Mexico is agriculture — all the other sectors of the economy receive concomitant stimulation.

The central aims of the program are to improve the volume and quality of the basic Mexican food crops and to develop a body of Mexican personnel trained in modern agriculture. The project personnel now consists of 11 United States agricultural scientists on the Foundation's regular staff, 1 man on temporary appointment, 46 young Mexican agriculturists commissioned to the project by their own government, 7 Mexican agriculturists studying in the United States,

6 fellows from various Latin American countries working with the group in Mexico and approximately 16 persons in various service capacities. In addition the project employs about 120 field laborers regularly and nearly twice this number seasonally.

The program involves: corn improvement; improvement of wheat and other small grains; bean improvement; introduction, testing and distribution of forage legumes and grasses; study of methods of soils management and conservation; control of insects, particularly those which attack corn and beans; cooperation with the Mexican government in the production and distribution of improved seeds to farmers; training of personnel; and cooperation with other Latin American agricultural projects. Results along all these lines have been encouraging, although much still remains to be done. It is hoped, among other things, to strengthen the extension work and the green manures program in the near future.

Interest in the program and its accomplishments has been widespread, as evidenced by the fact that during the past year it attracted about 350 visitors, who came from most of the countries of Latin America, from Canada, the United States Department of Agriculture, the Food and Agriculture Organization of the United Nations and from numerous North American universities. The publication program of the project is growing in response to an active demand for technical and popular bulletins. In 1949 The Rockefeller Foundation, in line with this expansion, published an illustrated booklet on the first six years' activities of the Mexican program.

The Rockefeller Foundation in 1949 made a supplementary appropriation of \$3,750 for 1949 expenses and allocated \$322,375 for 1950 expenses of the Mexican Agricultural Program, bringing its support thus far to a total of \$1,643,280.

SECRETARIAT OF AGRICULTURE, MEXICO  
NATIONAL COLLEGE OF AGRICULTURE, CHAPINGO

The National College of Agriculture at Chapingo, a dependency of the Mexican Secretariat of Agriculture, is the main center of activity for The Rockefeller Foundation's agricultural program in Mexico. The program's principal experiment station, including a large field laboratory and an experimental greenhouse, occupies about 300 acres of the college land. The work of the program staff has aroused a good deal of interest on the part of both the college's faculty and its student body. For many, the experiment station has been the first real contact with experimental agricultural science.

The college is now renovating and expanding its Departments of Plant Pathology and Entomology. Steps have been taken to increase library facilities and to bring agricultural scientists from the United States to the college to give short-term, intensive lecture and demonstration courses. The Mexican government has agreed to underwrite the cost of alterations and new laboratory installations for the plant pathology and entomology departments. A 1949 grant of \$14,500 from The Rockefeller Foundation, available for two years, provides \$10,000 for equipment and supplies for these two departments, \$2,500

for library materials and \$2,000 toward expenses of visiting professors.

#### INTER-AMERICAN SYMPOSIUM ON PLANT BREEDING

Believing that any significant results arising from the plant breeding activities of the Mexican Agricultural Program should be passed on to other Latin American scientists as soon as possible, The Rockefeller Foundation in 1949 set aside \$13,000 to cover the expenses of an Inter-American Symposium on Plant Breeding. The symposium was held last September in Mexico City, under the auspices of the Office of Special Studies of Mexico's Secretariat of Agriculture and Animal Industry. It was attended by leading specialists in plant breeding from Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Guatemala, Peru, Uruguay and Venezuela as well as by Mexican scientists. A number of technical papers were presented, and there were discussions and visits to field stations, all of which resulted in establishment of valuable contacts and the formulation of plans to intensify the exchange of important materials and information between the delegates and the local scientists. The \$13,000 grant was used for travel and living expenses of the visiting delegates.

#### TECHNOLOGICAL INSTITUTE, MONTERREY COLLEGE OF AGRICULTURE "ANTONIO NARRO" EQUIPMENT AND SUPPLIES

Largely as a result of the joint agricultural program supported by the Mexican government and The Rockefeller Foundation, agricultural research in

Mexico is undergoing a rapid growth. The supply of technical advice and improved plant materials is hard pressed to keep up with the demand. One deterrent has been a shortage of equipment, supplies and books in the agricultural colleges. To help meet immediate needs in these regards, The Rockefeller Foundation made two modest grants to Mexican agricultural schools. The first, for \$6,000, went to the Technological Institute, Monterrey, and the other, amounting to \$4,000, to the College of Agriculture "Antonio Narro," Saltillo. In both cases the appropriations were for use during 1949.

#### MINISTRY OF AGRICULTURE, CHILE FULL-TIME AGRICULTURAL RESEARCH

Two years ago the Chilean government reorganized its Department of Agriculture and brought together 116 employees in a new division known as the Department of Agricultural Investigations, directed by Carlos Munoz. Of this staff, 67 are graduate agronomists, the rest being clerks, stenographers and other nontechnical personnel. The division maintains about 20 adequately equipped experiment stations, and in general, conditions for research and for practical work in plant improvement, insect control and other aspects of agriculture are good. There has been, however, one major handicap. All employees have been on part-time salaries and have therefore been obliged to hold additional posts in order to earn a satisfactory living. The government recently decided to intensify food production programs by making it possible for some 20 of the most competent research men to work

full-time. The Foundation cooperated in this new arrangement by approving a grant of \$12,000, which, with Chilean funds, will be used toward providing the full-time salaries over a period of two years.

**UNIVERSITY OF SAN MARCOS  
FACULTY OF VETERINARY MEDICINE**

By attacking the prevalent animal diseases of Peru, the Faculty of Veterinary Medicine of the University of San Marcos, Lima, is endeavoring to increase the country's supply of animal protein. A campaign against animal disease depends, of course, on the existence of a corps of trained and competent veterinary physicians, and the school has inaugurated a vigorous program to provide Peru with such a body of workers. Under the leadership of Dean José Santivanez M., a United States trained veterinary specialist, a total of about 120 students are pursuing the four-year course. The teaching staff consists mostly of young men, a number of whom received their professional degrees in the United States, who are all eager to engage in research. The dean is making a concerted effort to place as many of the staff as possible on a full-time basis. A one-year appropriation of \$14,000 was made in 1949 by the Foundation for basic teaching and research equipment and consumable supplies for the Faculty of Veterinary Medicine.

**INSTITUTE OF AGRONOMY, CAMPINAS  
RESEARCH IN PLANT VIRUSES**

Under the direction of Dr. Alvaro Santos Costa, the program of research on plant viruses at the Institute

of Agronomy, Campinas, State of São Paulo, Brazil, has been progressing steadily. The institute at Campinas is one of the foremost agricultural research stations in South America. Under Dr. Santos Costa notable work has been done on "tristeza" (a disease of citrus fruit trees resulting in quick decline of the trees) and on potato, tomato and other plant virus diseases. The United States Department of Agriculture has recently stationed a plant virologist at Campinas to participate in the virus research program there. Plans have now been made to establish a new Virus Research Department, headed by Dr. Santos Costa, at the institute, to erect a new building to house the department and to expand the research activities on plant viruses. A grant of \$15,000 was made to the institute in 1949 by The Rockefeller Foundation to provide equipment, supplies and technical assistance for Dr. Santos Costa's augmented program over a two-year period.

INTER-AMERICAN INSTITUTE OF  
AGRICULTURAL SCIENCES  
LIBRARY AND COMMUNICATION SERVICES

The Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica, was started in 1942 with initial assistance from the United States Office of the Coordinator of Inter-American Affairs. Since 1944 it has operated, by convention agreement among the American republics, as a part of the inter-American system. The Governing Board of the Pan American Union serves as the institute's board of directors. At present the institute is supported by

quota funds from member countries and by special grants from organizations interested in tropical agricultural products and problems.

The institute is situated on a 2,500 acre tract of land donated by the government of Costa Rica. These grounds are at an elevation of 2,000 feet, giving ready access to both the tropical coastal areas and the mountainous agricultural regions. The extensive physical plant is in process of expansion to provide for increased work in tropical animal husbandry. There are about 20 persons on the permanent scientific staff, and seven scientists are in residence by arrangement with United States institutions. In addition, 33 graduate assistants and 22 extension service trainees, representing 13 countries, are at the institute on fellowships or other special aid. Research production, slowed down by the war at first, is now approaching substantial volume.

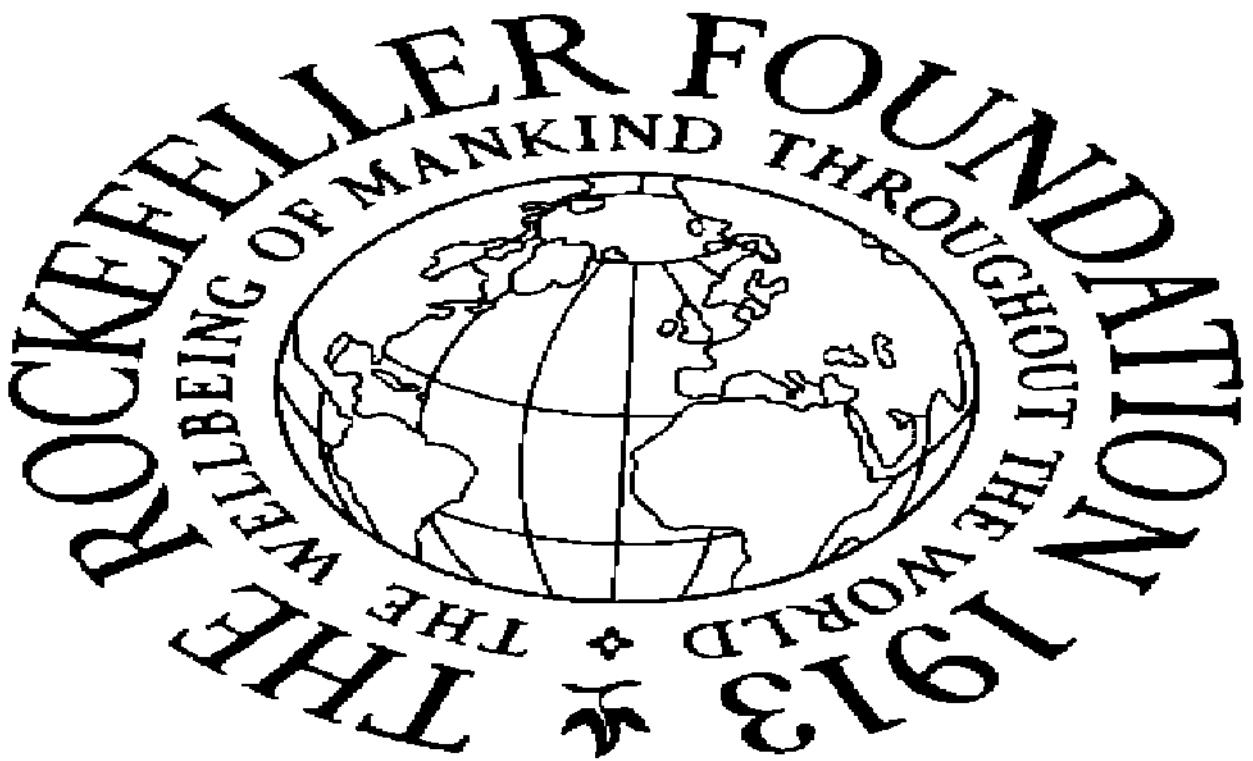
The Rockefeller Foundation in 1949 appropriated \$60,000 to the institute to assist in a program of providing scientific literature to Latin American agriculturists during the period ending June 30, 1955. Among the features of the institute's plan for broadening its library services is the publication of a new journal containing Spanish abstracts of important articles. The main points of some 1,200 articles a year will thus be circulated widely, and upon request the institute will furnish photostats of the original papers at or below the cost of reproduction. The Rockefeller Foundation funds are for additional jour-



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A staff member and a  
visiting professor from  
the University of Upsala  
perform an experiment at  
the Institute of Biophysics  
University of Brazil

Duke University, Department of Biochemistry,  
Measuring the rate of diffusion of protein molecules



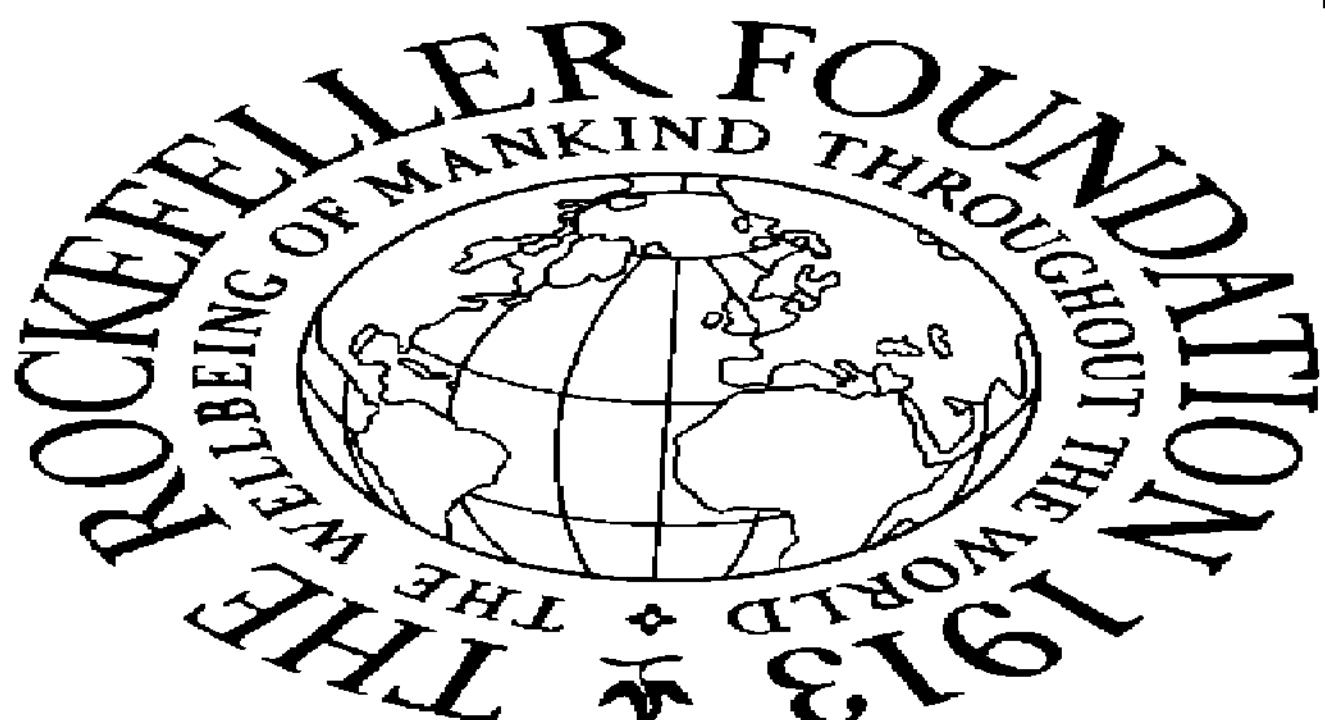
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*Coix lacrima-jobi*, a promising commercial grain imported from the Philippines by the Inter-American Institute of Agricultural Sciences

A demonstration in comparative physiology at the University of São Paulo



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nal subscriptions, short back-files of the major periodicals, necessary photostatic equipment and general operating expenses of the new Scientific Communication Service.

### PAN AMERICAN AGRICULTURAL SCHOOL SCHOLARSHIPS

The Pan American Agricultural School, Tegucigalpa, Honduras, provides free vocational education in agriculture for a total of 180 carefully selected boys, for the most part poor, from more than ten countries of Latin America. Sixty students are accepted each year for a three-year training period. The physical facilities, teaching staff and both the academic and practical instruction of the school are of excellent quality. In addition to tuition, students are furnished with transportation, clothing, books and other necessities.

In 1947, with funds from a Rockefeller Foundation grant in aid, the school inaugurated a program of sending honor graduates to the United States for a year's academic experience at various agricultural colleges. Assisted by a 1949 grant of \$15,000, available for four years, from the Foundation, the school has now expanded this program. Up to three graduates per year are to be appointed by Dr. Wilson Popenoe, the director of the school, to scholarships for study and practical training with The Rockefeller Foundation's agricultural staff in Mexico or at United States colleges of agriculture.

### COLLABORATIVE OPERATING PROGRAM IN AGRICULTURE IN COLOMBIA

Since 1942, when the Foundation first began to assist the development of agricultural science in Colombia, a sizeable sum has gone to that country in the shape of fellowship and travel awards, grants in aid and major appropriations for the agricultural colleges at Medellín and Palmira and for the Faculty of Veterinary Medicine and Animal Husbandry at Bogotá. These schools are now considerably strengthened, and they share fully in the desire of the Colombian Ministry of Agriculture to introduce to Colombia modern technical leadership in agricultural work.

The success of the Mexican Agricultural Program greatly heartened Colombian authorities and turned their thoughts to the possibility of a similar operating program in Colombia. In 1948 the President of Colombia officially requested the cooperation of The Rockefeller Foundation in inaugurating such work. In response to this invitation, Foundation staff members made an extensive study of the Colombian situation, during which they visited the country, observed conditions there and talked with both agricultural scientists and government officials. In 1949 an agreement was concluded between the Foundation and the Colombian government, whereby the two agencies together are embarking on a program which, like the one in Mexico, is designed principally to improve the basic food crops of the people. Dr. J. George Harrar, chief of the Mexican program, is responsible

for the general direction of the work in Colombia, while Dr. Lewis M. Roberts is transferring from the Mexican staff in order to take charge locally in Colombia.

Like Mexico, Colombia is a highly agrarian country. It has a considerable amount of good farming land, and the altitude, temperature and rainfall conditions are quite favorable. The most important grains are corn and wheat, and first efforts at improvement will be directed toward them. As a matter of fact, government experiment stations have already begun breeding programs in these two plants. Both the agricultural colleges in Colombia are developing well. Their staffs, together with the Ministry of Agriculture and the government experiment stations provide a group of trained, able personnel, anxious to cooperate with Foundation workers and to learn new and modern methods. All in all, the agricultural conditions in Colombia are such that results of real importance can be expected to emerge from an organized scientific assault on the problems involved.

The government of Colombia is contributing substantially to the new program. The Foundation is sending two staff men to Colombia and has set up a fund of \$40,000 for expenses of the program during 1950. About half of this is for salaries, travel funds and other expenses of the Foundation representatives. The remainder, along with the money furnished by the Colombian government, is for equipment, such as pick-up trucks and supplies for plant-breeding work, and for general expenses.

NATIONAL UNIVERSITY OF COLOMBIA  
FACULTY OF AGRONOMY, MEDELLÍN

Advancement of agricultural teaching and research in Colombia is obviously an important and necessary accompaniment to the program described above. Although supervision and direction from the outside may be required initially, the continued success of any such project depends on the ability of the country concerned to take over and run things itself. Hence the desirability of promoting the development of agricultural science in Colombia and developing an adequate corps of well-trained Colombian agriculturists.

The Rockefeller Foundation has given aid to the Medellín Faculty of Agronomy of the National University of Colombia since 1942. In light of the operating program in agriculture now being undertaken by the Foundation and the Colombian government, assistance of this kind assumes new and greater significance. While the Medellín Faculty has made a good deal of progress over the last few years, much more is needed for it to achieve its full potentialities. The Foundation in 1949 provided the sum of \$30,000 for use by the Medellín Faculty through the end of 1950 to promote teaching and research.

OTHER SUBJECTS

AMERICAN ACADEMY OF ARTS AND SCIENCES  
UNIFICATION OF SCIENCE

The Rockefeller Foundation in 1947 allocated \$9,000 to the Institute for the Unity of Science in

support of that body's first three years of operation. Unfortunately, because of legal technicalities, the funds could not be transferred, and it was necessary to allow the appropriation to lapse. In the meantime, however, the American Academy of Arts and Sciences, Boston, which for some time had been seriously interested in promoting the integration of the various branches of the natural sciences, the social sciences and the humanities, decided to enter upon active work in this field.

The attention of the academy quite naturally came to rest upon the Institute for the Unity of Science, which had already worked out a program for action. In 1949 the academy and the institute joined forces. The academy is now applying a three-year grant of \$9,000, made by The Rockefeller Foundation in 1949, to the support of the institute's first formal efforts in unifying science. The program of the institute at present consists of three major activities. The first is a nation-wide essay contest, open to students at any university, college or institution of higher learning in the United States or Canada and to young men and women who have received their doctor's degrees since July 1947. A prize of \$300 and two \$100 prizes will be awarded for the three best essays on *The Divorce Between Science and Philosophy; Its historical origins, its logical basis and proposals for its termination*. As Professor Philipp G. Frank of Harvard University, the president of the institute, has pointed out, there was no sharp distinction between science and philosophy in antiquity. The consequences of the separation, which became more or less complete

in the eighteenth century, have been far-reaching; there is every reason to believe that a reunion of the two would have profound and beneficial results.

The institute also has plans to invite active workers in its field to meet and discuss the present state of the problems of the unity of science. Consideration will be given to theoretical questions such as the current status of logical empiricism and semantics and also to topics of more general interest, such as the role of the unity of science movement in our cultural life and its potential contribution to the improvement of college education. The third activity is the publication of a bibliography on the unity of science. This will include not only titles of papers and books devoted particularly to the unity of science, but also a critical survey of material touching upon the subject which has appeared in other scientific publications.

#### UNIVERSITY OF CHICAGO METEORITE STUDIES

Although modern physical science has made enormous strides in recent years, we do not yet fully know what conditions existed in the universe when the elements were formed, what was the process of formation, when it took place, how the planets of our solar system were formed or what the internal structures of the planets are. It now appears that these and other similar basic questions bearing upon the nature of the universe can be usefully illuminated through a series of infinitely precise analyses of the

composition of a large and representative collection of meteorites.

This possibility rests upon the assumption — not wholly proved but very probably true — that from the point of view of composition meteorites are typical examples of the universe of matter. The technical problem of determining both qualitatively and quantitatively what elements are present in a small sample of meteorite have been solved by Professor Harrison Brown of the Institute for Nuclear Studies of the University of Chicago. Professor Brown has a radioactive isotope technique which can detect accurately the amount of any element in a given sample even though that element is present in concentrations of only one part in one hundred million.

With this technique as a starting point Professor Brown has begun a comprehensive program of meteorite studies. His plan is to obtain samples from as many as possible of the 2,000 meteorites known throughout the world (approximately 200 samples have already been collected) and carry out precise essays for 80 elements. The data will be compiled into a catalogue, using the latest automatic machine recording methods in order to facilitate later studies for each element. All this would be done as a completely open program of international cooperation. The catalogue will be deposited with a permanent agency which will keep it continuously up to date and make it available to scientists in all countries.

Once these voluminous data have been gathered there should be a statistically sound basis for precise

estimates of the relative abundance of elements in the universe. Such information is intimately relatable to three other problems — the age of our solar system, the origin of the elements and the evolution of those chemical compounds necessary for the emergence of life. Furthermore, there is a good chance that the data will aid in choosing between various hypotheses concerning nuclear forces.

The Rockefeller Foundation in 1949 made a four-year grant of \$60,000 to the University of Chicago in support of this project directed by Professor Brown. The funds will be used for staff salaries, travel expenses and laboratory and office supplies and equipment.

#### UNIVERSITY OF BRAZIL FULL-TIME PROFESSORSHIPS

About two years ago the University of Brazil, Rio de Janeiro, modified its regulations to permit the appointment of full-time professors to its faculty. Full-time appointments have been in force for some time at the University of São Paulo, and a part of the success of that institution in teaching and in research is attributed to the full-time system. The University of Brazil, younger as an organized university although some of its constituent faculties antedate those of São Paulo, now wishes to put the full-time teaching system into effect also, and is starting out by establishing three such professorships in experimental sciences. The men chosen are to receive adequate

salaries and will not hold other remunerated positions. The Rockefeller Foundation in 1949 granted \$14,000 to the University of Brazil to help support these professorships for the first three years.

#### THE CONSERVATION FOUNDATION UTILIZATION OF NATURAL RESOURCES

Growing populations, diminishing natural resources and international tensions arising from the contest for these decreasing resources are the special concern of the Conservation Foundation of New York. An independent organization, it deals with conservation as a whole, rather than with only one or two of its aspects. The foundation, which in 1949 received a three-year grant of \$75,000 from The Rockefeller Foundation, was established in 1948 under the auspices of the New York Zoological Society for the purpose of initiating and advancing research and education in the entire field of conservation — soil, water, forests, vegetation and wildlife. Its activities are guided by an advisory council of 12 experts in relevant technical fields. Although wholly independent, the Conservation Foundation has made effective liaison with government and private agencies dealing with conservation. It has secured the endorsement, advice and cooperation of important private groups and of the United States Forest Service, the United States Conservation Service, the United States Fish and Wildlife Service and the National Park Service. The president of the Conservation Founda-

tion, Mr. Fairfield Osborn, is a widely known writer and lecturer on conservation matters.

The work of the foundation at present can be divided roughly into two categories, research projects and educational projects. Among the former are a world survey of the incidence of soil erosion, in co-operation with the Food and Agriculture Organization of the United Nations; a ground water survey; a survey of research opportunities in the field of soil and nutrition; a survey of the range and watershed of the State of Utah; farm forest pilot demonstrations; and a survey of conservation endeavors, organization and coordination within state governments. Included among the education projects are production of the *Living Forest Series* of films; production of film strips presenting the facts and philosophy of Mr. Osborn's book, *Our Plundered Planet*, for school use; Yale University pilot courses in conservation; a survey of the curricula of the New York State school system to improve the methods and extent of teaching conservation in the New York schools; study of the policies in conservation education in the United States; and a conservation exhibit at the New York Zoological Park. In 1949 the Conservation Foundation published an illustrated report on the stake of industry in conservation of natural resources, entitled *Resources Report to Industry*.

The Conservation Foundation receives support for its administrative budget from the New York Zoological Society, the Milbank Memorial Fund and the Pack Foundation. The present grant from The Rockefeller Foundation provides \$30,000 toward adminis-

trative expenses and \$45,000 for financing projects, primarily of the research type.

NATIONAL RESEARCH COUNCIL  
OFFICE OF SCIENTIFIC PERSONNEL

The Office of Scientific Personnel of the National Research Council, established during the war to meet an emergency situation, has been continued as a regular activity of the council. The office still renders investigative and advisory services on the subjects of the supply, training and utilization of personnel in the different branches of science and technology. At present it is engaged in a number of studies and projects, including the formation of a new *Key Roster of Scientific Personnel*, sponsored by the Army and Navy. Rockefeller Foundation assistance, which began in 1948, was extended in 1949 with a one-year appropriation of \$15,000.

UNIVERSITY OF SÃO PAULO  
EXPERIMENTAL BIOLOGY AND CHEMISTRY

The University of São Paulo, Brazil, is one of South America's leading research and teaching institutions. Most of the professors and assistants in the scientific departments are on a full-time basis. The university is doing a large amount of promising and significant research, particularly in genetics.

The development of the scientific departments at São Paulo is handicapped, however, by a shortage of dollar and other foreign credits needed to buy special supplies and equipment not available in Brazil. The Rockefeller Foundation has in the past supplied funds

to the university for necessary purchases abroad. In 1949 a further grant of \$20,000, available until the end of June 1951, was made. The money is intended for use by the Departments of General Biology (Genetics), Geology and Paleontology, Botany (Ecology), Mineralogy and Petrography, Zoology and Chemistry, and by the Biochemistry Department of the Veterinary Faculty. Among the staff who will enjoy the benefits of the additional materials are seven former Rockefeller Foundation fellows.

#### UNIVERSITY OF TEXAS BIOCHEMICAL ASPECTS OF ALCOHOLISM

The University of Texas received aid from The Rockefeller Foundation in 1949 toward expenses of a research project on the biochemical aspects of alcoholism. A one-year grant in the amount of \$25,000 was made for use under the direction of Professor Roger J. Williams, director of the university's Biochemical Institute. Its purpose was to supply interim emergency support to enable the project to go forward until funds became available from other sources.

This research centers on the possible relationships between individual metabolic patterns and alcoholism. Preliminary work has indicated that the extreme appetite for alcohol possessed by compulsive drinkers may have a physiological basis closely linked with inherited metabolic patterns. This hypothesis does not exclude the influence of psychological and social forces. The biochemical differences in individuals are one factor that must be explored in the attempt to elucidate the problem of alcoholism.

## **THE SOCIAL SCIENCES**

## THE SOCIAL SCIENCES STAFF

During 1949

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JOSEPH H. WILLITS

*Associate Director*

NORMAN S. BUCHANAN

*Assistant Directors*

LELAND G. ALLBAUGH

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## THE SOCIAL SCIENCES

**I**N its efforts to be of help in developing basic knowledge in the social sciences, as well as the techniques of applying that knowledge to actual problems, The Rockefeller Foundation in 1949 gave aid to a selected number of projects now actively going forward both in this country and abroad. Attention was given to fields concerned with the vital social, political and economic issues of the day and also to long-run scientific problems. The year's grants included projects in international relations, in interpersonal and intergroup relations, in the economic and political functioning of our society and in social science research development in Europe. Within these categories funds were allocated for support of work on such subjects as problems of European recovery, long-term tendencies of the European economy, consensus in international affairs, the role of religion and ethics in modern political and economic developments, the impact of an aging population on American society and comparative values in five cultures. The Social Sciences also joined the Humanities in sponsoring programs of Slavic studies at two Canadian universities.

Research on the functioning of our economic and political systems continued to receive considerable support. Grants were made for projects dealing with

problems of economic progress, economic history, intergovernmental relations and for the program of the National Bureau of Economic Research. Aid was provided for a study of moral issues in a changing society and for a study of law and ethics. In addition, the Foundation continued to give strong support to research training activities in the social sciences, and the Social Sciences division itself administered a sizeable program of fellowships and grants in aid. Appropriations by the Social Sciences in 1949, totaling \$1,796,625, may be grouped as follows:

Functioning of the American Economy and Political Democracy		\$334,000
International Relations		354,000
Interpersonal and Intergroup Relations		288,500
Development of Social Science Research in Europe		160,900
Moral and Ethical Problems in Modern Economic and Political Society		53,225
Research and Training Agencies		230,000
Fellowships and Grants in Aid		376,000

A discussion of the grants in aid and the fellowships will be found in the section of this report devoted to those subjects.

#### THE FUNCTIONING OF THE AMERICAN ECONOMY AND POLITICAL DEMOCRACY

#### UNIVERSITY OF MINNESOTA RESEARCH IN INTERGOVERNMENTAL RELATIONS

During the past three years Professor William Anderson of the University of Minnesota has been

directing a research project in intergovernmental relations under a grant from The Rockefeller Foundation. The study has considered trends in federal, state and local systems from the point of view of a single, fairly typical state. It has included all types of intergovernmental relations — the vertical relations from nation to state to locality, and the horizontal relations between states and between local governments.

The main line of attack has been through field observation, partially by means of interviews, and through analysis of the structural relations among government agencies at various levels and the working relations between officials of these agencies. The results of the research are to be embodied in a series of monographs discussing intergovernmental relations in education, the courts, the matter of roads and highways, public health, social welfare, employment security, agriculture and financial arrangements. In addition, treatises on Minnesota and its local governments and on Minnesota and the nation are being prepared. The project is also serving as a testing ground for research methods and a training ground for graduate students. A year-long seminar on federalism and intergovernmental relations, in which the entire staff participated, has been held.

The Minnesota studies when concluded will provide much factual information of a kind not previously available. To permit completion of the project, The Rockefeller Foundation in 1949 supplemented its original five-year grant of \$72,700 with an appropriation of \$14,000.

### NATIONAL BUREAU OF ECONOMIC RESEARCH

The National Bureau of Economic Research, New York, is an independent agency engaged in the study of economic activities and their interrelations. The bureau seeks to extend and improve the scientific elements in economics. Its aim is to develop methods of performing a task rather than to carry out annual, monthly or other timed, repeated operations. It is the policy of the bureau to undertake a new study only if convinced that the proposed investigation supplements the rest of the bureau's program in addition to making a direct contribution of its own.

The general research program of the National Bureau has for many years had several fields of major emphasis: national income and the flow of money; employment and productivity; business cycles; commodity prices; and the labor market. Special research programs are conducted in finance and in fiscal policy. The financial research program is concerned principally with urban mortgage credit, agricultural credit and corporate bond experience. In the field of fiscal policy, research on federal grants in aid and on income tax changes is in progress. Other current projects include international economic relations, with attention to the role of the United States since 1870, and the declining quality of American foreign investment.

The bureau staff has published numerous books and papers. Among the recent volumes are *Analysis of Wisconsin Income*, by Frank Hanna, Joseph A. Pechman and Sidney Lerner; *American Transporta-*

*tion in Prosperity and Depression*, by Thor Hultgren; *Business Incorporation in the United States*, by G. Heberton Evans; *Studies in Income and Wealth*, by the Conference on Research in Income and Wealth; and *Taxable and Business Income*, by Dan T. Smith and J. Keith Butters. *Urban Real Estate Markets and Their Financial Needs*, by E. M. Fisher, will appear during 1950.

The bureau also has a program of collaboration and cooperation with universities and other research organizations. The Universities-National Bureau Committee has held regular conferences since 1935 and has conducted a series of special meetings designed to summarize the state of knowledge in regard to specific topics and to outline problems that require further investigation. Through its conference and research activities the bureau aims to raise the level of economic thinking, teaching and policy-making. The National Bureau of Economic Research had the support of the former Laura Spelman Rockefeller Memorial from 1923 to 1929 and since 1929 has received continuous support from The Rockefeller Foundation. A grant made in 1947 provided assistance through the end of 1954; in 1949 the Foundation appropriated \$200,000 for aid to the bureau during the year beginning January 1955.

#### HARVARD UNIVERSITY RESEARCH IN ECONOMIC HISTORY

In 1940 The Rockefeller Foundation appropriated \$350,000 to the Social Science Research Council for use by a Committee on Economic History. The pur-

pose of the grant was to enable a group of leading economic historians, under the chairmanship of Professor Arthur H. Cole of Harvard University, to initiate the task of developing economic history in this country. Since then the committee has succeeded in stimulating the establishment and growth of centers of teaching and research in the field at a number of universities. One of these, at Harvard, in 1948 received \$10,000 from The Rockefeller Foundation for a study of the history of the entrepreneur, or business enterpriser, under the supervision of Professor Cole.

In spite of the existence of economic theorists on the one hand and business schools on the other, no adequate comprehension of the functions of the business enterpriser as an agent of social change has been developed. Yet the business enterpriser has profoundly influenced economic history and played a significant role in shaping societies. Professor Cole brought a new approach to the subject, and in the past year he and his coworkers have expanded what at first was little more than a concept into a well-organized plan for study and research. A volume now in preparation summarizes the proceedings of the group and the conclusions at which it arrived.

Briefly, Professor Cole's approach involves increasing the range of functions ordinarily assigned to the business enterpriser and then considering him as the central figure in economic change. In other words, the emphasis is on the activities of the business enterpriser rather than upon the environment in

which he operates. Professor Cole's program calls for continuation of the discussion meetings held last year, prolonged visits at Harvard by scholars from other universities and further steps in actual research. Included in the last are studies of the business structure of the American economy, the prevailing methods of business communication, the contemporary modes of business thought and the social origins of the business leaders of the eighteenth, nineteenth and early twentieth centuries. The Foundation has granted \$50,000, available for two years, to aid in this work.

UNIVERSITY OF PENNSYLVANIA  
INDUSTRIAL RESEARCH DEPARTMENT

The Industrial Research Department of the Wharton School of Finance and Commerce at the University of Pennsylvania was established at the close of World War I for the purpose of investigating pressing problems in industrial relations. In subsequent years the scope of its activities was broadened to include studies of wages, commodity prices, the Philadelphia labor market and selected industries. During the last war the department carried out and published many studies which helped to clarify problems confronting community and federal agencies.

Since the end of the war the department has focused its efforts on the problem of economic progress, which, for research purposes, is defined as increase in productivity, be it through technological and technical improvements, improvements in mana-

gerial or labor efficiency or some other means. The department is considering particularly the ways in which advances in productivity are reflected in the economy as a whole. Another aspect of the problem of improved productivity being studied at present is the effect of technological change upon workers, especially in regard to labor mobility and the organization of the labor market. In an attempt to obtain results of more than theoretical value, this entire program on the distribution of economic gains to the public at large is increasingly centered on the investigation of particular plants and firms. Thus far three publications based upon this phase of the department's work have appeared: a book entitled *Economic Progress*; a paper describing a technique of productivity accounting and its experimental application to one company; and a memorandum on research planning in the field of labor mobility.

In addition, studies are currently under way in three fields in which the department has long had a specific interest — labor market analysis, price history and the economics of the coal industry. Reports on the findings are scheduled for publication in 1950. Research on productivity trends in the foundry industry of Pennsylvania and on recent changes in the relative distribution of the net product dollar is in progress, and the department plans a re-analysis of the unemployment surveys it carried out during the 1930's. This last will appear as one of a series of essays on labor mobility published by the Labor

## Market Research Committee of the Social Science Research Council.

A grant of \$35,000 for one year was made by The Rockefeller Foundation in 1949 to continue its support of this program of industrial research at the University of Pennsylvania.

### NEW YORK UNIVERSITY NATIONAL RECORDS MANAGEMENT COUNCIL

Scholars in the field of economic history and professional associations in the social sciences have long been concerned about the relative inaccessibility or disappearance of the records of private, governmental and institutional enterprise in the United States. These records constitute an indispensable body of research material, but they accumulate in such great volume that they can be maintained only at excessive cost. Superfluous records may be kept while important materials are frequently lost or of necessity discarded. As a consequence of this, obtaining research data often becomes an unwieldy and impractical procedure.

In September 1948, largely through the efforts of the American Historical Association and the Social Science Research Council, the National Records Management Council was established in order to do something constructive about the problems of collecting and preserving business records. The council is a nonprofit educational and service organization, under the chairmanship of Thomas C. Cochran, professor

of economic history at New York University. Its objectives are:

1. To promote, sponsor and assist the establishment of an adequate program of preserving, organizing, evaluating and interpreting the records of business organizations.
2. To sponsor and assist the establishment and operation of records centers or archival agencies.
3. To sponsor and assist the establishment of adequate training courses in records management and archival science and to encourage the training of individuals in these fields.
4. To provide assistance and counsel in all phases of records management and archival science.
5. To serve as a clearing house and central agency for information on research opportunities and technical matters in its field.

Services on a limited basis have already been rendered to such groups as the Hoover Commission on the Organization of the Executive Branch of the Government, The American Association of Medical Social Workers, the United States Atomic Energy Commission and the State of California.

New York University has provided space for the offices of the council. Under the auspices of the university the council is now engaged in a research project on problems dealing with the preservation of business records. The Rockefeller Foundation in 1949 made a one-year grant of \$35,000 to New York University to enable the study to go forward during the period required for the council to become self-

sustaining through the services it renders to public and private organizations.

### INTERNATIONAL RELATIONS

#### COUNCIL ON FOREIGN RELATIONS

#### PROBLEMS RELATING TO EUROPEAN AID

The Rockefeller Foundation in 1949 appropriated \$50,000 to the Council on Foreign Relations, New York, for an organized study of problems of aid to Europe in its broadest aspects. The European Recovery Program of the United States has a significance for our future prosperity and security so great as to challenge the best efforts of private citizens as well as those in public office. The Economic Cooperation Administration (ECA) believed that it would be of great value to the government and to the public at large to have an appraisal of the European situation by a group of competent private persons free from the pressure of day-to-day decisions and unhampered by governmental procedures or the considerations of practical politics.

Upon the invitation of the ECA the council organized a group of leaders in the fields of economics, politics and military strategy under the chairmanship of General Dwight D. Eisenhower. At its monthly meetings this group has carefully examined the aims of American foreign policy with respect to Western Europe and has assessed the means — economic, political and military — for achieving those

aims. Special attention has been given to the continuing interests of this country, as opposed to urgent expediencies of today and tomorrow, and to the relation between current measures of policy and the attainment of long-term goals. Close liaison has been maintained with ECA and with other federal agencies and departments, but the group has functioned independently of the government.

Conclusions will be presented in the form of memoranda to responsible government officials. Nonrestricted information is to be released to the general public by means of articles or pamphlets in order to help the public understand and judge the measures which it will be asked to endorse and carry out. In addition, it is hoped to issue a major publication or series of publications on the operations, effects, shortcomings and interrelations of United States aid to Europe under ECA and under the provisions of military lend-lease.

To assist the group the council has provided a full-time research staff of experts in the various fields of study, headed by Professor Howard Ellis of the University of California. Under the guidance of the study commission the research staff gathers facts and data for the discussion meetings and prepares memoranda on assigned topics. The council also furnishes library and clerical assistance. The study group is serving on a voluntary basis. The Rockefeller Foundation's grant is to cover salaries and expenses of the research staff.

INSTITUTE OF PACIFIC RELATIONS  
PACIFIC COUNCIL

The Institute of Pacific Relations, a nongovernmental international organization, has received support first from the former Laura Spelman Rockefeller Memorial and later from The Rockefeller Foundation since 1926. The purpose of the institute is to increase knowledge of problems of the Pacific area and to focus the attention of public and private educational groups on the study and discussion of these problems. It has endeavored to do this by training personnel, stimulating the teaching of Far Eastern languages and cultures, publishing research findings and sponsoring conferences. The institute is composed of a number of national bodies, or councils, and the Pacific Council, an over-all research body which conducts its own investigations and integrates the work of member councils. One of its major functions is the organization and administration of the triennial conferences of member councils. The last conference, in 1947, was held at Stratford on Avon on the general subject of *Economic and Social Reconstruction in the Far East*. Delegates from the national councils of Australia, Canada, China, France, New Zealand, the United Kingdom and the United States attended, and in addition the conference was host to representatives from Burma, India, Korea, the Netherlands, the Netherlands-Indies, Siam and the United Nations.

The eleventh conference will convene in 1950 in India and will discuss *Recent Political and Economic Trends in the Far East and their Consequences for the Western World*. Preparation for the conference is a part of the research program of the Pacific Council, which is responsible for writing up the data papers which give the members of the conference the background information they need for the discussions. Some of these papers, such as those on the Chinese Communist movement, nationalism and communism in Burma, postwar development of Indian capitalist enterprise, the development of political parties in Japan and the international effects of the withdrawal of Western power from the Far East, are of wide interest. In order to enable the institute to strengthen its conference and educational activities at a critical time in Far Eastern relations, the Foundation in 1949 made a supplementary grant of \$25,000, available until the end of March 1950. Of this, approximately \$14,000 is to augment the research function of the Pacific Council and \$11,000 toward the expenses of the 1950 conference.

#### SOCIAL SCIENCE RESEARCH COUNCIL INTERNATIONAL PROGRAM

The Social Science Research Council, among other things, concerns itself with the maintenance of contacts among social scientists and with the international exchange of scholars and students in its field. The council has been active in the program of the United Nations Educational, Scientific and Cultural Organization (UNESCO). It has played an impor-

tant role in bringing the Fulbright program of international educational exchange to its present high level of activity. To implement international programs as effectively as possible it needs to follow closely both national and foreign developments in the social sciences. This requires additional personnel and the council recently appointed to its staff Mr. Richard H. Heindel, formerly associated with the State Department and the Senate Committee on Foreign Relations.

Some of the new tasks to be undertaken are:

Critical evaluation of ideas and mechanisms for fostering mutually profitable relations between social scientists in the United States and other countries.

Development of ideas and criteria on ways in which competent research relating to other nations and cultures can be stimulated effectively in this country.

Preparation of a working inventory of social science research in progress.

Staff assistance for the council's Committee on World Area Research, Committee on International Relations Research and Committee on International Exchange of Persons. Staff service in regard to council participation in international programs, such as UNESCO, the Fulbright program and activities relating to the occupied countries.

The Rockefeller Foundation in 1949 made a grant of \$30,000 for three years to the council toward expenses in connection with this new work.

UNIVERSITY OF NOTRE DAME  
INTERNATIONAL RELATIONS

The University of Notre Dame, Indiana, has been interested for many years in international relations,

particularly the influence of ethics, philosophies and ideologies in world affairs. In 1949, with the aid of a three-year grant of \$69,000 from The Rockefeller Foundation, the university appointed a Committee on the Study of International Relations to direct research and publications in this field. Dr. Waldemar Gurian, editor of the *Review of Politics*, which Notre Dame sponsors, has been named chairman of the committee.

The committee's first concern is the interrelations of religion, democracy and international order, with special attention to the rise of the political religions of the twentieth century and their relations with traditional religious groups. Other topics that will be investigated include the adaptation of various religious groups to the new conditions created by modern mass movements, the relations between church and state, the role of religion in educational systems, the relations of different groups threatened by various forms of totalitarianism, and Catholic Action and ecumenical movements. Specific studies on the Soviets and world affairs, on religion and international affairs and on the Christian Democratic parties have been planned.

An advisory group of outstanding American and European scholars with diverse views on international affairs will assist the committee in this program. Joseph Pieper, German philosopher and sociologist, and Stefan Kertesz, Hungarian student of international law and a former Foundation fellow, are participating in the project as visiting research profes-

sors. The committee also intends to invite a number of scholars from this country and abroad to contribute articles to the program or to deliver lectures at annual symposia which will be held at Notre Dame. Through this broad approach the committee hopes to illumine and bolster the role of ethics in world affairs.

### WORLD PEACE FOUNDATION

#### *DOCUMENTS ON AMERICAN FOREIGN RELATIONS*

The World Peace Foundation, Boston, is a research organization devoted to the task of making factual information on international relations available in clear and undistorted form. It does this by publishing annually *Documents on American Foreign Relations*, a contemporaneous compilation of official documents, policy speeches and international agreements to which the United States is a party. Although not as complete as the official *Foreign Relations of the United States*, the *Documents* are more up to date than the official record, which still lags nearly 15 years behind present events. The materials included in the foundation's series constitute a basic reference collection, widely used by legislators, publicists, scholarly journalists and research workers in the field of international relations.

Eight volumes, through 1946, have already been published. The World Peace Foundation is completing as quickly as possible Volume IX (1947), Volume X (1948) and the supplement to Volume VIII (covering the negotiation of the first five peace treaties).

It is establishing a schedule whereby each annual volume appears within 12 months following the end of the calendar year covered by the volume. Since it is important for the *Documents* series to be available on as nearly current a basis as possible, The Rockefeller Foundation in 1949 provided \$15,000 over three years to enable the World Peace Foundation to enlarge its activities toward this end.

YALE UNIVERSITY  
INSTITUTE OF INTERNATIONAL STUDIES

The Institute of International Studies at Yale University was established in 1935 as a research and training center in the field of international relations. Its special interests are the clarification of American foreign policy and the formulation of policies for avoiding war. The institute publishes monographs and research reports on its work, and its staff members make frequent contributions to journals such as *Foreign Affairs* and *World Politics*. Among the books recently published or scheduled for publication in the near future as a result of the institute's long-term research program are: *American Public Opinion in the Present World Crisis* by Gabriel Almond, *America in Soviet Propaganda, 1941-1948* by Frederick C. Barghoorn, *American Security Policy* by Bernard Brodie, *Congress and Foreign Policy* by Robert Dahl, and *The Use of Force in Collective Action* by Grayson L. Kirk.

During the next five years the institute plans to focus its attention on the subject of consensus in

international affairs. By consensus it means voluntary accord reached against a background of initial disagreement. Research on this subject is of particular importance because of the widespread conviction today that a more stable international order can be achieved only through a substantial broadening of the consensus among nations. Since the danger of aggression still exists in the world, the institute will continue its work on power conflicts, but the major emphasis will be on conditions essential to increased international consensus and ways of attaining it. The proposed investigations fall into six categories:

The Conditions of Consensus in the Contemporary World

The Range of American Initiative

The Soviet Society and Its Ideologies

Formal International Organizations and Consensus

The New Europe

The Non-European World

The institute has had the support of The Rockefeller Foundation since its inception. In 1949 the sum of \$75,000 was granted, available for three years.

#### UNIVERSITY OF TORONTO

##### SLAVIC STUDIES

The University of Toronto and the University of British Columbia are the two Canadian universities which have developed plans for programs in Slavic studies. In recent years these programs have been

maintained on a very modest level. The University of Toronto in 1949 completed proposals to fill the growing demands for the strengthening of undergraduate work and a beginning in graduate studies.

Development in this field at Toronto has been through instruction in Russian language, literature and history. The university proposed to increase its staff for general advance in Russian studies by means of joint appointments in the established departments and in the newly organized Department of Slavic Studies. The university also wished to have visiting lecturers in residence for periods of as long as a full term in some cases in order to give instruction in subjects that could not be assigned to new staff members. The plan looked to a well-ordered development that would provide advanced work in Slavic studies leading to the master's degree in social sciences and humanities. In 1949 The Rockefeller Foundation, through its Social Sciences and Humanities divisions, granted the University of Toronto the sum of \$90,000 to be used over a five-year period for the support of this enlarged program in Slavic studies.

A recent analysis of the status of area studies in Canada, made by the Humanities Research Council of Canada with the cooperation of the Social Science Research Council of Canada, resulted in a recommendation of two centers of Slavic studies for the country as a whole. In line with this recommendation both the University of British Columbia and the University of Toronto are strengthening their under-

graduate programs, with the latter school also committed to a basic program at the graduate level.

UNIVERSITY OF BRITISH COLUMBIA  
SLAVIC STUDIES

One other joint Social Sciences — Humanities grant to further the development of Slavic studies in Canada was made by The Rockefeller Foundation in 1949. This appropriation (reported in greater detail on page 301) provided the University of British Columbia, Vancouver, with \$90,000 for use over a five-year period.

INTERPERSONAL AND INTERGROUP RELATIONS  
UNIVERSITY OF MICHIGAN  
SURVEY RESEARCH CENTER

During the past few years the Survey Research Center at the University of Michigan, Ann Arbor, has been carrying out a series of surveys of consumer finances for the Federal Reserve Board. The purpose of the surveys is to obtain information about consumer income and assets, consumer behavior (spending and saving) and the factors influencing that behavior. The surveys are based on a sample of over 3,500 consumer units, representing a random cross section of the American population. The Federal Reserve Board makes extensive use of the findings in predicting future developments and in reaching its policy decisions.

Within the framework of the tasks assigned or approved by the board the center has conducted a number of small-scale methodological studies, and the results of rough checks also attest to the soundness of the surveys. However, Dr. Rensis Likert, director of the center, and his colleagues believe that it is important to check more comprehensively the validity and reliability of the techniques employed in the surveys, since little precise information is available on these points.

An opportunity for such a study arose in 1949 when the Federal Reserve Board agreed to a resurvey of part of the 1948 sample in the 1949 annual survey. Repeated interviewing of the same respondents is one of the most effective methods of testing the dependability and authenticity of data obtained by survey research. Analysis of two successive interviews with identical respondents should yield information on the degree of stability of financial attitudes and the factors related to shifts in these attitudes; on the relation of expectations and plans to their realization; on the factors contributing to such realization; on the repetitive or nonrepetitive nature of certain forms of economic behavior, such as saving, drawing upon liquid assets, income increases and decreases; and on memory error in recalling past financial data. The analyses should also provide important information concerning basic determinants of economic behavior.

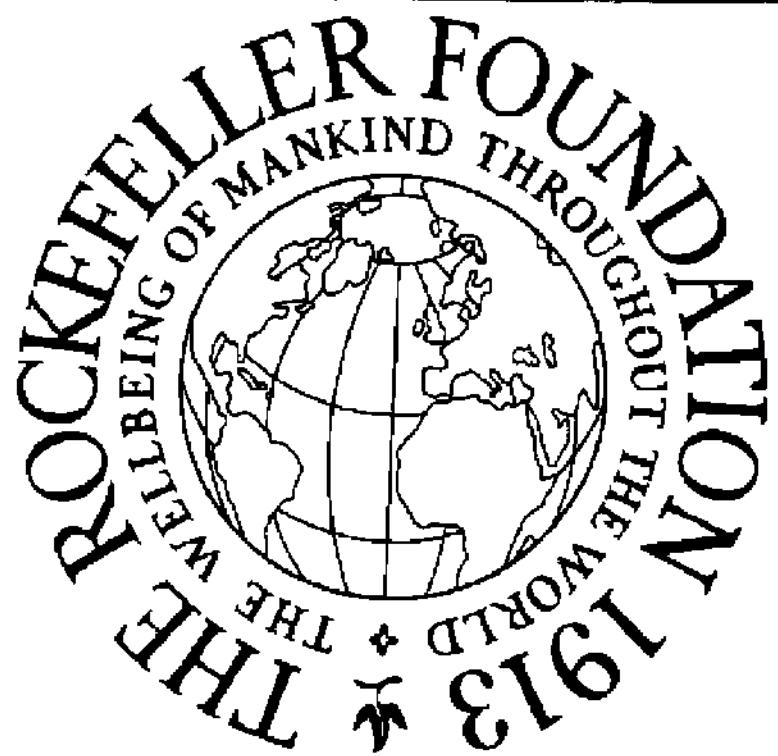
The field work for this investigation is financed entirely with funds from the Federal Reserve Board.



## Photograph Excised Here

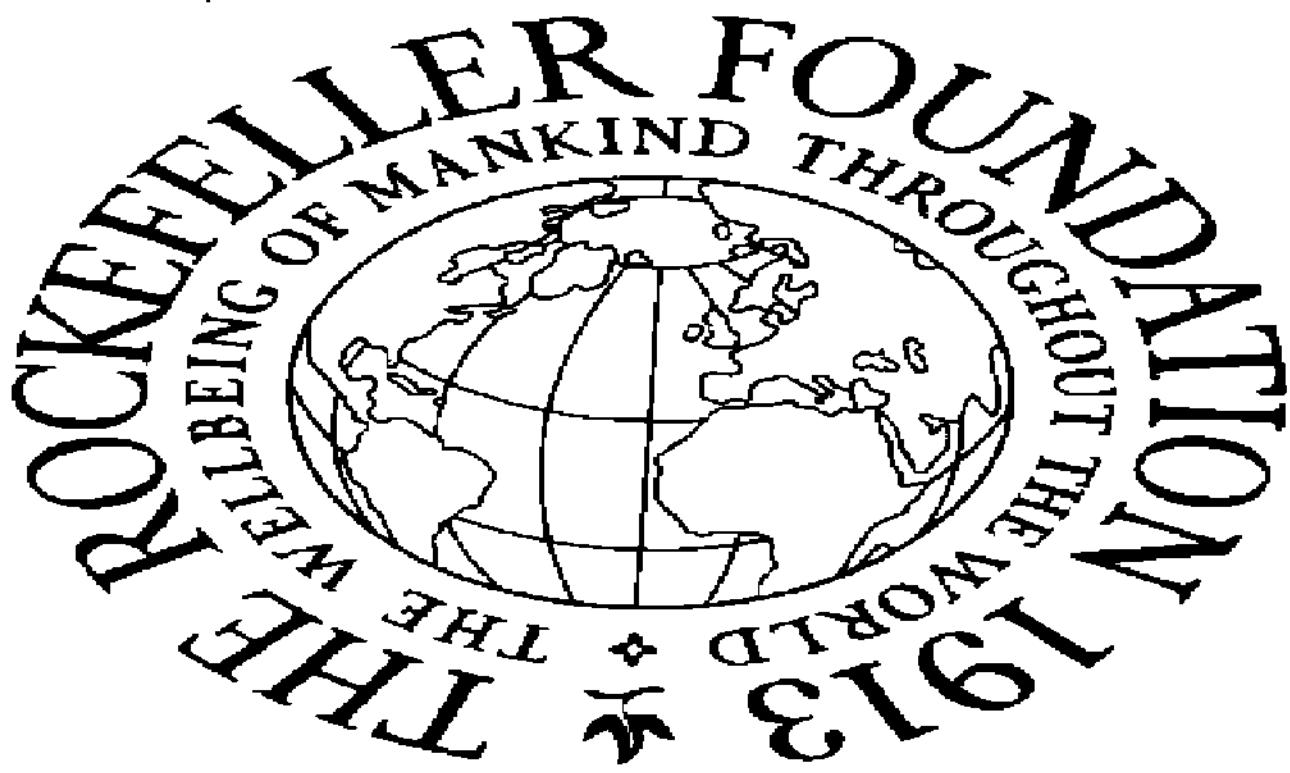
bers of the University of Minnesota's research staff on intergovernmental relations within the United States

A windmill used in irrigating  
the Mallia Plain, Crete



Photograph Excised Here

Sunday travel  
in the Island of Crete,  
scene of a comprehensive  
survey of social, economic  
and public health conditions



Photograph Excised Here

The Rockefeller Foundation granted the sum of \$19,500 for one year to cover the cost of analyzing the data.

HARVARD UNIVERSITY  
LABORATORY OF SOCIAL RELATIONS  
Research in Motivated Perception

For the past three years Dr. Jerome Bruner and Dr. Leo Postman of the Harvard University Laboratory of Social Relations have been carrying out a research program on human perception and the influence of motivation upon it. It is widely recognized that factors other than the actual thing perceived markedly enter into the formation of perceptions, but there has been little systematic study of the processes and mechanisms involved.

The experiments of Dr. Bruner and Dr. Postman have revolved mainly about the roles of past experience and of personality factors in determining the individual's choice of certain stimuli from the large number confronting him and the organization of those he selects into a configuration. They have shown that the interests, values, apprehensions, expectations and many other attributes of the subject all help shape his perceptions. These findings have been presented in a number of research reports.

Plans for the next three years include continued study of the mechanisms by which motivational and social factors influence human perception and the relation of different personality characteristics to different factors in perception. One group of experi-

ments will concern the role of expectancy in perception; another deals with the way in which different kinds of stress and fatigue affect perception. Additional areas for investigation will probably be developed as the work proceeds. It is hoped that the program of the laboratory will not only throw light on the subject of perception but will also provide information of value for the development of the theory on which projective personality tests are based. An increased body of theory is necessary for more effective construction and interpretation of the tests. The Rockefeller Foundation assisted the project in 1949 with a grant of \$24,000 over a three-year period.

#### UNIVERSITY OF CALIFORNIA PROBLEMS OF AN AGING POPULATION

For many decades, as a result of declining birth and mortality rates, the population of the United States in the older age groups has been increasing more rapidly than the population as a whole. The best available evidence indicates that this is a continuing and perhaps even an accelerating trend. As such, it raises serious social, economic and political problems. In the economic sphere problems include the effects upon per capita incomes of compulsory retirement at fixed ages, a practice which virtually arrests the retired workers' contribution to the national output; the fiscal consequences of "pensions" for an increasing number of people; the relation between job requirements and the capacities of older workers; the effects of age-discriminatory hiring

policies and union policies upon older workers, upon labor mobility and upon the flexibility of the economy in general. Among the political considerations are such phenomena as the growing political cohesiveness of older persons, forcing politicians to reckon with and cater to an "old-age vote," and the expansion of "old-age movements" with their single-minded demands for government pensions. The progressive segregation of the aged in regard to the social world also has important consequences, particularly from the psychological point of view.

These problems, obviously interrelated in a variety of ways, reflect in sum the impact of an aging population on American society. A comprehensive study of the entire question was begun in 1949 by the Institute of Industrial Relations of the University of California, aided by a five-year grant of \$125,000 from The Rockefeller Foundation. The institute was established by the university in 1946 as a cooperative research organization for investigation of issues arising from the functioning of our modern industrial system. The senior staff members, all of whom hold appointments in some teaching department of the university, are drawn from the School of Business Administration, the School of Social Welfare, and the Departments of Economics, Psychology, Political Science, Sociology and Social Institutions. They divide their time between instruction in their respective subjects and research at the institute. The School of Medicine and the School of Public Health of the university are also interested in

the present project and will participate actively in studies of age and work performance.

Professor Clark Kerr, director of the institute, and Professor Lloyd Fisher of the Department of Political Science are principally responsible for the program of old age studies. The plan is to attack the general problem by a series of specific but related studies. Some of the concrete inquiries which have been planned are: physiological and chronological aging in relation to job requirements; broad economic consequences of an aging population; retirement schemes and fiscal policies; and the politics of old age. All these investigations involve considerable field work for interviews, attitude testing, job analysis, physiological testing, psychological testing and other items. The bulk of the Foundation grant is for field workers, most of whom will be advanced graduate students in medical sciences, psychology, sociology, political science and other pertinent disciplines.

The effects of an aging population and the adjustments necessitated thereby comprise a relatively new but increasingly important social problem in the United States. These studies at the University of California, while unlikely to provide a complete set of answers, should furnish some much needed and widely useful information.

HARVARD UNIVERSITY  
LABORATORY OF SOCIAL RELATIONS  
Comparative Study of Values

One key to understanding a society rests in the system of values to which it adheres, and values in

turn are inextricably tied up with questions of culture, group psychology and individual motivation. In view of the conflicts within and between societies today the problem of values urgently needs exploration. The Laboratory of Social Relations at Harvard University believes that objective methods for investigation of personal and group values are most likely to be developed through intensive comparative study of culture groups of limited size and complexity. In 1949, with the aid of a \$100,000 grant for three years from The Rockefeller Foundation, the laboratory embarked on a comprehensive study of five relatively small, distinct groups. These are all located in or around Ramah, New Mexico, and include Mormon, Texan, Navaho, Zuni and Spanish American communities.

The program is carried out under an advisory committee consisting of Professor Talcott Parsons, chairman of the Department of Social Relations, Professor Clyde Kluckhohn of the Department of Anthropology and Professor John O. Brew, director of the Peabody Museum of Archaeology and Ethnology. The project combines several disciplines. Anthropologists, sociologists, social psychologists and clinical psychologists are actively collaborating. Dr. John Roberts, general coordinator of the project, faculty coordinators for each of the five culture groups, staff members and graduate student assistants are conducting the research.

In the course of other investigations, including a genetic study of the Ramah Navaho Indians which is currently receiving support from the Foundation,

Dr. Kluckhohn and his coworkers have assembled a substantial backlog of factual information on the five cultures in question. This material has been organized into a cross-cultural index, thus providing maximum efficiency in its utilization. Six staff members have lived and worked in the Ramah area for extended periods, so that, in addition to being familiar with the total background of the program, they have well-established entrée to the societies involved. Staff members and students in the different specialties have already set up a number of cooperative research seminars on such subjects as techniques for gathering and organizing various kinds of data and the relations between culture and personality.

Although the efforts of the group center specifically on practical and theoretical problems of values, they also plan some research directed toward validating other hypotheses that may have indirect implications for the over-all study. In addition to contributing to our knowledge of values and how best to study them, the project provides staff members and graduate students with exceptional training and experience in cooperative interdepartmental research.

COMMUNITY SERVICE SOCIETY OF NEW YORK  
INSTITUTE OF WELFARE RESEARCH

Leaders in the field of social service case work have for some time been aware of the fact that their profession has suffered for want of dependable and precise means of assessing the degree of success or

failure of their activities. During the past few years the Institute of Welfare Research, the research section of the Community Service Society of New York, in concerning itself with the problem, has developed two promising methods for determining the results of case work more accurately and objectively than has hitherto been feasible. One is based on analysis of the statements made by clients to case workers during recorded interviews; the other rests upon standardization of the procedures used by case workers to estimate an individual's improvement — or lack of it — in regard to specific factors such as adaptive ability, disabling habits or conditions, verbalized understanding and environmental circumstances. Both techniques yield greater reliability than the traditional appraisals by individual workers of the cases under their own supervision.

At present staff members of the institute, under the supervision of Dr. J. McVicker Hunt, the director, are putting these methods into practice. A limited sample of families whose cases were closed five years ago is the subject of an investigation designed to reveal present status with respect to various situations the case workers had originally sought to change. The institute also proposes to make a study of factors associated with improvement among the clients of a family social service agency. Comparison between cases in which there was much improvement and those in which there was little may provide criteria for screening potential cases in order to select those most amenable to

treatment, thus measurably increasing the efficiency of service agencies. A two-year grant of \$20,000 was made to the Community Service Society by The Rockefeller Foundation in 1949 to help defray the expenses of these projects.

#### DEVELOPMENT OF SOCIAL SCIENCE RESEARCH IN EUROPE

##### LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

##### SOCIOLOGICAL AND DEMOGRAPHIC RESEARCH

Apart from economics, social science research in Great Britain has been directed primarily toward solving urgent social problems rather than toward examining social phenomena and testing hypotheses relative to the structure or dynamics of society. A considerable volume of social investigation has been carried out in past years and still more is in progress. However, because of its *ad hoc* approach, many social scientists in Europe feel that it is particularized, limited in comparability and that it contributes only incidentally to the understanding of social processes. There has also been a growing feeling of need for an organization with a broad program of social research to which investigators might turn for help on specific studies or for counsel on methodological problems in social science research.

In 1949 the London School of Economics and Political Science created a Department of Social and

Demographic Research. The main functions of the new department are to encourage the coordination of social research carried out by universities and other agencies in Great Britain, to undertake its own research and to train students. The London School is an appropriate sponsor for such a program for several reasons: it is the main institution in England with extensive provision for training in sociology, the chief one offering full courses in demographic analysis and it already has two research units, one on social structure and one on population questions.

These two well-established units are the nucleus of the new department, which contains three divisions — sociological research, demographic research and research techniques. Although each division has its own area of concentration, close collaboration between them and other sections of the school is fostered. In sociology, work is far advanced on a study of social mobility and on a study of British social structure with particular reference to the middle class. In the field of population a study has recently been completed and published on the subject of certain economic and social aspects of pregnancy and childbirth. Other current or impending research projects include studies in maternal health, research techniques, the trend of measured intelligence and an inquiry into some of the factors affecting measured intelligence. *Population Studies*, an already successful journal, is now to appear under the auspices of the department. The department will also serve as a

center for training in research methods, with emphasis on practical experience in selection of data, sampling techniques and interview procedures.

The London School provides quarters and the services of its staff members for the new department, and the Nuffield Foundation furnishes some funds for research. In 1949 The Rockefeller Foundation granted \$50,900, available for three years, toward general expenses.

ECONOMIC COMMISSION FOR EUROPE,  
UNITED NATIONS  
EUROPEAN ECONOMIC TRENDS

The operations of the Economic Commission for Europe (ECE) of the United Nations in Geneva center on emergency problems concerning the production and distribution of commodities essential to postwar recovery. In the course of its work the commission has brought together information on European economy and in particular on its progressive tendency to split up into self-contained, self-interested units. The commission believes that the sound development of the European economy requires attention to problems of a basic and continuing nature. To make possible a more thorough and concentrated study of long-run tendencies than is possible as a by-product of the commission's day-to-day work, The Rockefeller Foundation has made a two-year grant of \$50,000 to the ECE. Professor Ingvar Svennilson, a leading Swedish economist and specialist in the structure of industry and the factors influencing it, is directing the study.

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The project will consider Europe as an economic region in terms of material resources, industrial development, transport, trade and population. The investigations will focus on interstate trade in relation to changes in production, the growing restrictions on trade, the modifications that European industry is currently undergoing and the trend toward further industrialization in Europe. In addition, collateral studies on alterations in the structure of interstate trade, on intra-European cartels and combines and on the structure and location of the European countries are planned.

The commission is giving Dr. Svennilson access to all its data. He is able to draw upon the entire machinery of the commission, including the operational committees and their secretarial divisions (coal, steel, power, industry and raw materials, timber, agriculture, intra-European trade) for advice and information on every country in Europe. The commission is also furnishing research, statistical and secretarial assistance, office space and supplies for Dr. Svennilson's inquiries. The results of the study, which is to be completed in time for the review of ECE activities by the United Nations Economic and Social Council in 1951, will be published by the United Nations.

#### INSTITUTE OF APPLIED ECONOMICS RESEARCH IN ECONOMIC THEORY

The Institute of Applied Economics, Paris, was founded in 1944 by Professor François Perroux of the University of Paris as an independent organ-

ization. In the past year the institute has completed studies on Keynes and the influence of Keynesianism, national revenue and national budgets, the problems of social accounting, national revenue and the budgetary deficit and on international investment. Some of these studies have appeared in the institute's trimonthly review, *Economie Appliquée*, some as separate monographs. Current work includes research on the Marshall Plan and the modern theory of international investment, the achievements of the European Recovery Program, salaries and prices, social security and on national revenue and national wealth.

During the next three years the institute proposes to continue the investigations already in progress and to undertake additional practical and theoretical studies. Some of the latter will be carried out in collaboration with foreign economists. Other plans call for continuation of the visits and lectures by economic specialists from abroad and for organization of France's first center of statistical economics. The research program of the institute in 1948 received a one-year grant in aid from The Rockefeller Foundation. In 1949 support in the amount of \$10,000 a year for three years was granted.

UNIVERSITY OF OSLO  
INSTITUTE OF ECONOMICS

The Institute of Economics of the University of Oslo has, since the end of the recent war, been the scene of a mathematically-oriented research and

research training program. Professor Ragnar Frisch, the director of the institute and editor of *Econometrica*, a leading international journal in its field, has succeeded in gathering together at the institute a group of promising young economists and statisticians. Under his leadership, the research work of the institute has followed along lines closely related to problems of the day. Professor Frisch and his colleagues are trying to analyze theoretically the means — fiscal policy, taxation measures, central bank policy, foreign trade policy, for instance — which the government may use to avoid mass unemployment and economic fluctuations without unduly endangering the freedom of individuals.

The group under Dr. Frisch is approaching its task by means of what are known as repercussion studies. A repercussion study measures the interrelation between different economic variables, as for example between income and savings or between taxation and investment, and from there explores the ways in which the findings may be applied to the formulation and administration of economic policy. A good part of such an experiment consists in preparing a mathematical model with many variables which can then be manipulated and the results observed. Professor Frisch has used data drawn from the Norwegian economy in assigning values to the variables, but his methods and to some extent his results are applicable to other countries. A mathematical model cannot, of course, be brought to bear directly upon the complexities of

the real world, but it can throw light on the multitude of factors operating in the economic system and in so doing help to establish a firmer basis for policy decisions.

Specific studies proposed for the next three years are international aspects of the Norwegian economy; the investment problem — the relations between investment and saving; a breakdown of the national economy into major groups; government enterprises; the factors of the money market; the reaction of enterprises to changes in prices, wages and other similar economic elements; and social goals and the problem of economic control. Rockefeller Foundation support of these repercussion investigations, begun in 1946, was continued in 1949 with a three-year grant of \$30,000.

#### MORAL AND ETHICAL PROBLEMS IN MODERN ECONOMIC AND POLITICAL SOCIETY

AMERICAN LAW INSTITUTE

LAW AND ETHICS

Before Anglo-Saxon law became a statutory entity and its provisions were fully embodied in formal codes, matters that were not covered by the common law or that were not dealt with justly by common law could be referred in England to the Courts of Equity for consideration by the King's Chancellors, or, in the United States, to special courts of equity. Law and equity have since merged more or less

completely in both Great Britain and the United States, but much of present day American law concerned with the principles of equity is based on ethical concepts developed by the King's Chancellors in England during the period prior to 1873 when the Courts of Equity flourished.

Although the law should express the moral and ethical standards of the community, American students have given scant reflection to the relation between law and ethics. Cognizant of this deficiency, the American Law Institute has outlined a study of the maxims, precepts and principles developed by a series of brilliant Lord Chancellors to serve as guides in administering equity cases. Some of the basic research for such a study has already been done, and the opinions of the Lord Chancellors are available in a series of reports published in England. The plan of the institute is first to investigate the ethical concepts set forth in these opinions and then to trace the application of these concepts through the years, noting their interpretation in separate equity courts and later in the law courts as equity and law were fused. The result should be a statement of present law with emphasis on the development of earlier ethical ideas and ideals.

Progress reports on the study will be submitted to the executive council of the institute and then to its general membership. The final product, therefore, will reflect the consensus of a representative group of the legal profession. The Rockefeller Foundation

in 1949 granted the sum of \$20,125, available for two years, to the institute in support of this project.

**AMERICAN PSYCHOLOGICAL ASSOCIATION  
ETHICAL CODE FOR PRACTICING PSYCHOLOGISTS**

As the ranks of practicing professional psychologists grow, ethical problems become more frequent. With the expanding scope and responsibilities of psychology there is need for a definition of professional standards. The American Psychological Association of Washington, D. C., realizing this, has appointed a committee to consider the development of a code of ethics. To insure wide acceptability for such a code, the committee is taking steps to base its final statement on a sizeable body of representative opinion, rather than on the personal convictions of a small group of individuals.

The association is therefore collecting from its members descriptions of specific incidents involving ethical problems in such fields of psychology as university teaching, psychological research and writing, clinical and industrial consultation, school psychology and public service. The descriptions are accompanied by comments. The main concern is with borderline cases involving the exercise of careful judgment rather than with obvious violations of ethics in clinical practice. The reports are to be studied, classified and extensively discussed. The final code will represent the general principles evolved from this research. The Rockefeller Foundation has

granted \$8,100, available until the end of 1951, for the research expenses of the project; all other costs, including those of publishing and distributing the statement, will be borne by the association.

INSTITUTE FOR ADVANCED STUDY  
MORAL ISSUES IN A CHANGING SOCIETY

Sir Henry Clay, chairman of the National Institute of Economic and Social Research of Great Britain and one of his country's leading economic scholars, is engaged in a broad-scale study of the moral implications of recent changes in the political and economic structure of society. Sir Henry has been closely associated with the evolution of Great Britain's socioeconomic order and possesses both the background and experience necessary for writing about the central issues involving questions of wisdom and morality. He began his career as a lecturer in the Workers' Education Society and during and after the first World War served in the Ministry of Labor. He has been on several other governmental missions and was for many years chairman of the Department of Political Economy at the University of Manchester. From 1930 to 1944 Sir Henry served as economic adviser to the Bank of England, and for five years after that as Warden of Nuffield College of the University of Oxford. During the latter part of 1949 Sir Henry visited the Institute for Advanced Study at Princeton, New Jersey, in connection with his present work.

Sir Henry's program of study and writing is concerned with the following subjects:

1. The relation between the state and industry in their bearing on personal liberty.
2. A review of the United Kingdom's experience in the generation before the first World War and the generation between the two wars.
3. Political implications of changes in economic organization that have taken place since the middle of the nineteenth century.
4. Differing conceptions of right in the light of changing economic-political arrangements.

The Rockefeller Foundation has appropriated the sum of \$25,000, available until March 31, 1955, to the Institute for Advanced Study for assistance and compensation to Sir Henry in the course of this work.

RESEARCH AND TRAINING AGENCIES  
SOCIAL SCIENCE RESEARCH COUNCIL  
CONFERENCES AND PLANNING

The operations of the Social Science Research Council, New York, embody the cooperative efforts of seven national scientific societies to advance knowledge of human social relations through scientific research. The seven societies, which are the American Anthropological Association, the American Economic Association, the American Historical Association, the American Political Science Association, the American Psychological Association, the

American Sociological Society and the American Statistical Association, participate actively in the direction of the council in addition to sponsoring it.

The council's central objective is to improve the scope and quality of social science research. The survey, appraisal and research planning projects and the conferences carried on by the various committees and by the research staff of the council form the core of its program. Through these conferences and planning activities the council translates into concrete form its continuing interest in identifying the most promising areas for research in the social sciences, in improving research techniques and the application of those techniques, in planning and promoting research of new kinds or in new fields and in encouraging joint research between specialists in different disciplines.

A number of significant research planning projects have been completed recently. The work of the Committee on Appraisal of Research led to the publication of critiques of methods of using personal documents in historical, sociological and anthropological investigations. The Committee on Social Adjustment has issued several bulletins and a comprehensive report on social adjustment in old age. Several pilot studies have been planned as a result of the explorations accomplished by the Committee on the Measurement of Attitudes, Opinions and Consumer Wants. Other active committees include those on housing research, public libraries, historiography and labor market research. A special committee of the research staff

counsels government agencies on the disposition of war records to assure their accessibility for future research.

All these functions are made possible through the conference and planning funds, which represent the free or unrestricted money of the council. The Rockefeller Foundation in 1949 continued its aid to the Social Science Research Council with a grant of \$150,000 for conferences and planning during a three-year period.

#### CANADIAN SOCIAL SCIENCE RESEARCH COUNCIL GENERAL PROGRAM

The Canadian Social Science Research Council, Ottawa, which is sponsored by the Canadian Historical Association, the Canadian Committee of the International Geographic Union, the Canadian Political Science Association and the Canadian Psychological Association, plays a central role in Canadian scholarly activities. Operating through committees, it serves as a responsible coordinating agency for research efforts in the social sciences in Canada in a manner similar to that of the Social Science Research Council in the United States. The Rockefeller Foundation continued its support of the council's general program in 1949 with a grant of \$30,000, available until the end of August 1951. The funds are to be used mainly for expenses in connection with the council's Committee on Aid to Publications, its Committee on Aid to Research and committees on special projects.

# **THE HUMANITIES**

THE HUMANITIES STAFF  
During 1949

*Director*

DAVID H. STEVENS

*Associate Directors*

CHARLES B. FAHS

JOHN MARSHALL

*Assistant Directors*

EDWARD F. D'ARMS

CHADBOURNE GILPATRIC<sup>1</sup>

<sup>1</sup>Appointment effective April 15, 1949

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## THE HUMANITIES

A TOTAL of \$1,181,580 was granted by the Humanities division of the Foundation in 1949 for 28 major projects classified under the following program headings:

Studies in Language and Foreign Cultures	\$359,500
American Studies	214,500
Drama, Film and Radio	80,000
Other Subjects	152,580
Fellowships and Grants in Aid	375,000

Noteworthy under the first of these headings, as evidence of a growing concern with Near Eastern studies, were two grants, one made to the American Board of Commissioners for Foreign Missions for studies of Turkish thought and the other to the American University of Beirut for studies of the modern Arabic Middle East. Two other grants in this category, for development of Slavic studies in Canada at the University of British Columbia and the

University of Toronto, were joint Social Sciences and Humanities grants.

The largest Humanities appropriation of the year was to McGill University. With this grant of \$100,000 the university has assumed the responsibility of providing Mr. W. L. Mackenzie King with assistance to bring into usable form the large amount of documentary material accumulated in the course of his career as Prime Minister of Canada.

Exploratory visits of officers abroad in 1949 resulted in aid to a number of European universities or study centers, including a grant to the University of Bristol for development of a university program in drama, one to the University of Munich toward establishment of an Amerika Institut and one to the Italian Institute of Historical Studies for general development and support.

Assistance in the Far East was given in 1949 through two grants to Columbia University for programs of study by Japanese and Korean broadcasters. A similar allocation to the American Press Institute of Columbia University was for use in a training program for Japanese press personnel.

In addition to the major grants the officers of the division also approved during the year a number of smaller grants in aid and fellowship appointments, which are noted in the section devoted to these subjects. A grant to enable foreign scholars to attend the Goethe Bicentennial Celebration and a grant to the Midwest Inter-Library Corporation for a central depository library, both made out of general funds,

are described in this section, since they fall largely within the Humanities program.

### STUDIES IN LANGUAGE AND FOREIGN CULTURES

#### AMERICAN BOARD OF COMMISSIONERS FOR FOREIGN MISSIONS

##### STUDIES OF TURKISH THOUGHT

Any real understanding of the thought, tradition and outlook of present-day Turkey must in some measure have its roots in the nineteenth century. The final overthrow of the Sultan in 1924 and the program for the westernization of the country laid down by Mustapha Kemal were by no means unrelated to intellectual and cultural movements of the preceding century, which culminated in the revolution of the Young Turks in 1908. Despite their importance these movements are as yet little known outside Turkey.

Knowledge of them on the part of one Western scholar, Dr. J. Kingsley Birge, offers an unusual opportunity for the needed interpretation to the outside world of this period of Turkish history. A three-year grant of \$25,000 to the American Board of Commissioners for Foreign Missions, Boston, will free Dr. Birge, after 30 years of service in Turkey for the board, to undertake this study. Part of the work will be done in Turkey in consultation with Turkish historians, part in the United States.

An understanding of the modern Near East requires attention to the four elements in its life and

thought — the Arabic, Turkish, Persian and Hebrew traditions. This grant for a study of nineteenth century Turkish thought and the Foundation's grant to the American University of Beirut for interpretative studies of the modern Arab Middle East are contributions toward a better understanding of the Near Eastern area.

#### AMERICAN UNIVERSITY OF BEIRUT ARABIC STUDIES

The American University of Beirut was established in Beirut, Lebanon (then Syria), in 1866 as the Syrian Protestant College under a New York State charter. In 1920 the present charter of the university was granted by the Board of Regents of the University of the State of New York. An American board of trustees governs the university.

Enrollment is principally from the Arab states. Students are sent to the university in considerable numbers by the governments of the Near Eastern countries, often to prepare for advanced study in English-speaking countries. As a private university at which a considerable proportion of the leading figures of the Near East have received their higher education, the American University of Beirut has the respect of the general public and of the governments of the area.

In recognition of the increasing importance of the Arab world in international life, the university recently formulated a plan for a series of interpretative studies of the modern Arab world from 1900 to the

present, to embrace so far as possible all aspects of Arab life — political, economic, social, educational, intellectual and literary. The faculty of the university increasingly is composed of scholars native to the Near East who have had their advanced training in Western institutions, mostly in the United States. Within this faculty a number of such scholars are primarily concerned with Arabic studies. A well-trained group thus exists for this program of interpretative studies.

The Foundation in 1949 contributed to the American University of Beirut the sum of \$83,000, to be used during a three-year period toward realization of this plan. The grant will release from teaching duties faculty members who are to engage in the studies and will provide books and other materials needed to augment present library resources of the university.

#### AMERICAN COUNCIL OF LEARNED SOCIETIES SLAVIC STUDIES

Since 1944 the American Council of Learned Societies, Washington, D. C., has been responsible for preparing English translations of Slavic materials essential for the development of Slavic studies in the English-speaking world. The Rockefeller Foundation in 1943 and 1947 made two grants totaling \$75,000 to the council for this project.

The work of translation is under the direction of a committee of the council with the participation of leading American authorities in Slavic studies. The

Macmillan Company of New York is publishing the series. By the end of 1949, 24 translations had been completed or needed only final editing. Published volumes include Kuzminskaya: *Tolstoy as I Knew Him*; Vyshinsky: *The Law of the Soviet State*; and Lyashchenko: *History of the National Economy of Russia*. Other works to appear will be on the history of Russian art, music, theatre and public education.

A second part of this program is the Current Soviet Thought series, which is concerned with shorter but nonetheless significant items. These monographs contain important Russian studies in economics, political science and the humanities in general. Titles issued in this series have included *Soviet Views on the Postwar World Economy*, *The Economy of the USSR During World War II* and *Soviet Interpretation of Contemporary American Literature*.

This has been a new type of project, and some of the difficulties involved could not be foreseen at the time of the Foundation's first grant. In particular, the large amount of editorial service which proved necessary increased the administrative cost considerably. To provide for continuation of essential editorial service until the end of 1952, the Foundation in 1949 made an additional grant of \$20,500 for this work.

#### NEW YORK PUBLIC LIBRARY SLAVONIC REFERENCE MATERIALS

The New York Public Library is one of the largest, most valuable and most used libraries in the world.

Some of the extensive bibliographical services of the Central Reference Library at Fifth Avenue and 42nd Street cannot be duplicated elsewhere.

The City of New York supports the branch libraries of the New York Public Library. Private contributions support the Central Reference Library. The New York Public Library is thus both a public and a private institution. Increasing deficits for the reference department, however, reached the sum of approximately \$575,000 for the fiscal year 1948-49. Multiplying costs and decreased income resulting from 15 years of depression, war and inflation had outstripped the ability of public-spirited citizens to sustain the department by unsolicited donations and led to a public appeal in 1949 for contributions to stabilize its financial position. The program of the trustees of the library called for an increase in endowment to \$10,000,000 to yield eventually \$300,000 a year, for a rise in the level of public gifts for current purposes to \$300,000 a year and for a greater contribution from the city toward the cost of maintaining the central building.

As part of this program The Rockefeller Foundation contributed in 1949 the sum of \$60,000 as an outright grant to the New York Public Library toward the maintenance and development of the Slavonic division of its reference department. The Slavic collection of the library is next to that of the Library of Congress in importance in the United States and is one of the best outside the Soviet Union. It is constantly used by scholars, graduate

students and experts in foreign trade and international relations, including the staff of the United Nations. This grant was made as a part of the Foundation's program for development of Slavic studies.

#### OCCIDENTAL COLLEGE AREA STUDIES OF THE SOUTHWEST

Occidental College in Los Angeles, California, has developed a special interest in the problems peculiar to its area, particularly those involving the impingement of Latin American influences and culture on southwestern California. The college has offered some undergraduate courses on the Southwest in the United States and on elements of Latin American background. Several departments give master's degree training of interest to future teachers and community workers in the southwestern area.

These factors led to a plan to develop further the potentialities of the college for work on the cultural history of the southwest area by the organization of courses to form a new area major in this field. Time for research by faculty members was the most needed single part of the plan, together with a small extension of library resources. To meet these needs the Foundation in 1949 made available to Occidental College the sum of \$35,000, to be used toward the development of a program of studies in the cultures of the American Southwest and of Mexico during the period ending June 30, 1953.

Area studies have not yet been incorporated to any extent in undergraduate general education. The

program at Occidental College is an effort to relate interest in regional American research to the normal educational programs of a college or university. Its own special collections of material and easy accessibility to outstanding resources in the Huntington Library at Pasadena and in other nearby college libraries will be of considerable help in developing the program.

UNIVERSITY OF CHICAGO  
CENTRAL AMERICAN STUDIES

Humanistic studies in Central America for some years have included a program of linguistic and ethnological research by the Carnegie Institution of Washington. The University of Chicago has co-operated with the Carnegie Institution through the participation of some of its faculty members, among them Professor Robert Redfield of the Department of Anthropology. Professor Redfield has had an important part in helping to guide the development of these research and training activities.

The gradual termination by the Carnegie Institution of its interest in linguistics and cultural studies led the University of Chicago to formulate a plan to maintain some of this work in Mexico and Guatemala. The proposal called for the continuation of linguistic studies and analysis of the large body of materials on Middle America that had been gathered as a result of the research program. To aid in meeting the expenses of this work in Mexico and Guatemala, The Rockefeller Foundation made a

grant of \$8,000 to the University of Chicago for use during the year 1949.

WAYNE UNIVERSITY  
RUSSIAN WORD COUNT

A frequency list of words is fundamental for various practical problems of preparing textbooks, readers and dictionaries in any language. The quality of teaching in French, Spanish and some other modern languages has improved greatly through the use of texts built on frequency-tested vocabularies.

The growing number of students of the Russian language has created a need for a statistical analysis of Russian vocabulary, which must be based not only on modern and classic literature but also on the spoken language which has emerged since 1917. Work is now under way at Wayne University, Detroit, on a frequency list of Russian words.

As the work proceeded during 1949, it became apparent that to achieve statistical accuracy the basic word count would need to be extended from 600,000 words, the number tentatively fixed at the beginning, to 1,000,000 words. One hundred blocks of 10,000 words each will be included in the new total, providing effective sampling from books, magazines and newspapers; from literature, the social sciences and public affairs; and from both exposition and conversation. The project will produce a frequency list of Russian words based on this higher count and also a recommended teaching vocabulary.

The Foundation made a grant of \$38,000 to Wayne University in 1949, in addition to its 1948 grant of \$40,000, to carry this work through 1952 on the basis of the extended count.

#### UNIVERSITY OF BRITISH COLUMBIA SLAVIC STUDIES

The University of British Columbia, Vancouver, the only Canadian university west of the Rockies, has developed rapidly during the last few years under the leadership of President Norman MacKenzie. Despite its location far from the population center of the country, it draws its professors and students from all over Canada.

The University of British Columbia has been a leader in the development of Slavic studies in Canada. It has a program of instruction in the Russian language and the nucleus of a Slavic library. Language teaching has been conceived of as the foundation for a wider program in Russian area studies, and the university has been proceeding with plans for this program.

The decline in veteran enrollment necessitated an over-all retrenchment by the university and made desirable some outside aid for the program in Slavic studies. The Rockefeller Foundation's grant of \$90,000 to the university in 1949 made available funds for library development, for staff expansion and travel and for visiting professors during a five-year period. Like the grant to the University of Toronto

noted below, this action was supported jointly by the Humanities and Social Sciences divisions of the Foundation.

UNIVERSITY OF TORONTO  
SLAVIC STUDIES

The University of Toronto also received funds from The Rockefeller Foundation in 1949 for the development of Slavic studies. The sum of \$90,000, available for five years, was furnished to the university through a joint grant of the Humanities and the Social Sciences. A fuller account of this appropriation appears on page 261.

AMERICAN STUDIES

ABRAHAM LINCOLN ASSOCIATION  
LINCOLN EDITION

The plan of the Abraham Lincoln Association, Springfield, Illinois, to produce a scholarly edition of the writings of Abraham Lincoln received aid from The Rockefeller Foundation through a grant of \$30,000 in 1947. In 1949 the Foundation provided an additional \$12,000 for this purpose.

The manuscript for the eight volumes of this new Lincoln edition is well on the way to completion. A staff of four persons headed by Professor Roy P. Basler has gathered here and abroad a large amount of material that was not included in the 12 volume Nicolay-Hay edition published in 1905. The search for unknown items has covered several classes of

documents in the National Archives. The Library of Congress collection of Lincoln papers, deposited with the library in 1925 by Robert Todd Lincoln and released to scholars in July 1947, also has yielded a substantial number of new items.

In addition to this large project, the Abraham Lincoln Association is maintaining its normal activities by continuing to issue its quarterly journal and an annual volume presenting contributions to the Lincoln story and to American history of the nineteenth century. The association has planned also to complete the day-by-day record of Lincoln's life, of which four volumes have been issued, and to publish the full collection of his legal papers.

McGILL UNIVERSITY  
CURRENT HISTORY

The resignation on November 7, 1948, of the Honorable W. L. Mackenzie King as Prime Minister of Canada brought to a close the active career of a man recognized for his leadership in national and international affairs for more than 20 years.

In the course of his long and brilliant career of public service Mr. King accumulated extensive official and personal records containing a wealth of information on the social and political history of our times. A considerable volume of public papers and official correspondence gathered during his Prime Ministry is deposited in the Dominion Archives at Ottawa and has been in process of classification. To put all these materials into form for ready and

prompt use by students of public affairs would require the services of a larger staff than the Dominion Archives could be expected to provide.

The other part of the record lies in the personal papers and detailed diaries kept by Mr. King during his full career, on which considerable work also remains to be done by Mr. King himself. One of the reasons prompting Mr. King's recent retirement was the desire to write an autobiography that would encourage young men and women to interest themselves in public affairs and social service. This responsibility which he has imposed upon himself will be a laborious one in view of the vast amount of documentary material involved.

In 1949 the Foundation's officers became interested in the opportunity for a contribution by the Foundation toward the expense of rapidly bringing into usable form the large body of documents on deposit in the archives and of providing Mr. King with such assistance as he might need for work on his personal records. The outcome was a grant of \$100,000 to McGill University, Montreal, which accepted the responsibility for its administration as a national service. The work, which is to be carried on over a three-year period by a group of skilled archivists and other aides, will center in the Public Archives of Canada under Mr. King's personal direction.

#### MICHIGAN STATE COLLEGE MIDWESTERN LIFE AND HISTORY

A strong interest in the cultural and social history of the Michigan area has long existed at Michigan

State College, East Lansing. From its own research funds the college has provided as much support as possible for regional studies in the humanities and social sciences. In 1946 The Rockefeller Foundation made a grant to the college for studies in American and Canadian culture by three of its staff members.

Recently the college has formulated research and teaching plans in regional studies for its undergraduate and graduate courses in the humanities. A 1949 Foundation grant provided \$30,000 to coordinate and expand this regional program for a three-year period.

The studies to be carried on center in the Great Lakes area and in nearby parts of Canada. The range of projects covers the regional aspects of folklore, art, music, literature, language and history in factual and interpretative forms. Resources of the region are unusual and are to be increased by gathering of oral data from early settlers and by collection of records throughout the state. Many useful special collections also exist in the surrounding state universities and state historical societies.

The results of the research are to be incorporated into educational practice by direct use of the materials and by evolving a graduate program around areas rather than departments. The ultimate aim is to prepare teachers who can integrate the culture of the region with the culture of the nation.

#### UNIVERSITY OF MUNICH AMERIKA INSTITUT

The desire of the University of Munich to set up a permanent center for American studies grew out of

the realization that at no university in Germany or in Europe could the various aspects of American civilization be studied in an integrated fashion under the guidance of competent scholars. In November 1949, after the university had considered the situation for almost two years, the Amerika Institut of the University of Munich was officially opened. Despite its seriously damaged physical plant the university provided excellent facilities for the institute. The Bavarian Ministry of Education contributed a sum for renovation of the building and an annual allowance for its maintenance. The ministry also created one chair and two assistantships at the institute.

Professors of American literature, history, economics and government will develop a program of instruction in American area studies to include the best features of current humanities and social science courses under American methods of instruction. The Foundation's grant of \$50,000 in 1949 was a contribution for salaries of visiting professors of American literature and American history from the United States or Canada during a three-year period, and for purchase and delivery of essential library materials in these subjects. Books and journals are being purchased with the aid of the Library of Congress, which has supplied a staff member to help in their selection and catalogue cards for the volumes.

UNIVERSITY OF WISCONSIN  
AMERICAN STUDIES

A program of research and teaching in the materials of American civilization began at the Univer-

sity of Wisconsin, Madison, in 1946 with the aid of a grant of \$75,000 from The Rockefeller Foundation. In 1949 the university received renewed aid in the amount of \$22,500 for further development of this work over a three-year period.

The program is under direction of a Committee on the Study of American Civilization, composed of representatives of the various interested departments of the university, with Professor Merrill Jensen serving as chairman. The aim of this committee is the study of what is common to the culture of Wisconsin and the region of which it is a part and to the cultures of other regions in the United States. The committee's director of research serves also in a similar capacity for the Wisconsin State Historical Society, which is cooperating with the university in the investigation and planning of research projects.

Studies completed during the past three years include seven volumes on the language, literature and art of the Wisconsin region and five on the region's history. Two others deal with important minority groups in the state — the Norwegians and the Finns. For the next three years the committee will concentrate on studies of Wisconsin history in the twentieth century, emphasizing the trend from an agrarian toward an industrial society. This transition, which absorbed three centuries in England and more than a century in the eastern part of the United States, took place in the Wisconsin region inside of 25 years, within the memory of living men. It had effects upon every phase of Wisconsin life — the social, political, economic and cultural.

The current grant is payable on a matching basis against funds secured by the University of Wisconsin from other sources toward the cost of the program. For many years the university has contributed substantial sums of money to the support of studies in other fields related to the Wisconsin region.

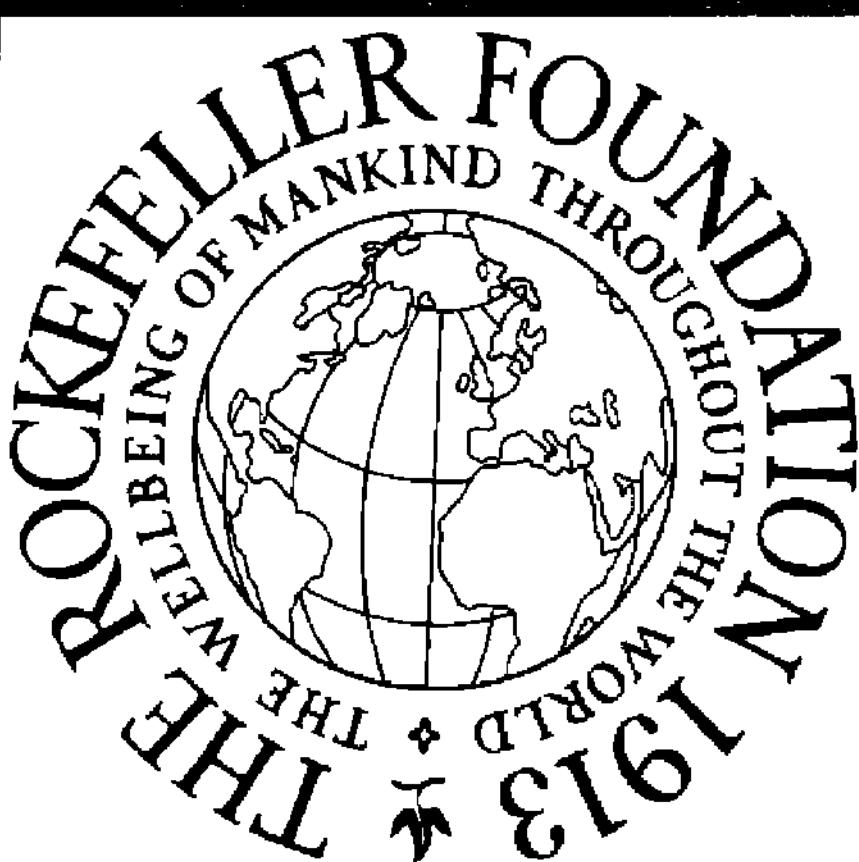
### DRAMA, FILM AND RADIO

#### COLUMBIA UNIVERSITY

#### KOREAN AND JAPANESE BROADCASTERS

In 1947 Columbia University received a grant of \$25,000 from The Rockefeller Foundation for a program of study by a group of German broadcasters. Two similar grants totaling \$50,000 to Columbia University in 1949 provided for study and observation of broadcasting in the United States and Canada by groups of Japanese and of Korean broadcasters.

The six men of the Japanese group were selected by the Civil Information and Education Section of General MacArthur's headquarters in Tokyo; the United States Public Information Officer in Korea selected the four Koreans. The members of the Korean group arrived in the United States two weeks before the Japanese to follow the program planned for them by the Bureau of Applied Social Research at Columbia University. The Japanese then joined the Korean group for lecture courses on American history and on the principles, organization and operation of American radio. The first five weeks of the



## Photograph Excised Here

A seminar on the development of the American novel at the Amerika Institut, University of Munich

Japanese journalists exchange views with an American newspaperman at the American Press Institute, Columbia University



## Photograph Excised Here



Photograph Excised Here

Microfilming the *Manchester Guardian* with a microfilm camera acquired through a Foundation grant in aid to the Manchester Public Libraries

Speech recording in the Drama Department of the University of Bristol



Photograph Excised Here

18 week training period were spent in New York City. Then followed a five-week tour of radio stations in other areas of the country, further specialized study in New York City and a two-week visit to Canada to study radio operations in that country.

The occupation policy of greater decentralization in Japan looks to the establishment of commercial broadcasting in Japan alongside the heretofore monopolistic Japan Broadcasting Corporation. Canada was included in the program because it offers one of the best examples of such a mixed system in operation. In Korea also the need of radio personnel for foreign experience was unusually great, since few Koreans had an opportunity to gain a knowledge of broadcasting during the long Japanese occupation of their country.

#### NATIONAL THEATRE CONFERENCE FELLOWSHIPS

For a period of some ten years the National Theatre Conference, Cleveland, Ohio, a national organization for work in drama, has had general support from the Foundation. The conference, whose purpose is to improve educational and creative work in drama in American universities and colleges, had a membership totaling 95 groups in 1949. Among its activities is a program of fellowship awards.

The fellowships granted by the National Theatre Conference have been of two types: one of direct awards to individuals, another of appropriations to centers of work in drama for local award. In 1949

the Foundation made a grant of \$10,000 to the conference for fellowships in drama to supplement conference funds for this purpose during 1949 and 1950.

Since 1938 the officers of The Rockefeller Foundation have found it advantageous in large measure to delegate to others responsibility for the award of drama fellowships. In recent years responsibility for such awards has been assumed by the National Theatre Conference, which is in close touch with the personnel and needs of college, community and university theatres.

#### UNIVERSITY OF BRISTOL DRAMA

The University of Bristol, England, has programs of arts, science, medicine and engineering, with some 500 of its 2,000 students enrolled in its advanced schools. Created as a provincial university in 1909, it has developed rapidly under the leadership of its present vice-chancellor, Sir Philip Morris.

The university's opportunities for advanced work in drama are unusual. In addition to having the first department of drama in a British university, Bristol is the seat of one of the strongest acting companies outside London. The Bristol Old Vic Company has its own theatre and resident company as well as a School of Theatre, which has accepted for training a few students from the university. These resources give the university a theatrical training laboratory of unusual potentialities.

In 1949 the University of Bristol decided upon a five-year program to develop work in drama that will

include the creation of a studio theatre at the university and the appointment of its own drama faculty. During this period the university plans to develop a cycle of lecturers from Great Britain and abroad as well as younger teaching staff under fellowships. In this way it aims to build up its courses in drama to a high university standard in parallel to acting and training opportunities through the Old Vic Theatre and School.

Certain items of expense in this plan cannot be made part of the university budget immediately and some of the charges require dollar expenditures. To aid in covering these expenses which fall under the general headings of equipment, lecturers, foreign study of staff members, summer sessions and book purchases, The Rockefeller Foundation in 1949 made available to the University of Bristol the sum of \$20,000 for use during a five-year period.

#### OTHER SUBJECTS

##### AMERICAN COUNCIL OF LEARNED SOCIETIES PERSONNEL IN HUMANITIES

Careful planning to assure a steady supply of people qualified for high level work is needed in public affairs as well as in education and institutional research. Considerations of national welfare have led a number of governmental agencies to ask how many specialists of particular kinds now exist, how they can be located and whether they are being replaced or increased in number.

A report to the Conference Board of the Associated Research Councils in 1947 on existent data relating to highly trained and specialized personnel in the United States indicated a need for a special survey in the field of the humanities. There has been less over-all, conscious planning of personnel for the humanities than for the sciences, with a resulting lack of consideration by humanists of the manpower problem as it affects their particular disciplines.

A two-year study under direction of the American Council of Learned Societies is now assembling data and drawing up recommendations on personnel in humanistic fields. For this purpose the Foundation in 1949 made available \$31,000 to the council. The study represents a contribution by the council, as a member of the Conference Board of the Associated Research Councils, to the board's comprehensive study of human resources now under way with aid of a grant of the Foundation. This latter project is described on pages 344-346 of the present report.

#### COLUMBIA UNIVERSITY JAPANESE PRESS PERSONNEL

In September 1945 General MacArthur's headquarters abolished Japanese measures for control of the press, with the aim of promoting the democratization of the country as a whole by a reconstruction of the press. Designed to stimulate and enrich Japanese journalism, this action created entirely new operating conditions for Japanese newspapermen.

To help the Japanese press discharge its new responsibilities, the American Press Institute of Columbia University proposed a program of advanced study for 12 Japanese journalists from large and small newspapers in various parts of Japan, with the choice of participants left to the Civil Information and Education Section of General Headquarters of the Supreme Commander for the Allied Powers (SCAP) in Japan. The Foundation's grant of \$25,000 to Columbia University in 1949 was for use by the American Press Institute for this purpose during the period ending June 30, 1950. General Headquarters SCAP provided transportation from Tokyo to New York and return for the group, with other expenses covered by the Foundation's grant.

The group arrived in the United States late in December 1949. The first three weeks of the training program were spent at the American Press Institute. These sessions emphasized discussion of principles rather than instruction in techniques. The remainder of the three months' stay was devoted to observation, especially of small newspapers outside the metropolitan centers, and to travel. Throughout the program particular effort was made to give the Japanese newspapermen constant opportunities to observe the relation of American newspapers to their communities and so gain an understanding of the function of a free press in a democracy.

This plan paralleled a previous project for German journalists successfully carried out in 1948 by the

American Press Institute under its director, Mr. Floyd Taylor, with a similar grant from The Rockefeller Foundation.

**DOWNING COLLEGE, UNIVERSITY OF CAMBRIDGE  
ENGLISH STUDIES**

The first function of literary study, according to Dr. F. R. Leavis, director of English studies at Downing College, University of Cambridge, and many other scholars in Great Britain, should be sound critical appraisal of the literary values of the work in question. Dr. Leavis and his colleagues maintain that this is more important than an initial study of a given piece of literature from the philological or historical point of view. The critical writing of Dr. Leavis, particularly his revaluations of the work of the major figures of English literature, has attracted widespread attention. Most of the articles have been published in *Scrutiny*, one of England's leading literary reviews.

Many students at Downing College wish to work toward a degree in English under Dr. Leavis. However, the college has been forced to limit the number of candidates accepted because Dr. Leavis alone could not care for more than a certain number. To aid Downing College in placing a greater number of students with Dr. Leavis, The Rockefeller Foundation in 1949 made a grant of \$8,080 to the college for use over a three-year period. The money will provide an assistant for Dr. Leavis, thus enabling him to

take on the larger teaching burden without sacrificing his freedom to carry out his own writing.

### ITALIAN INSTITUTE OF HISTORICAL STUDIES GENERAL SUPPORT

Benedetto Croce, one of the leading thinkers of the twentieth century, for many years cherished the hope of establishing a small historical institute in Italy where promising young historians could engage in study and research. In 1946, with the backing of personal friends and contributions from five of the leading banks of Italy, he founded the Italian Institute of Historical Studies. The institute is located in Croce's home in Naples and utilizes his personal library.

The purpose of the institute is "the reinvigoration in Italy and beyond Italy of historical thought which lies at the basis of fruitful social and political life." The institute is now recognized as a potent force in the revitalization of historical studies in Italy. Its director, Professor Federico Chabod, one of the leading historians in Italy, is also professor of modern history at the University of Rome and senior editor of the *Rivista Storica Italiana*. The number of students has been fixed at 25, chosen on the basis of regional competitions throughout the country.

Several urgent needs of development in the formative years of the institute are being met in part through a grant of \$21,000 made by The Rockefeller Foundation in 1949 for use over a three-year period.

This fund is being used for general support, for scholarships, and particularly for the purchase of periodicals and monographs, especially those published abroad.

#### PRINCETON UNIVERSITY LITERARY CRITICISM

The proposal of Princeton University to establish an experimental group in literary criticism received support from The Rockefeller Foundation through a three-year grant of \$30,000 in 1949. The main purpose of this plan is to utilize as fully as possible all approaches to the study of literature, with special attention to the relationship between literature and the total cultural pattern. Under traditional departmental operation in universities, such an approach has not been possible. Recent cooperation of the seven humanities departments at Princeton in programs in American civilization and the creative arts has laid a basis for further interdepartmental work in humanities at the university.

In training students of literature the universities have traditionally emphasized the historical approach and have given little consideration to the work of literary critics outside the university. Consequently university students have tended to learn little of the principles and practice of literary criticism. Establishment of this group in literary criticism at Princeton will make it possible for advanced students to participate in a program that will include the

best elements of both the academic and the non-academic approaches.

The program will consist of several six-week seminars each year on the position of literature in the world today and the contributions it can make to contemporary culture. Membership in the seminars will comprise faculty as well as qualified advanced students, with participation by visiting critics and scholars.

**ST. VLADIMIR'S ORTHODOX THEOLOGICAL  
SEMINARY AND ACADEMY  
GENERAL EXPENSES**

St. Vladimir's Orthodox Theological Seminary and Academy, New York, in 1948 established a graduate academy under cooperative plans with Union Theological Seminary and Columbia University. Under this arrangement the seminary is able to train men for the Russian and other Orthodox churches to serve in parishes throughout the country. The Russian Orthodox Church in the United States is more than 100 years old, and St. Vladimir's is the only training school for its leadership. Other Orthodox communities of Slavic-speaking background also are turning to the seminary for leaders.

The distinguished faculty of the new academy includes several leading scholars from the Eastern Orthodox Churches who were self-exiles from Russia in 1920. From then until 1948 they served as professors in Germany, Czechoslovakia and France. Their writ-

ings cover a wide range of subjects in church history, philosophy, ethics and theology. Students in the seminary receive a bachelor's degree from Columbia University as well as the degree of the seminary at the end of five years. Postgraduate courses in the academy are open to students from Columbia and other institutions.

In 1949 the Foundation granted the sum of \$5,000 to St. Vladimir's Orthodox Theological Seminary and Academy toward its general expenses for the year 1949.

SOCIETY OF BIBLICAL LITERATURE AND EXEGESIS  
CRITICAL APPARATUS TO THE NEW TESTAMENT

There is constant need among New Testament scholars for a consolidated collation of existing manuscripts. The latest complete critical apparatus of this kind is that made by Tischendorf in 1872. Since then many new manuscripts have come to light, and others to which access had been denied are now available for use through photostats and microfilms. The whole discipline of papyrology has developed since Tischendorf's work appeared, and intensive exploration and study of Near Eastern sites and languages have provided new bases for interpretation of the Greek text.

A group of American scholars has been planning a critical apparatus since 1942, and when British colleagues suggested a cooperative venture, the offer was received with enthusiasm. In the United States

the center of editorial work will be the University of Chicago, but the major tasks on the manuscripts, versions and church fathers will be done at Duke University, Princeton Theological Seminary and Brown University, respectively. The contributions of experts can best be obtained by this division of labor, and the decentralization of work is aiding the development of younger students throughout the country who are taking part in the project under the direction of competent scholars. Universities and biblical authorities in Great Britain and on the Continent are making comparable contributions to the joint enterprise. It is hoped that the whole task may be completed for publication within ten years.

The Rockefeller Foundation in 1949 granted \$12,500 to the Society of Biblical Literature and Exegesis, Philadelphia, Pennsylvania, to aid in organizing and beginning this cooperative critical apparatus to the New Testament. The society has assumed responsibility for initiating in the United States the project of assembling the evidence relevant to the creation of basic New Testament texts.

YALE UNIVERSITY  
WESTERN LITERATURE FOR THE FAR EAST

As a result of isolation during and after the war the libraries of the Far East have been without Western books of the last decade. This general shortage of foreign books was recognized by The Rockefeller Foundation in a series of small grants made during

the last few years to provide urgently needed volumes for Far Eastern institutions. The publications sent to Japan and Korea with these funds have included books on language teaching, on librarianship and on higher education.

Another evident gap in the supply of foreign books in this part of the world has been in the modern literature of Western countries. Such books are needed by scholars, students and general readers in the Far East who wish to renew their acquaintance with the life and thought of the Western world. In the encouragement and development of contemporary writing in the Far East a supply of modern literature of Western countries is also of considerable importance.

To aid in correcting this deficiency a grant of \$20,000 was made by the Foundation to Yale University, which is assisting writers and students of modern literature in the Far East by furnishing several centers of literary activity with collections of Western literature in the major Western languages. Shipments are now under way to the first four libraries selected — the new National Diet Library in Tokyo, the National Library in Seoul, Korea, the Library of the University of Hong Kong and, pending a decision with regard to final disposition to an Indonesian library, to the United States Information Service Library in Jakarta. The books selected are primarily American and English literary works of the twentieth century, with a considerable number of

English translations from the literature of other Western countries.

MIDWEST INTER-LIBRARY CORPORATION  
CENTRAL DEPOSITORY LIBRARY

The Middle West has developed more rapidly in library resources than any other section of the United States, but requirements have nevertheless outstripped supply. During the last few years librarians in the Middle West have been developing a cooperative plan for a central depository which will afford member institutions greater research facilities at reduced costs. The pressure for action came from the demands for space in every large library and from the necessity of improving service to readers while avoiding new costs of building at individual institutions.

The Midwest Inter-Library Corporation was created in 1949, its charter members including the state universities of Illinois, Iowa, Indiana, Kansas and Minnesota, Illinois Institute of Technology, Michigan State College and Chicago, Northwestern and Purdue universities. Membership in the corporation is available to other institutions in the region on a contributing basis. The plan provides for the deposit in a new building to be erected in Chicago of not less than a million items which will be at hand for loan on one day's notice. The depository also will maintain microfilm service.

This will be a "librarian's library," that is, a common source of rarely used materials made accessible

to the member institutions. Eighteen major classifications, including newspapers, journal files and official documents, will be represented, and special collections of less wide interest will also be available on loan to members. The University of Chicago or Northwestern University will give the land for the library at a convenient location in Chicago.

The Rockefeller Foundation's contribution in 1949 of \$250,000 toward the general expense of the Midwest Inter-Library Center will be used with funds pledged by the Carnegie Corporation for erection and equipment of the building and toward expenses of operation during a four-year period.

#### GOETHE BICENTENNIAL FOUNDATION THE GOETHE BICENTENNIAL CELEBRATION

The Goethe Bicentennial Foundation was organized in 1948 to commemorate by an international celebration the 200th anniversary of Goethe's birth. The foundation's board of directors is headed by Chancellor Robert M. Hutchins of the University of Chicago, with former President Herbert Hoover as honorary chairman.

The universality and perennial timeliness of Goethe's thought offer a basis for reinterpretation of his philosophy in relation to its contemporary significance. Goethe's achievements were not limited to his work in literature and philosophy. He served as a member of the Council of State in Weimar and was active in the administration of other important branches of the public economy. Goethe's conduct

of these government affairs was in accordance with his respect for individual initiative and responsibility.

In his honor a group of distinguished scholars, literary figures and leaders of contemporary thought from the Western nations assembled at Aspen, Colorado, from June 27 to July 17 of last year. Among the participants in this Goethe Bicentennial Celebration were Albert Schweitzer, Ortega y Gasset, Halvadan Koht, Charles J. Burckhardt, Ernest R. Curtius, Gerardus van der Leeuw and Stephen Spender.

A Rockefeller Foundation grant of \$20,000 to the Goethe Bicentennial Foundation provided dollar funds needed for the travel expenses of foreign visitors to the celebration.



## **OTHER APPROPRIATIONS**



## OTHER APPROPRIATIONS

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## OTHER APPROPRIATIONS

UNDER the heading of Other Appropriations there is reported a group of seven items for which funds were approved during 1949. All of these grants crossed the boundaries of more than two of the Foundation's divisions and were therefore properly chargeable to general funds. The following pages give some of the details of these grants, which involved appropriations totaling \$789,-500. Two grants made from general funds but relating solely to the program of the Humanities are described in the Humanities section of this volume; an account of a grant for a project in the natural sciences, similarly financed, appears in the section devoted to the Natural Sciences division. A note on the fund of \$50,000 set up for small exploratory grants outside the divisional programs will be found on page 354 in the section dealing with the several grant-in-aid and fellowship funds made available in 1949.

### ASSOCIATION OF AMERICAN UNIVERSITIES FINANCING OF HIGHER EDUCATION AND RESEARCH

Forces generated by World War II and by economic changes during the past 20 years have altered traditional patterns of financing colleges and universities in the United States. In 1932 one per cent of

our national income was spent on higher education. In 1940 this had dropped to 0.7 per cent and in 1947 to 0.5 per cent. Meanwhile enrollments have almost doubled. Costs have risen substantially at the same time that colleges and universities are expected to render a much larger volume of educational and research services than ever before. In recent years many institutions have balanced their budgets at the expense of their standards, which have been allowed to deteriorate.

The roots of this many-sided problem extend far. They reach into public policy, into the gift-giving practices of all kinds of private donors and the relationship between institutions and donors, into the educational policies and administration of the institutions themselves and into the inter-institutional division of labor, especially at the advanced level. It is doubtful that the solution of the problem can be left to time and the independent efforts of each of the 1,800 institutions.

Upon the suggestion of many colleges and universities that a comprehensive inquiry be made into the financial crisis confronting them, The Rockefeller Foundation in 1947 appropriated \$10,000 for the expenses of a committee to survey the possibilities of a study of the financing of higher education and research. Acting upon the recommendations of this committee, of which Dr. Paul H. Buck of Harvard University was chairman, the Association of American Universities has now undertaken an exhaustive study of the financing of higher education and

research in this country. Toward the cost of this nation-wide survey of public and private institutions The Rockefeller Foundation in 1949 made available the sum of \$400,000 for use by the Association of American Universities over a period of three years. The Carnegie Corporation is also contributing to the study. Dr. Frank D. Fackenthal, former acting president of Columbia University, has been appointed chairman of the association's Commission on Financing Higher Education, which is in charge of the survey, and Professor John D. Millett, also of Columbia, is the executive director.

#### EUROPEAN REHABILITATION PROGRAM

With the allocation of approximately \$325,000 for support of 24 projects, The Rockefeller Foundation in 1949 terminated its emergency European Rehabilitation Program, begun in 1948. Of this sum, \$185,000 was appropriated during 1949, the remainder being available from prior years' appropriations. As in the previous year, the projects receiving aid were classified under the headings of General Aid to Intercultural Exchange, Exchange of Personnel, Youth Activities and Student Assistance. A number of the grants supplemented support begun in 1948. The Foundation continued its assistance to the American Council on Education's Commission on the Occupied Areas. It renewed aid for the Alpbach and Salzburg Seminars and for projects in youth activities for German leaders. It again provided a number of travel grants which made possible study trips to the United

States for European educators and trade union leaders and visits by American scholars to universities in Germany and Austria.

Reorganization of education in Germany has proceeded slowly, largely because of difficulties inherent in the administration of such a program under the conditions of military government and because of the absence of qualified German leaders. As the task of educational reconstruction in western Germany is transferred to German authorities, the strengthening of leadership becomes more and more important. The field of teacher education is one in which the need for leadership is especially urgent. The American Association of Colleges for Teacher Education is much concerned with this problem. In 1948-49, with the aid of a Rockefeller Foundation grant, it brought nine carefully selected normal-school teachers from Germany and Austria to the United States for study periods of six to ten months. In support of a similar project, involving fellowships for several German educators from Württemberg-Baden, the association in 1949 received a grant of \$35,000. This project grew out of the workshop held in Esslingen last summer which was attended by some 20 Germans from that area and resulted in plans for a new program of teacher education in Württemberg-Baden. Eight German educators, all participants in the Esslingen workshop, were invited to this country to spend several months at a teachers college and a semester in a large university in order to observe at first hand American teacher education and practice. Dr. Walter

E. Hager, president of Wilson Teachers College, Washington, D. C., who was one of the American consultants at the Esslingen workshop, is directing the project for the association.

Another major allocation was to the University of Maryland for staff training for two German institutes of child study. The German education authorities in Württemberg-Baden and Hesse are setting up these institutes for child study as a part of their equipment for teacher education. The institutes will summarize existing research, apply it to practical problems of training teachers and social workers and stimulate German research in child development. The University of Maryland is assisting the two institutes by training a number of staff members at its Institute of Child Study.

One of the primary interests of the European Rehabilitation Program has been the training of youth leaders. A program was begun in 1948 with a grant to the National Social Welfare Assembly Youth Division for the training in the United States of a group of German youth leaders. In 1949 the sum of \$40,000 was appropriated for the continuation and expansion of this program. Under this grant four German and two Austrian youth leaders have been brought to this country for training and two professional group workers have gone to Germany to assist in developing training schools there. These funds have also furnished staff for planning and administration of the visits of some 50 Germans engaged in youth activities who were brought to the United States under the

military government and State Department programs. Orientation courses as well as carefully planned itineraries have been provided. At the end of the training period the visitors participate in evaluation sessions, which are usually attended by 25 or so social workers representing various social agencies in New York City. The funds available under this grant will permit the continuation of the program during most of 1950.

Another important project has been that of the International Youth Library in Munich. The American Library Association became interested in plans for the establishment of such a library and agreed to administer a fund of \$22,200 which was appropriated by the Foundation for the undertaking. Under the grant thus provided Miss Margaret Scoggin, children's librarian in New York City, spent two months in Germany to assist in getting the project started. The Kultusministerium of Bavaria has made available a building and the German mark funds come from local contributions. The Foundation's grant is for the director's salary, for equipment and for other expenses which can be met only with dollars.

An interesting research project is under way at the Dortmund Center for Social Science Research at Münster. This project, proposed and staffed by German social scientists, is concerned with the study of social conditions affecting productivity in the Ruhr. During the past year a Foundation grant to the center permitted the initiation of the project and

a grant to Columbia University enabled Professor Conrad Arensberg, a member of its faculty, to spend several months in Dortmund cooperating with the German workers on their project. Professor Arensberg's assistant is remaining in Germany for an extended period to continue his service with the German staff on the productivity study.

The Advisory Committee on Educational and Cultural Relations with the Occupied Countries, organized by the American Council on Education in 1948 with the aid of a Foundation grant, is now known as the Commission on the Occupied Areas. In 1949 this commission, whose chief aim still is to coordinate the efforts of voluntary agencies in the field, received a further grant of \$50,000 toward its general expenses over a 15 month period. During the past year the commission and its subcommittees (called panels) have played an important role in both the Army and the State Department exchange programs for German, Austrian and Japanese nationals. The commission has been particularly concerned with the discussion of policy, the stimulation of voluntary activities, evaluation of programs and the development of recommendations to government departments. In connection with this program it publishes a semimonthly news bulletin and has recently issued an *Occupied Areas Handbook*, which contains useful information concerning cultural relations with the occupied countries and a directory of the organizations participating in the commission's program.

The 24 projects concerned with rehabilitation problems in Germany and Austria which were granted support in 1949 were as follows:

American Association of Colleges for Teacher Education, German leaders in teacher education	\$35,000
American Council on Education, Commission on the Occupied Areas	50,000
American Council on Education, panel on teacher education of Commission on the Occupied Areas	8,000
American Library Association, international youth library in Munich	22,200
Austro-American Institute of Education, general expenses	7,000
Catholic University of America, Friedrich Engel-Janosi to University of Vienna	1,500
Columbia University, Bureau of Applied Social Research, study of social conditions affecting productivity in the Ruhr area	23,000
Congress of Industrial Organizations (CIO), travel grant for European trade unionists to attend CIO summer institutes in the United States	5,000
Dortmund Center for Social Science Research, study of social conditions affecting productivity in the Ruhr valley	15,000
Dutch Coordinating Committee for Cultural Relations with Germany, program of cultural relations between European countries	3,000
Free Trade Union Committee, travel grant for United States visit of French and Italian trade union leaders	5,000

Franz Goldmann of Harvard University, public health survey of western zones of Germany with assistance of German specialists	\$25,000
Harvard University, purchase of subscriptions to the <i>International Education Review</i> for distribution to American and Canadian libraries	1,200
National Education Association, technical panel on public education of Commission on the Occupied Areas	7,000
National Social Welfare Assembly, projects in youth leadership training	40,000
New York University, International Work-Student exchange project	10,000
Max Planck Gesellschaft, purchase of foreign books and periodicals	5,500
Queens College, New York, Richard Alewyn to University of Cologne	3,000
Erich Schneider of the University of Kiel, visit to the United States	3,000
University of Maryland, training of staff for two German institutes of child study	35,000
L. von Wiese of University of Cologne, purchase of social science books and journals in sociology	500
World Student Service Fund, expenses of the Alpbach Seminar 1949	2,000
World Student Service Fund, expenses of the Salzburg Seminar in American Studies 1949	15,000
Württemberg Library Society, central book exchange	2,500

As in 1948, the grants in 1949 were carried out under the general direction of Professor Robert J. Havighurst of the University of Chicago, who served

as adviser on the European Rehabilitation Program until its termination on April 30, 1949.

**INSTITUTE OF INTERNATIONAL EDUCATION  
PROGRAM OF INTERNATIONAL STUDENT INTERCHANGE**

The Institute of International Education is a United States agency which for many years has been arranging for Americans and non-Americans to study under exchange programs in this country and abroad. The institute cooperates with governmental, philanthropic and institutional groups providing scholarships and fellowships by screening candidates and setting up study programs. It has organized the screening process for graduate students under the Fulbright program, and it cooperates with the State Department in the latter's trainee projects. The institute also works with the United Nations Educational, Scientific and Cultural Organization in the awarding and administration of fellowships for study in the United States. In addition the institute staff answers a heavy volume of requests for information, guidance and service.

Steady expansion of the service functions of the institute has led to a corresponding rise in its operating costs. Partial support of its budget comes from the United States government and from direct service charges to agencies whose programs the institute is administering. The balance must be secured from individuals and organizations. In 1949 The Rockefeller Foundation contributed \$37,500 toward support of



Photograph Excised Here

The International Goethe Bicentennial Celebration held at Aspen, Colorado, in July 1949. Insert shows Dr. Albert Schweitzer speaking on Goethe while Thornton Wilder translates from the German.



## Photograph Excised Here

A UNESCO fellow from the Netherlands visits the Cleveland Public Library under a program arranged by the Institute of International Education and the American Library Association

the institute's program of international student interchange and related services.

**McGILL UNIVERSITY  
ASSOCIATION OF THE UNIVERSITIES  
OF THE BRITISH COMMONWEALTH**

In 1949 The Rockefeller Foundation granted \$10,000 to McGill University for use by the Association of the Universities of the British Commonwealth in connection with the first meeting of the association's executive council.

At the meeting of the Congress of Universities of the Commonwealth at Oxford in July 1948, the Association of the Universities of the British Commonwealth was formally set up. An executive council elected by the several universities in each dominion administers the association. The first meeting of the council was held in Canada last June; 16 vice-chancellors from the other dominions and from Great Britain were present.

The Nuffield Foundation of Great Britain furnished sterling funds to cover the plane or ocean travel of non-Canadian delegates to the meeting, but no dollar funds were available to defray their expenses on this side of the Atlantic. Particularly for those coming from such distances as Australia, New Zealand, India, Pakistan and South Africa, it seemed desirable to make it possible to take advantage of an unusual opportunity to observe universities and colleges in the United States and Canada. The Rockefeller

Foundation's grant was to cover dollar expenses involved in such travel.

#### NATIONAL RESEARCH COUNCIL HUMAN RESOURCES STUDY

There is considerable evidence today that society is developing demands for personnel of great competence and highly specialized training which cannot in fact be satisfied. This predilection for experts raises a question with implications for all the institutions of our society, including our political, industrial and academic institutions. For it is clear that the strength and the value of our national cultural life depend essentially upon a balanced development of human resources. We must have electronic engineers, nuclear physicists and chemists, but it is equally true that we ought to have philosophers, artists and musicologists.

The attractiveness of particular fields of intellectual effort has shifted decade by decade and the tempo at which demands for high-level personnel are growing has speeded up greatly during the last 20 years. Factors of expediency, prestige and specially motivated financial gain might possibly distort the flow of highly talented young men and women into the various professional and scientific fields to such a degree as seriously and adversely to affect the nation's intellectual and cultural life.

A number of agencies have been concerned with various aspects of this problem, but no systematic study of our scientific and scholarly personnel as one

of the nation's most important resources has yet been made. The problem calls for consideration in its entirety by organizations concerned with the integrity of our cultural structure as well as with the needs of our complex technical civilization.

Under a 1947 grant of \$20,000 from the Foundation the Conference Board of the Associated Research Councils carried out an exploratory study of the available data on the existing supply and utilization of highly trained personnel and on the demands of our society for such personnel. The four councils comprising this board — the American Council of Learned Societies, the American Council on Education, the National Research Council and the Social Science Research Council — represent the scholarly resources of the country in the fields of the natural, medical and social sciences, the humanities and education.

To follow up this preliminary study The Rockefeller Foundation in 1949 made a grant of \$120,000 to the National Research Council for use over two years by the Conference Board of the Associated Research Councils in a comprehensive study of human resources and the fields of higher learning. A committee representing the four councils will direct the development of cooperative research programs with scientific and professional societies and organizations. The aim is to formulate data on personnel requirements in the several fields of interest represented on the committee and on the qualitative and quantitative population resources of the nation. It seems likely

that within its limitations of time and financial support the committee will be able to accomplish the primary task of defining the major aspects of the problem and eliciting the detailed help of many other agencies for continuing work.

#### PACIFIC SCIENCE ASSOCIATION PERMANENT SECRETARIAT

The Pacific Science Association is an international organization for promoting scientific work on problems of common interest arising in the Pacific area. Its principal activity has been the holding of scientific congresses at three-year intervals since 1920. Although the several congresses have served a useful purpose in bringing together scientists from various nations and disciplines for exchange of ideas, the need to reduce to practical reality the many resolutions and recommendations for joint research offered by the congresses made a permanent office desirable.

At its Auckland, New Zealand, meeting in February 1949 the association approved the establishment of a permanent secretariat to serve as a central office between congresses and as an information center in Pacific science matters. The secretariat was also to assist in handling relationships between the association and specialized agencies of the United Nations and the South Pacific Commission. The Rockefeller Foundation in 1949 granted the Pacific Science Association the sum of \$12,000 for use over a two-year period to help in establishing and main-

taining such a permanent secretariat. The office is being set up in Honolulu in space donated by the Bishop Museum, the Hawaiian member of the Pacific Science Association.

In addition to the congresses, the association's program includes many projects which must be pursued on an international basis in order to realize their greatest effectiveness. This is especially true of projects in epidemiology, oceanography, meteorology and geology. The new permanent office offers an opportunity for advancement in these fields through international cooperation on clearly defined practical problems.

#### THE ROCKEFELLER FOUNDATION FELLOWSHIP DIRECTORY

The Trustees of The Rockefeller Foundation in 1949 set aside the sum of \$25,000 for the preparation and distribution of a directory of Rockefeller Foundation fellowship holders.

The Foundation and associated Boards have in 35 years awarded more than 9,200 fellowships, involving a total investment of more than \$21,175,000. In addition to these fellowships awarded directly, extensive fellowship programs have been financed by the Foundation through grants to other agencies. The American Council of Learned Societies, the National Research Council, the Social Science Research Council and a number of other organizations and institutions have administered such fellowship funds. The

Foundation expended some \$9,000,000 for these indirect awards during the years 1922 to 1949.

A comprehensive directory of former fellows would be of immediate practical value to the Foundation and would probably be useful as a reference volume in libraries. Work has started on its preparation, and it is hoped to have the directory ready for publication and distribution in 1951.

**FELLOWSHIPS  
AND  
GRANTS IN AID**



## FELLOWSHIPS AND GRANTS IN AID

THE direct expression of The Rockefeller Foundation's interest in the training of individuals is its long-standing fellowship program, by which it seeks to further the scientific and scholarly careers of promising young men and women who have already earned the doctor's degree. Coming from all countries and studying in every field from endocrinology to library science, from sanitary engineering to social psychology, Foundation fellows represent an investment in talent, an investment whose dividends society reaps in the form of a multiplication of its intellectual resources. Over the last 35 years the Foundation has expended more than \$25,000,000 for some 10,000 fellowships.

In 1949 the Foundation devoted \$812,000 to the support of 376 direct fellows. Of these funds, the International Health Division had at its disposal \$212,000, the Medical Sciences \$175,000, the Natural Sciences \$175,000, the Social Sciences \$125,000 and the Humanities \$125,000. (The International Health Division, in addition, allocated \$38,000 for 49 travel and training grants.)

While the five divisions of the Foundation awarded 376 fellowships directly, other organizations, using Foundation funds over and above those mentioned

in the preceding paragraph, awarded another 273. Thus, fellowships were made possible for a total of 649 persons. The distribution of awards can be seen in the following table:

*Awarded by The Rockefeller Foundation*

International Health Division.....	130	
Medical Sciences.....	70	
Natural Sciences.....	70	
Social Sciences.....	33	
Humanities.....	73	
		<hr/>
	376	376

*Awarded by other agencies*

National Research Council.....	102	
Social Sciences Research Council.....	78	
American Council of Learned Societies.....	69	
British Medical Research Council.....	13	
Canadian Social Science Research Council.	12	
National Health and Medical Research Council of Australia.....	7	
National Theatre Conference.....	2	
		<hr/>
	273	273
		<hr/>
TOTAL.....	649	

The 376 recipients of direct fellowships came from 49 countries. Among the countries represented by 10 or more fellows were Australia, Brazil, China, Colombia, Denmark, Finland, France, Great Britain, Italy, Japan, the Netherlands, Norway, Sweden and the United States. The great majority of fellows studied in the United States, with a smaller number electing

to work in Brazil, Canada, Chile, China, Denmark, England, Finland, France, Hawaii, Mexico, Nigeria, Sweden and Switzerland. This facilitation of international interchange of persons, and of ideas, in a time when certain parts of the world are becoming sealed off from one another is one of the most rewarding aspects of the fellowship program.

The Foundation in 1949 approved 1950 fellowship expenditures of \$160,000 for the Medical Sciences, \$175,000 for the Natural Sciences, \$125,000 for the Social Sciences and \$125,000 for the Humanities. In addition there were appropriations of \$50,000 and \$64,000 to the National Research Council, Washington, D. C., for fellowships in the medical sciences and the natural sciences, respectively, and a contribution of \$1,000 toward the administrative expenses of the Australian-New Zealand Social Science Fellowship Committee, Melbourne, Australia.

Closely related to the Foundation's fellowship program is a system of modest grants in aid. These are generally given to enable established scholars and scientists to carry out a specific, short-term piece of research whose scope does not warrant a regular grant and that might otherwise be lost to the world of learning. Grants in aid are marks of achievement rather than promise and are bestowed to enlarge the boundaries of knowledge as well as to assist an individual. However, in many instances, recipients of grants in aid are former Rockefeller Foundation fellows.

The Foundation administered a grant-in-aid fund of \$950,000 during 1949, divided as follows: \$200,000

for work in the medical sciences, \$250,000 in the natural sciences, \$250,000 in the social sciences and \$250,000 in the humanities. There were all told 304 grants in aid, ranging in value from \$200 to \$10,000, of which the Medical Sciences awarded 71, the Natural Sciences 80, the Social Sciences 67 and the Humanities 86. A total of 37 countries participated in the distribution of the grants, with 110 going to the United States; 35 to England; 20 to France; 16 to Italy; 11 to the Netherlands; 10 each to Brazil and Mexico; 8 to Canada; 7 each to Denmark, Sweden and Switzerland; 5 each to Australia, Colombia and Chile; 4 each to Japan, Scotland, Norway, Peru and Finland; 3 each to Costa Rica and Argentina; 2 each to Puerto Rico, China, Indonesia, New Zealand, Austria and Poland; and 1 each to India, Hawaii, Korea, Haiti, Eire, Siam, Java, Germany, Czechoslovakia and South Africa.

For 1950 The Rockefeller Foundation set aside grant-in-aid funds of \$140,000 for the Medical Sciences, \$250,000 for the Natural Sciences, \$250,000 for the Social Sciences and \$250,000 for the Humanities. In addition, the sum of \$50,000, to be allocated at the discretion of the President of the Foundation, was appropriated for small exploratory grants in aid that do not come within the divisional programs.

## **REPORT OF THE TREASURER**



## TREASURER'S REPORT

**I**N the following pages is submitted a report of the financial transactions of The Rockefeller Foundation for the year ended December 31, 1949.

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## THE ROCKEFELLER FOUNDATION

## BALANCE SHEET—DECEMBER 31, 1949

## ASSETS

SECURITIES (Ledger value)..... \$147,588,489.96  
(Market value \$220,181,242.63)

## CURRENT ASSETS

## Cash on deposit:

In New York.....	\$4,937,503.11
In Canada — Can. \$136,616.88 @ .9063	123,815.89
	<hr/>

Advances and deferred charges.....	\$579,696.37
Sundry accounts receivable.....	169,381.62
	<hr/>

## EQUIPMENT

In New York.....	72,668.67
	<hr/>
	\$153,471,555.62
	<hr/>

TREASURER'S REPORT

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BALANCE SHEET — DECEMBER 31, 1949

FUNDS AND OBLIGATIONS

PRINCIPAL FUND..... \$114,884,394.18

COMMITMENTS

Unpaid appropriations.....	\$28,855,778.58
Unappropriated authorizations.....	1,487,732.00
	<hr/>

FUNDS AVAILABLE FOR COMMITMENT

Appropriations Account No. 1.....	\$2,263,936.23
Appropriations Account No. 2.....	5,841,107.41
	<hr/>

CURRENT LIABILITIES

Accounts payable.....	65,938.55
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EQUIPMENT FUND.....	72,668.67
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\$153,471,555.62  

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## PRINCIPAL FUND

Balance, December 31, 1948.....	\$114,883,971.32
Add Legacy from Estate of William O. Wakenight (total amount received to date \$27,225.09).....	422.86
Balance, December 31, 1949.....	<u>\$114,884,394.18</u>

## APPROPRIATIONS AND PAYMENTS

Unpaid appropriations, December 31, 1948.....	\$31,441,422.91
Appropriations during the year 1949 (For detail see pages 364 to 404)	
Public Health.....	\$1,850,000.00
Medical Sciences.....	1,545,935.00
Natural Sciences.....	2,110,835.00
Social Sciences.....	1,796,625.00
Humanities.....	1,181,580.00
Miscellaneous.....	1,134,500.00
Administration	
Scientific Services.....	1,042,512.00
General.....	374,441.00
	<u>\$11,036,428.00</u>
Unused balances of appropriations allowed to lapse.....	718,691.35
	<u>10,317,736.65</u>
	<u>\$41,759,159.56</u>

<b>Payments on 1949 and prior years' appropriations (For detail see pages 364 to 404)</b>		
General Education Board.....	\$1,500,000.00	
Public Health.....	2,387,176.63	
Medical Sciences.....	1,695,651.37	
Natural Sciences.....	1,867,306.74	
Social Sciences.....	2,200,713.07	
Humanities.....	1,442,868.61	
Miscellaneous.....	494,545.19	
Administration		
Scientific Services.....	970,024.15	
General.....	345,095.22	12,903,380.98
 Unpaid appropriations, December 31, 1949.....		<u><u>\$28,855,778.58</u></u>
 <b>UNAPPROPRIATED AUTHORIZATIONS</b>		
Unappropriated authorizations, December 31, 1948.....		\$1,489,036.00
Add		
Authorizations during 1949 for later appropriation by the Executive Committee .....		198,696.00
		<u><u>\$1,687,732.00</u></u>
Deduct		
Amount appropriated from this account during the year.....		\$150,000.00
Authorizations lapsed.....	50,000.00	200,000.00
 Unappropriated authorizations, December 31, 1949.....		<u><u>\$1,487,732.00</u></u>

## FUNDS AVAILABLE FOR COMMITMENT

## APPROPRIATIONS ACCOUNT No. 1

Funds available for commitment, December 31, 1948.....	\$423,698.78
<b>Add</b>	
Income and refunds received during 1949	
Income.....	\$10,984,524.26
Refunds.....	39,907.58
Gift from Mrs. Edward E. Yaggy, Jr., for general purposes.....	1,000.00
Unused balances of appropriations (\$641,469.61) and authorizations (\$50,000.00) allowed to lapse.....	<u>691,469.61</u> <u>11,716,901.45</u>
	<u>\$12,140,600.23</u>
<b>Deduct</b>	
Appropriations from this account during 1949.....	\$9,677,968.00
Authorizations during 1949.....	<u>198,696.00</u> <u>9,876,664.00</u>
	<u>\$2,263,936.23</u>
Funds available for commitment, December 31, 1949.....	

## APPROPRIATIONS ACCOUNT No. 2

Funds available for commitment, December 31, 1948.....	\$6,972,345.67
<b>Add</b>	
Unused balances of appropriations allowed to lapse.....	<u>77,221.74</u>
	<u>\$7,049,567.41</u>
<b>Deduct</b>	
Appropriations from this account during 1949.....	<u>1,208,460.00</u>
	<u>\$5,841,107.41</u>

## APPROPRIATIONS AND UNAPPROPRIATED AUTHORIZATIONS

Commitments, December 31, 1948

Unpaid appropriations.....	\$31,441,422.91
Unappropriated authorizations.....	1,489,036.00

Add

Amount appropriated and authorized during 1949

Appropriated.....	\$11,036,428.00
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Less

Appropriations for which funds were previously authorized.....	\$150,000.00
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Appropriations and authorizations lapsed during 1949.....	768,691.35
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\$10,117,736.65

198,696.00

10,316,432.65

Authorized.....			\$43,246,891.56
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Deduct

Payments on 1949 and prior years' appropriations.....	12,903,380.98
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Commitments, December 31, 1949

Unpaid appropriations.....	\$28,855,778.58
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Unappropriated authorizations.....	1,487,732.00
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\$30,343,510.58

## EQUIPMENT FUND

	BALANCE DEC. 31, 1948	CHANGES DURING 1949		BALANCE DEC. 31, 1949
		EXPENDITURES	DEPRECIATION	
Library.....	\$13,192.00	\$886.94	\$129.94	\$13,949.00
Equipment.....	57,963.91	8,407.29	7,651.53	58,719.67
	<u>\$71,155.91</u>	<u>\$9,294.23</u>	<u>\$7,781.47</u>	<u>\$72,668.67</u>

**APPROPRIATIONS DURING 1949, UNPAID BALANCES OF PRIOR YEAR APPROPRIATIONS,  
AND PAYMENTS THEREON IN 1949**

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	APPROPRIATIONS PRIOR YEARS	1949	1949 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>PUBLIC HEALTH</b>				
International Health Division of The Rockefeller Foundation *				
Prior Years (RF 44106, 45108, 46130, 47123).....	\$1,582,171.45			
1949 (RF 48121).....	2,200,000.00	\$.....	\$2,019,594.54	
1950 (RF 49135).....		1,800,000.00		
Revolving Fund to provide working capital (RF 29093).....	200,000.00			
The Rockefeller Foundation Health Commission * (RF 44107).....	250,999.38		142,582.09	
Harvard University, Cambridge, Massachusetts. School of Public Health				
General budget (RF 45109).....	700,000.00		100,000.00	
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health				
For developmental purposes (RF 48037).....	680,000.00		75,000.00	
Rockefeller Institute for Medical Research, New York				
Toward general expense of administration and operation (RF 49014).....		50,000.00	50,000.00	
University of Toronto, Canada. School of Nursing				
Construction of new building (RF 45037).....	300,000.00		.....	
<b>TOTAL — PUBLIC HEALTH</b> .....	<u>\$5,913,170.83</u>	<u>\$1,850,000.00</u>	<u>\$2,387,176.63</u>	

**MEDICAL SCIENCES**

**Psychiatry, Neurology and Allied Subjects**

American Psychiatric Association, New York

Work of Committee on Psychiatric Nursing (RF 47107).....

\$11,250.00     \$.....     \$6,250.00

\* A complete financial statement of the work of the International Health Division and The Rockefeller Foundation Health Commission for 1949 will be found on pages 406 to 418.

Burden Neurological Institute, Bristol, England				
Research in neurophysiology and neurosurgery (RF 47088).....	\$35,502.33	\$.....		\$8,542.19
Cardiff City Mental Hospital, Wales				
Research in normal and pathological biochemistry of brain tissue (RF 48014).....	29,189.81	.....		7,179.08
Catholic University of America, Washington, D. C.				
Teaching and research in psychiatry and child guidance (RF 44059)....	2,000.00	.....		2,000.00
Child Research Council of Denver, Colorado				
Studies in child growth and development (RF 48057, 49116).....	112,500.00	25,000.00		25,000.00
Columbia University, New York				
Investigation of genetic factors in the incidence of nervous and mental diseases peculiar to old age (RF 45002, 47068).....	21,689.97	.....		5,500.00
Research in brain chemistry (RF 47008).....	9,750.00	.....		6,500.00
Dalhousie University, Halifax, Nova Scotia				
Development of teaching in psychiatry (RF 47069).....	10,661.30	.....		5,892.52
Georgia State College for Women, Milledgeville				
Research in medical genetics (RF 47055).....	7,000.00	.....		1,500.00
Harvard University, Cambridge, Massachusetts				
Investigation of the dynamics of personality development (RF 48016) ..	54,000.00	.....		9,000.00
Research in epilepsy at Harvard Medical School and Boston City Hos- pital (RF 42109, 49035).....	17,901.90	30,000.00		17,000.00
Teaching and research in psychiatry in the Harvard Medical School (RF 48055).....	68,640.00	.....		12,480.00
Institute of Andean Biology, University of San Marcos, Lima, Peru				
Equipment for a high altitude laboratory at Morococha (RF 49061)....	.....	50,000.00		29,154.27

**MEDICAL SCIENCES — *Continued*****Psychiatry, Neurology and Allied Subjects — *Continued***

Institute of the Pennsylvania Hospital, Philadelphia

Research in neurophysiology (RF 48044)..... \$5,000.00 \$..... \$2,645.03

Johns Hopkins University, Baltimore, Maryland

Research and training in psychiatry (RF 43053)..... 1,787.52 ..... Cr. 362.95

Karolinska Institute, Stockholm, Sweden

Research in neurophysiology (RF 45003, 48095, 49120)..... 10,233.20 20,000.00 13,347.60

Long Island College of Medicine, Brooklyn, New York

Development of the Department of Psychiatry (RF 49002)..... ..... 20,000.00 20,000.00

Massachusetts Institute of Technology, Cambridge

Expenses of a project in mathematical biology to be conducted jointly with the National Institute of Cardiology, Mexico, D. F. (RF 47009) .. 8,250.00 ..... 2,747.57

McGill University, Montreal, Canada

Maintenance of Department of Psychiatry (RF 43046, 49033)..... 24,341.27 120,000.00 30,000.00

Research in brain chemistry (RF 46069)..... 31,869.68 ..... 13,598.10

Menninger Foundation, Topeka, Kansas

Establishment of a school for psychiatric aides in conjunction with the Topeka State Hospital (RF 49093)..... ..... 70,575.00 12,950.00

National Institute of Cardiology, Mexico, D. F.

Research in neurophysiology and pharmacology (RF 49036)..... ..... 35,000.00 4,932.34

National Mental Health Foundation, Philadelphia, Pennsylvania

General purposes (RF 47010)..... 25,000.00 ..... .....

New York University, New York

Interdepartmental project on the rehabilitation of neurological patients (RF 49075)..... ..... 37,200.00 9,300.00

Teaching and research in Department of Psychiatry (RF 43078)..... 16,161.47 ..... Cr. 6,362.78

<b>Princeton University, New Jersey</b>			
Research on the psychology of perception (RF 48040).....	\$30,000.00	\$.....	\$7,500.00
Work of the Department of Psychology (RF 49034).....	.....	25,000.00	25,000.00
<b>Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine</b>			
Studies of genetic factors of intelligence and emotional variation in mammals (RF 45008).....	46,400.00	.....	46,400.00
<b>Tavistock Institute of Human Relations, London, England</b>			
Research and teaching in the field of psychiatry (RF 49003).....	.....	121,200.00	60,482.82
<b>Tufts College Medical School, Boston, Massachusetts</b>			
Research in brain chemistry (RF 44098).....	14,473.54	.....	6,988.51
<b>University College, University of London, England</b>			
Research in physiology (RF 45085).....	38,360.25	.....	14,511.35
<b>University of Aarhus, Denmark</b>			
Development of research and teaching in psychiatry (RF 49004).....	.....	25,960.00	7,022.40
<b>University of Brussels, Belgium</b>			
Research in neurophysiology (RF 46015).....	5,671.13	.....	51.75
<b>University of California, Berkeley</b>			
Toward the establishment of an Institute for Personality Assessment and Research (RF 49048).....	.....	100,000.00	16,615.00
<b>University of Cambridge, England</b>			
Research in neurophysiology (RF 46014).....	28,273.46	.....	12,407.59
Psychological Laboratory. Training and research (RF 46084).....	23,659.61	.....	5,319.93
<b>University of Chicago, Illinois</b>			
Teaching and research in psychiatry (RF 47050).....	97,500.00	.....	35,000.00
Investigation of non-directive psychotherapy (RF 49090).....	.....	45,000.00	12,500.00
<b>University of Cincinnati, Ohio</b>			
Teaching and research in psychiatry (RF 47121).....	140,000.00	.....	17,500.00
<b>University of Copenhagen, Denmark</b>			
Work in the genetics of mental defectiveness (RF 48112).....	21,120.00	.....	4,017.60

**MEDICAL SCIENCES — *Continued*****Psychiatry, Neurology and Allied Subjects — *Continued***

University of Edinburgh, Scotland

Research in psychiatry, neurology and neurosurgery (RF 47007)..... \$10,178.19 \$..... \$2,419.50

University of Illinois, Urbana

Research in the biochemical aspects of schizophrenia (RF 45001)..... 55,000.00 ..... 27,756.04

Research in epilepsy (RF 47106)..... 18,000.00 ..... 8,045.16

University of London, England. Galton Laboratory

Research in problems of human heredity (RF 46085)..... 11,183.45 ..... 4,434.72

University of Oregon, Eugene

Work in neurophysiology (RF 48071)..... 6,000.00 ..... .....

University of Oregon Medical School, Portland

Clinical and physiological investigation of pain (RF 49051)..... ..... 30,000.00 18,600.00

University of Oxford, England

Neurohistological research in the Department of Human Anatomy (RF 48058)..... 72,423.74 ..... 10,240.69

University of Toronto, Canada

Development of a laboratory of experimental clinical neurology (RF 49049)..... ..... 32,000.00 3,626.16

Washington University, St. Louis, Missouri. School of Medicine

Support of Department of Neuropsychiatry (RF 47041)..... 97,500.00 ..... 32,388.00

Western Reserve University, Cleveland, Ohio

Research in psychiatry, especially in biochemistry related to mental disease (RF 48056)..... 63,000.00 ..... 14,000.00

Wilhelmina Hospital, Amsterdam, Netherlands

Research in psychosomatic medicine (RF 47105)..... 12,587.27 ..... 5,956.19

**Endocrinology**

Collège de France, Paris

Equipment for an experimental monkey station in Algeria (RF 49001).. ..... 20,000.00 3,248.31

Columbia University, New York				
Research in endocrinology (RF 46026).....	\$4,460.00	\$.....	\$824.01	
Institute of Biology and Experimental Medicine, Buenos Aires, Argentina				
Support of research (RF 44136, 47067).....	11,620.46	.....	5,014.16	
Massachusetts General Hospital, Boston				
Research in endocrinology and metabolism (RF 46071, 49107).....	2,000.00	12,000.00	1,936.06	
McGill University, Montreal, Canada				
Research in endocrinology (RF 46070).....	10,963.10	.....	4,532.70	
National Research Council, Washington, D. C.				
Committee for Research in Problems of Sex (RF 44002, 46051, 46134, 49074).....	52,723.78	240,000.00	79,820.84	
University of California, Berkeley				
Research on hormones and vitamins (RF 44064).....	203.05	.....	.....	
Medical Education				
American University of Beirut, Lebanon				
Equipment for the School of Medicine (RF 47065).....	50,000.00	.....	50,000.00	
Bingham Associates Fund of Maine, Boston, Massachusetts				
Program of postgraduate medical education in certain rural areas and towns in Massachusetts (RF 45073).....	123,856.50	.....	73,058.99	
Forsyth Dental Infirmary for Children, Boston, Massachusetts				
Expenses of a consultant in dental education (RF 49015).....	.....	6,000.00	6,000.00	
Harvard University, Cambridge, Massachusetts				
Development of legal medicine (RF 44001).....	47,406.29	.....	9,945.01	
Development of the Department of Dermatology, Harvard Medical School (RF 48039).....	100,000.00	.....	9,976.86	

	PRIOR YEARS	1949	1949 PAYMENTS	370
<b>MEDICAL SCIENCES — <i>Continued</i></b>				
<b>Medical Education — <i>Continued</i></b>				
Japan — Purchase of medical books and periodicals to be distributed to various medical schools in Japan upon recommendation of the Japanese Council on Medical Education (RF 49076).....	\$.....	\$30,000.00	\$29,273.14	
Johns Hopkins University, Baltimore, Maryland				
Institute of the History of Medicine (RF 49050).....	.....	90,000.00	15,000.00	THE ROCKEFELLER FOUNDATION
Meharry Medical College, Nashville, Tennessee				
Current expenses (RF 48053).....	53,167.11	.....	53,167.11	
Postwar appointments for medical graduates from armed services (RF 44135).....	105,267.44	.....	11,968.64	
Publication of French contributions to medicine during the war years (RF 46028).....	424.14	.....	.....	
Royal Society of Medicine, London, England				
Expenses of a Central Medical Library Bureau (RF 45115).....	64,858.21	.....	23,880.42	
Tulane University of Louisiana, New Orleans. School of Medicine				
Improving animal house facilities (RF 48015).....	10,000.00	.....	10,000.00	
University College, University of London, England				
Study of medical student selection (RF 48008).....	16,216.88	.....	2,812.24	
University of Brussels, Belgium				
Teaching and research in preventive medicine (RF 47122).....	23,859.85	.....	6,750.00	
Teaching and research in social medicine (RF 45090).....	1,233.43	.....	.....	
University of Iceland, Reykjavik				
Scientific equipment for the School of Medicine (RF 42039).....	261.48	.....	.....	
University of San Marcos, Lima, Peru. Faculty of Medicine				
Equipment and supplies for Department of Pathology (RF 46087).....	1,656.73	.....	1,291.23	
Washington University, St. Louis, Missouri. School of Medicine				
Maintenance (RF 38059).....	11,818.90	.....	Cr. 2,315.91	
Teaching of preventive medicine (RF 47042).....	16,000.00	....	6,631.25	

**General****Columbia University, New York**

Study of the effects of fetal and neonatal injury on growth and functional development (RF 47051).....

857,545.00 \$..... \$18,181.71

**Medical Library Association, Nashville, Tennessee**

Traveling fellowships in medical librarianship (RF 49044).....

..... 10,000.00 10,000.00

**Medical Research Council, London, England**

Purchase of scientific equipment (RF 47066).....

13,291.79 ..... 9,104.09

**National Health Council, Inc., New York**

Program in the coordination of voluntary health agencies (RF 48009) ..

193,750.00 ..... 75,000.00

**National Society for Medical Research, Chicago, Illinois**

Survey of public opinion on the question of animal experimentation (RF 48045).....

6,000.00 ..... 6,000.00

**New York University, New York**

Support of research in pharmacology (RF 49087).....

..... 1,000.00 1,000.00

**Research Council of the Department of Hospitals, New York**

Research on chronic diseases (RF 45056).....

175.30 ..... .....

**Fellowships and Grants in Aid****Fellowships**

Administered by The Rockefeller Foundation (RF 44139, 46102, 46135, 47134, 48101, 48138, 49144).....

320,300.31 160,000.00 137,509.85

Medical Research Council, London, England (RF 45042, 46029, 48013).....

113,572.41 ..... 91,332.51

National Research Council, Washington, D. C.

Medical sciences (RF 46133, 49121).....

112,125.63 50,000.00 76,202.04

Welch fellowships in internal medicine (RF 41028).....

89,388.39 ..... 19,254.53

**MEDICAL SCIENCES — *Continued*****Fellowships and Grants in Aid — *Continued*****Grants in Aid**

	<b>APPROPRIATIONS PRIOR YEARS</b>	<b>1949</b>	<b>1949 PAYMENTS</b>
Administered by The Rockefeller Foundation (RF 43122, 44143, 45123, 46120, 47089, 47138, 48142, 49148).....	\$388,256.14	\$140,000.00	\$206,968.80
Special Emergency Grant-in-Aid Fund			
Scientific equipment for medical science laboratories of universities and technical schools in the Netherlands (RF 45089).....	8,799.83	.....	4,656.40
<b>TOTAL — MEDICAL SCIENCES.....</b>	<b>\$3,305,261.24</b>	<b>\$1,545,935.00</b>	<b>\$1,695,651.37</b>

**NATURAL SCIENCES****Experimental Biology**

## Amherst College, Massachusetts

Research in biology (RF 46095).....	\$17,500.00	.....	\$7,000.00
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## Auckland University College, University of New Zealand

Equipment for investigations on the plant products of New Zealand (RF 49124).....	.....	13,000.00	202.06
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## California Institute of Technology, Pasadena

Support of combined research programs in biology and chemistry (RF 48030).....	600,000.00	.....	\$0,000.00
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## Carlsberg Foundation, Copenhagen, Denmark

Research in biochemistry (RF 46107).....	13,528.49	.....	4,420.16
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## Columbia University, New York

Research on enzymes in the Department of Medicine, College of Physicians and Surgeons (RF 48043).....	9,750.00	.....	6,500.00
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Research on vitamins and related substances in relation to plant growth (RF 45086).....	9,000.00	.....	5,000.00
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Research in immunochemistry (RF 48066).....	\$30,000.00	\$.....	\$10,000.00
Research in genetics and experimental zoology (RF 48076).....	68,750.00	.....	24,750.00
Connecticut Agricultural Experiment Station, New Haven			
Research in genetics (RF 48018).....	14,416.46	.....	3,600.00
Cornell University, Ithaca, New York			
Research in enzyme chemistry (RF 42050, 49082).....	3,210.00	30,000.00	6,060.54
Research in protein chemistry (RF 45094).....	34,400.00	.....	Cr. 1,286.53
To assist in establishing an electron microscope laboratory (RF 49069).....	.....	45,000.00	18,750.00
Duke University, Durham, North Carolina			
Research on physical biochemistry of proteins (RF 46096, 49070).....	17,500.00	100,000.00	10,000.00
Eidgenössische Technische Hochschule, Zürich, Switzerland			
Laboratory of Organic Chemistry. Research on constitution and synthesis of physiologically active compounds (RF 46099).....	88,675.95	.....	28,441.72
Harvard University, Cambridge, Massachusetts			
Basic studies in chemotherapy (RF 45014, 48020).....	60,003.88	.....	31,051.38
Research in the Medical School on the application of physical and chem- ical methods to problems of tissue structure (RF 46019).....	23,000.00	.....	6,000.00
Indiana University, Bloomington			
Research in cytogenetics (RF 45036).....	27,000.00	.....	13,500.00
Iowa State College, Ames			
Research in physiological genetics (RF 46032, 49028).....	824.92	18,000.00	.....
Karolinska Institute, Stockholm, Sweden. Medical Nobel Institute			
Equipment for Departments of Biochemistry and Cell Research (RF 45068).....	654.54	.....	.....
Research in biochemistry (RF 47100).....	38,199.85	.....	11,499.79
Research in the Institute for Cell Research (RF 49030).....	.....	35,000.00	20,000.00
Marine Biological Laboratory, Woods Hole, Massachusetts			
Modernization of laboratory building and general support (RF 48131)..	250,000.00	.....	175,000.00

**NATURAL SCIENCES — *Continued***
**Experimental Biology — *Continued***

Massachusetts General Hospital, Boston			
Research in enzyme chemistry (RF 48135).....	\$12,000.00	\$.....	\$3,500.00
Massachusetts Institute of Technology, Cambridge			
Project in mathematical biology to be conducted jointly with the National Institute of Cardiology, Mexico, D. F. (RF 47009).....	8,250.00	.....	2,747.56
Research in biology (RF 47039).....	175,000.00	.....	50,000.00
Research in the physical chemistry of protein solutions (RF 45107)....	52,096.80	.....	9,585.70
New York University, New York			
Altering and equipping several laboratory rooms to be used for research in enzyme chemistry (RF 48134).....	7,000.00	.....	7,000.00
Northwestern University, Evanston, Illinois			
Research in the physical chemistry of proteins (RF 49058).....	.....	27,000.00	4,500.00
Princeton University, New Jersey			
Research in genetics (RF 47076).....	4,000.00	.....	3,818.75
Research in organic chemistry (RF 40058).....	20,866.72	.....	8,000.00
Purdue University, Lafayette, Indiana			
Research in genetics (RF 49104).....	.....	15,000.00	2,500.00
Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine			
Research in genetics (RF 48108).....	15,000.00	.....	12,000.00
Smith College, Northampton, Massachusetts			
Work in genetics (RF 49105).....	.....	8,000.00	4,000.00
Stanford University, Palo Alto, California			
Research in biochemistry of nucleic acids (RF 48109).....	21,000.00	.....	9,000.00
Research in biochemical genetics (RF 49057).....	.....	25,000.00	2,975.00

THE ROCKEFELLER FOUNDATION

Research in protein chemistry (RF 45023, 48064).....	\$17,318.96	\$.....	\$10,108.64
Research in microbiology (RF 48065).....	13,200.00	.....	.....
University of Brazil, Rio de Janeiro			
Research at the Institute of Biophysics (RF 49020).....	.....	12,000.00	1,501.30
University of California, Berkeley			
Construction and installation of cyclotron (RF 42001).....	37,237.04	.....	.....
Purchase of basic equipment for research in biochemistry with special emphasis in virus studies (RF 48132).....	100,000.00	.....	65,000.00
Research in biochemistry (RF 46034, 49059).....	2,500.00	15,000.00	4,924.53
Research in the comparative biochemistry of marine organisms (RF 47077, 49009).....	3,000.00	29,000.00	6,805.39
University of Cambridge, England			
Molteno Institute of Biology and Parasitology. Research in cell physiology (RF 47101).....	30,369.46	.....	7,507.18
Purchase in the United States of equipment to be used in the University Chemical Laboratory (RF 49041).....	.....	15,000.00	625.19
University of Chicago, Illinois			
Research in molecular spectra (RF 41101).....	1,274.51	.....	.....
Research in application of spectroscopic methods to biological problems (RF 40021).....	13,441.26	.....	.....
University of Copenhagen, Denmark			
Research on the biological uses of isotopes (RF 47083, 49094).....	4,250.00	17,000.00	8,500.00
Research in biochemistry, physiology, embryology and genetics (RF 49029).....	.....	31,500.00	6,103.80
University of Glasgow, Scotland			
Equipment for research in the natural sciences (RF 49125).....	.....	11,000.00	4,000.00
University of Graz, Austria			
.....	.....	25,000.00	12,500.00

**NATURAL SCIENCES — *Continued*****Experimental Biology — *Continued*****University of Leeds, England**

Research on the analysis of biological tissues by physical techniques (RF 46108, 47081).....

\$12,512.20 \$..... \$4,465.46

**University of London, England**

Birkbeck College. Equipment for X-ray analysis (RF 48078).....

19,271.98 ..... 6,770.08

King's College. Research in molecular biology (RF 47082).....

20,381.25 ..... 15,012.30

Imperial College of Science and Technology. Research on vitamins, sterols and related compounds (RF 38070).....

14,469.22 ..... 3,023.91

**University of Missouri, Columbia**

Research in genetics (RF 47054).....

3,750.00 ..... 1,127.76

**University of North Carolina, Chapel Hill**

Research in mathematical and experimental genetics (RF 49079).....

..... 27,000.00 4,500.00

**University of Nottingham, England**

Equipment for research in biochemistry (RF 49129).....

..... 16,250.00 .....

**University of Oxford, England****Dyson Perrins Laboratory of Organic Chemistry**

Research in organic chemistry (RF 47084).....

12,180.00 ..... 4,100.63

Equipment for research (RF 49122).....

..... 14,000.00 .....

Sir William Dunn School of Pathology. Research on antibiotics (RF 46021, 47003).....

4,583.76 ..... 3,030.68

Research in crystallography (RF 49123).....

..... 6,060.00 700.63

**University of Pennsylvania, Philadelphia**

Research on permeability of the red blood cell (RF 44056).....

1,697.51 ..... 1,255.04

**University of Pittsburgh, Pennsylvania**

Research on the chemistry of proteins (RF 49019).....

..... 15,000.00 4,000.00

University of Rochester, New York				
Microphotometric studies of biological tissues (RF 49114).....	\$.....	875,000.00	821,405.00	
University of São Paulo, Brazil. Faculty of Philosophy				
Equipment for research in the Department of Physics (RF 45061)....	38,830.67	.....	16,436.74	
University of Texas, Austin				
Research in biochemical genetics (RF 47053, 49042).....	3,000.00	12,000.00	5,994.22	
Research in genetics of drosophila (RF 46020, 49027).....	4,424.89	30,000.00	9,895.06	
University of Upsala, Sweden				
Researches in Institute of Physiology (RF 49126).....	.....	5,400.00	500.00	
Equipment for research on proteins and polysaccharides (RF 49142)...	.....	100,000.00	.....	
University of Utrecht, Netherlands				
Research in biophysics and biochemistry (RF 47092, 49113).....	6,000.00	22,000.00	5,998.96	
University of Wisconsin, Madison				
Research in biochemistry of symbiotic nitrogen fixation (RF 46118)....	14,348.57	.....	3,904.21	
Research in physical chemistry (RF 45015).....	3,804.57	.....	.....	
Research in cytogenetics (RF 48019).....	15,000.00	.....	10,000.00	
Scientific equipment for the Enzyme Institute (RF 48031).....	100,000.00	.....	25,000.00	
Uruguay, Ministry of Public Health, Montevideo				
Equipment and expenses for the Research Institute of Biological Sciences (RF 47078, 49008).....	2,264.99	35,000.00	18,896.37	
Washington University, St. Louis, Missouri				
Research in general physiology and experimental embryology (RF 46097)	10,890.90	.....	3,005.22	
Biochemical research (RF 49117).....	.....	50,000.00	7,875.00	
Yale University, New Haven, Connecticut				
Research on proteolytic enzymes (RF 45095, 48133).....	24,147.96	.....	7,396.68	
Research in the Department of Botany (RF 48032).....	45,000.00	.....	10,000.00	
Yerkes Laboratories of Primate Biology, Orange Park, Florida				
..... (D.D. 47019).....	137,500.00	.....	35,000.00	

NATURAL SCIENCES — *Continued*

## Agriculture

	PRIOR YEARS	APPROPRIATIONS 1949	1949 PAYMENTS
Collaborative Operating Program in Agriculture in Colombia (RF 49127) ..	\$.....	\$40,000.00	\$.....
College of Agriculture "Antonio Narro," Saltillo, Mexico			
Equipment and supplies (RF 49102) .....	.....	4,000.00	495.00
Institute of Agronomy, Campinas, State of São Paulo, Brazil			
Research in plant viruses (RF 49156) .....	.....	15,000.00	.....
Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica			
Strengthening the library resources and making possible the development of a scientific communication program (RF 49077) .....	.....	60,000.00	12,500.00
Inter-American Symposium on Plant Breeding, Mexico, D.F.			
Expenses of an Inter-American Symposium on Plant Breeding to be held under the auspices of the Office of Special Studies, Secretariat of Agri- culture and Animal Industry, Mexico (RF 49100) .....	.....	13,000.00	7,849.27
Mexican Agricultural Program			
General expenses (RF 46126, 47115, 48028, 48123, 49109, 49136) .....	411,516.55	326,125.00	273,392.49
Nutrition research (RF 48104) .....	5,283.83	.....	2,956.13
Support of a special program of improvement of the Mexican substations for agricultural research and demonstration (RF 45106) .....	570.96	.....	202.67
Cost of providing greenhouse facilities (RF 46127) .....	3,828.66	.....	2,134.04
Ministry of Agriculture, Santiago, Chile			
Cooperative project to establish on full-time salaries Chilean agricultural scientists engaged in food production programs (RF 49155) .....	.....	12,000.00	.....
National University of Colombia			
Faculty of Agronomy, Palmira. Equipment (RF 47118) .....	10,000.00	.....	6,130.29

<b>Faculty of Agronomy, Medellín</b>				
Equipment (RF 47117).....	852,158.68	8.....	.....	\$22,420.83
To send outstanding graduating class students for specialized training with The Rockefeller Foundation's agricultural staff in Mexico (RF 48072).....	12,000.00	.....	.....	1,811.68
Teaching and research facilities, study trips of staff members, and to assist in bringing foreign visiting professors to the faculty (RF 49031)	.....	30,000.00	5,485.06	
<b>Pan American Agricultural School, Tegucigalpa, Honduras</b>				
Scholarships for practical experience with Foundation's agricultural pro- gram in Mexico, or study in the United States (RF 49157).....	.....	15,000.00	.....	
<b>Secretariat of Agriculture, Mexico</b>				
National College of Agriculture, Chapingo. Teaching and research facilities, materials for the college library, and travel of visiting pro- fessors (RF 49018).....	.....	14,500.00	1,868.45	
<b>Technological Institute, Monterrey, Mexico</b>				
Equipment and supplies for the Department of Agronomy (RF 49101)..	.....	6,000.00	232.00	
<b>University of San Marcos, Lima, Peru</b>				
Equipment and supplies for the Faculty of Veterinary Medicine (RF 49103).....	.....	14,000.00	10,485.79	
<b>Fellowships and Grants in Aid</b>				
<b>Fellowships</b>				
Administered by The Rockefeller Foundation (RF 45080, 46110, 46136, 47135, 48139, 49145).....	328,643.64	175,000.00	.....	126,504.44

**NATURAL SCIENCES — *Continued*****Fellowships and Grants in Aid — *Continued*****Fellowships — *Continued***

Brown University, Providence, Rhode Island

Support of scholarships, assistantships and fellowships in advanced applied mathematics (RF 46063).....

National Research Council, Washington, D. C. (RF 46008, 47057, 48063, 48113, 49084).....

New York University, New York

Development of graduate work in applied mathematics (RF 46009) .....

**Grants in Aid**

Administered by The Rockefeller Foundation (RF 42138, 45081, 46106, 47058, 47139, 48143, 49149).....

Emergency scientific reconstruction, Italy

Equipment, consumable supplies and other materials for Italian scientists (RF 48067).....

Special Emergency Grant-in-aid Fund

Scientific equipment for natural science laboratories of universities and technical schools in the Netherlands (RF 45089).....

**General**

American Academy of Arts and Sciences, Boston, Massachusetts

Support of activities aimed at making more sound and effective the interrelationships between the various branches of the Natural Sciences, the Social Sciences, and the Humanities (RF 49085).....

American Mathematical Society, New York

Expenses of International Congress of Mathematicians (RF 37108) .....

APPROPRIATIONS PRIOR YEARS	1949	1949 PAYMENTS
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\$30,778.75	\$.....	\$11,630.00
127,001.93	64,000.00	84,929.95
29,044.88	.....	10,585.41
403,769.24	250,000.00	184,259.65
15,511.30	.....	15,108.84
14,029.10	.....	4,656.40
.....	9,000.00	1,500.00
5,000.00	.....	.....

Centre National de la Recherche Scientifique, Paris, France Special equipment for natural science research laboratories of France (RF 46048).....	856,224.30	\$.....	839,158.06
Travel of non-French delegates to conferences of scientists (RF 46049) .....	65,164.07	.....	19,832.99
China Medical Board, Inc., New York Peiping Union Medical College, China Human paleontological research in Asia (RF 45024).....	17,868.08	.....	718.39
Conservation Foundation, The, New York Operating and administrative expenses, and support of projects (RF 49056) .....	.....	75,000.00	45,000.00
Harvard University, Cambridge, Massachusetts For research and publication of research in the history of science (RF 47013).....	5,770.51	.....	3,265.88
Institute for the Unity of Science, Cambridge, Massachusetts Support of activities (RF 47131).....	9,000.00	.....	.....
International Meteorological Organization, Lausanne, Switzerland Analysis and publication of data collected during the International Polar Year of 1932-1933 (RF 47132).....	12,000.00	.....	.....
National Research Council, Washington, D. C. Expenses of its Office of Scientific Personnel (RF 48114, 49081).....	13,500.00	15,000.00	21,000.00
Social Science Research Council, New York Joint Social Science Research Council — National Research Council Committee on the Measurement of Opinion, Attitudes, and Consumer Wants. Study of the reliability of various methods of sampling (RF 45117).....	500.00	.....	489.84

**NATURAL SCIENCES — *Continued*****General — *Continued***

	PRIOR YEARS	1949	1949 PAYMENTS
University of Brazil, Rio de Janeiro Establishment of three full-time professorships (RF 49154).....	\$.....	\$14,000.00	\$.....
University of Chicago, Illinois International aspects of a program of meteorite studies (RF 49078)....	.....	60,000.00	5,987.50
University of Iceland, Reykjavik Cost of building and equipping an Institute of Experimental Pathology (RF 45048, 48110).....	62,448.67	.....	25,321.10
University of Leiden, Netherlands Purchase and endowment of a photographic telescope for the Union Observatory, Johannesburg, Union of South Africa (RF 34100).....	6,575.61	.....	6,575.61
University of Oslo, Norway Postwar reconstruction of research facilities in natural sciences (RF 46117).....	3,532.70	.....	2,328.50
University of São Paulo, Brazil University Research Fund, Equipment and consumable supplies (RF 47059).....	14,904.29	.....	3,504.37
Research, equipment and supplies for certain of the basic science depart- ments of the Faculty of Philosophy, Science and Letters and for the Department of Biochemistry of the Faculty of Veterinary Medicine (RF 49099).....	.....	20,000.00	.....
<b>TOTAL — NATURAL SCIENCES.....</b>	<b>\$4,054,903.06</b>	<b>\$2,110,835.00</b>	<b>\$1,867,306.74</b>

## SOCIAL SCIENCES

## American Institute of Accountants, New York

Study of accounting definitions and postulates and their effect upon political-economic policies (RF 47073)..... \$20,000.00 \$..... \$10,000.00

## American Law Institute, Philadelphia, Pennsylvania

Study of development and application of ethical concepts of the Lord Chancellors and the Courts of Equity (RF 49140)..... ..... 20,125.00 .....

## American Psychological Association, New York

Research connected with the development of a code of ethical practice for psychologists (RF 49012)..... ..... 8,100.00 3,129.00

## Brookings Institution, Inc., Washington, D. C.

Research and education in fields of American foreign policy and international relations (RF 47027)..... 112,500.00 ..... 75,000.00

## Canadian Institute of International Affairs, Toronto

General budget (RF 46036)..... 19,836.98 ..... 7,932.23

## Canadian Social Science Research Council, Montreal

Toward expenses of its program (RF 48088, 49098)..... 6,808.39 30,000.00 11,799.05

## Carnegie Foundation, The Hague, Netherlands

Purchase of books, periodicals and pamphlets and for cataloguing (RF 47028)..... 22,500.00 ..... 10,517.15

## Centre d'Etudes de Politique Étrangère, Paris, France

General budget (RF 46075)..... 17,310.43 ..... 4,854.43

## Christian Michelsen Institute, Bergen, Norway

Development of research and popular education in international relations in Norway (RF 46076)..... 2,849.55 ..... 1,515.00

## College of William and Mary, Williamsburg, Virginia

Study of the impact of war on the Hampton Roads area (RF 45013)..... 1,735.21 ..... 1,735.21

## Columbia University, New York

Bureau of Applied Social Research

Study of panel methods in research on public opinion, attitudes and consumer wants (RF 47090)..... 14,000.00 ..... 14,000.00

**SOCIAL SCIENCES — *Continued*****Columbia University, New York — *Continued***

	APPROPRIATIONS PRIOR YEARS	1949	1949 PAYMENTS
Development of a program of Far Eastern studies through the various social science departments (RF 48041).....	\$120,000.00	\$.....	\$23,500.00
Expenses of a study of social balance in Western society (RF 48049).....	10,200.00	.....	5,100.00
<b>School of International Affairs</b>			
Development of the Russian Institute (RF 45034).....	155,504.87	.....	45,285.00
Program of the Institute for Urban Land Use and Housing Studies (RF 48021).....	63,000.00	.....	27,201.02
Study of trends in labor union leadership (RF 47006).....	21,500.00	.....	2,700.00
<b>Committee on Financing Higher Education and Research, New York</b>			
Survey of possibilities of a study of financing higher education and research (RF 47124).....	6,445.18	.....	2,326.98
<b>Community Service Society of New York, New York</b>			
Institute of Welfare Research. Studies of the results of social case work (RF 49130).....	.....	20,000.00	8,750.00
<b>Cornell University, Ithaca, New York</b>			
Study of data collected in the Manzanar and Poston war relocation communities (RF 48136).....	10,000.00	.....	5,000.00
Research in the field of group hostility and prejudice (RF 48004).....	69,270.00	.....	33,925.00
Study of French and Italian contemporary political and economic issues (RF 48107).....	15,100.00	.....	15,100.00
Study of the relation of civil rights to the control of subversive activities in the United States (RF 48050).....	82,500.00	.....	55,000.00
<b>Council on Foreign Relations, New York</b>			
General research program (RF 47102).....	30,000.00	.....	20,000.00
History of the foreign relations of the United States during World War II (RF 46002).....	41,446.10	.....	40,270.88

Study of problems of aid to Europe (RF 49010).....	\$.....	\$50,000.00	\$50,000.00
Crete Survey			
Expenses of a survey in Crete as a means of exploring ways of raising the standard of living in undeveloped countries (RF 48102).....	25,000.00	.....	23,849.29
Dutch Economic Institute, Rotterdam, Netherlands			
General budget (RF 46057).....	1,134.50	.....	344.81
Economic Commission for Europe, United Nations, Geneva, Switzerland			
Study of long-run tendencies in the European economy (RF 49067).....	.....	50,000.00	4,800.00
Far East — Population Problems			
Exploratory reconnaissance in public health and demography in the Far East for the International Health Division and the Social Sciences (RF 48097).....	4,809.03	.....	2,550.85
Federal Council of Churches of Christ in America, New York			
Program of its Department of the Church and Economic Life (RF 48130)	100,000.00	.....	30,000.00
Fellowships			
Administered by The Rockefeller Foundation (RF 46103, 47108, 48090, 48140, 49146).....	242,498.74	125,000.00	67,562.28
Australian-New Zealand Social Science Fellowship Committee, Melbourne			
Administrative expenses (RF 49108).....	.....	1,000.00	.....
Canadian Social Science Research Council, Montreal. Fellowships (RF 47093, 48089).....	20,503.56	.....	9,101.67
Columbia University, New York. School of International Affairs			
Special fellowships in the Russian Institute (RF 47045).....	62,675.00	.....	5,958.63
Economic Commission for Europe, United Nations, Geneva, Switzerland			
In-service training scholarships (RF 48096).....	6,000.00	.....	.....

	PRIOR YEARS	APPROPRIATIONS 1949	1949 PAYMENTS
<b>SOCIAL SCIENCES — <i>Continued</i></b>			
Fellowships — <i>Continued</i>			
Social Science Research Council, New York (RF 45065, 46053, 47046, 48006).....	\$370,500.00	\$.....	\$114,508.33
Foreign Policy Association, New York Research program (RF 45116).....	50,000.00	.....	30,000.00
Grants in Aid			
Administered by The Rockefeller Foundation (RF 46113, 46141, 47140, 48091, 48144, 49150).....	412,334.01	250,000.00	224,815.48
Harvard University, Cambridge, Massachusetts Program of economic research (RF 47126).....	80,000.00	.....	23,466.90
Research in social sciences (RF 35086).....	11,372.65	.....	.....
Research in economic history (RF 48070, 49092).....	20.00	50,000.00	12,500.00
Laboratory of Social Relations Study of comparative values in five cultures (RF 49032).....	.....	100,000.00	35,000.00
Studies of motivated perception (RF 49073).....	.....	24,000.00	3,666.66
Institut de Science Économique Appliquée, Paris, France Research program (RF 49068).....	.....	30,000.00	10,000.00
Institute for Advanced Study, Princeton, New Jersey Study of the law of international civil aviation (RF 45046).....	8,000.00	.....	8,000.00
? Assistance and compensation in a program of study and writing (RF 49064)	.....	25,000.00	2,024.30
Institute of Economic and Social Research, Paris, France General expenses, equipment and printing accumulated studies (RF 47005)	76,201.80	.....	26,349.67
Institute of Economics and History, Copenhagen, Denmark General budget and printing of manuscripts now ready for publication (RF 46060).....	7,539.07	.....	3,004.38
Institute of Pacific Relations American Council, New York. General expenses (RF 46044).....	15,000.00	.....	10,000.00

THE ROCKEFELLER FOUNDATION

Pacific Council, New York			
General expenses and research (RF 46045).....	\$50,000.00	\$.....	\$30,000.00
General budget (RF 49072).....	.....	25,000.00	25,000.00
Johns Hopkins University, Baltimore, Maryland			
Experiment in research training in the social sciences (RF 46055).....	10,500.00	.....	7,000.00
Study to measure and interpret trends and forces affecting the United States in its international relations (RF 47103).....	24,333.31	.....	12,861.76
London School of Economics and Political Science, University of London, England			
Library development (RF 31030).....	7,828.26	.....	4,799.07
Purchase of land for expansion of school plant (RF 31028).....	8,509.95	.....	.....
Department of Sociological and Demographic Research. General expenses (RF 49115).....	.....	50,900.00	5,885.25
Miami University, Oxford, Ohio			
Studies of population redistribution (RF 46080).....	48,591.34	.....	13,468.50
Moral Issues in the Economic Order			
For use by the officers for the Social Sciences in the development of opportunities in the general area of moral issues in the economic order (RF 48092).....	25,000.00	.....	200.00
National Bureau of Economic Research, New York			
Support of general programs and special programs of research in finance and fiscal policy (RF 44020, 47120, 49141).....	1,360,000.00	200,000.00	160,000.00
National Institute of Economic and Social Research of Great Britain, London			
General budget (RF 44108).....	51,105.70	.....	24,195.00
National Institute of Public Affairs, Washington, D. C.			
Training of personnel for the federal services (RF 47029).....	17,500.00	.....	17,500.00

**SOCIAL SCIENCES — *Continued***

National Opinion Research Center, Denver, Colorado

Study of the isolation, measurement and control of interviewer effect in attitude and opinion studies (RF 47072).....

\$19,330.00 \$..... \$19,330.00

New York University, New York

Study of problems dealing with the preservation of business records to be undertaken by the National Records Management Council (RF 49011).

..... 35,000.00 35,000.00

Office National des Universités, Paris, France

Expenses of a section for the social sciences in the École Pratique des Hautes Études (RF 47125).....

22,500.00 ..... 8,944.23

Ohio State University, Columbus

Study of executive positions in educational institutions, in its program of leadership studies (RF 48002).....

30,000.00 ..... 12,374.80

Pacific Coast Board of Intergovernmental Relations, San Francisco, California

General expenses (RF 47030).....

15,000.00 ..... 9,861.54

Population Association of America, Washington, D. C.

Expenses of an executive office in the United States of the International Union for the Scientific Study of Population (RF 48106).....

11,250.00 ..... 7,500.00

Princeton University, New Jersey

Office of Population Research of the School of Public and International Affairs (RF 44109, 48105).....

230,000.00 ..... 30,000.00

Royal Institute of International Affairs, London, England (Chatham House)

History of the war and of the peace settlement (RF 45045, 47071).....

81,622.13 ..... 38,012.89

Preparation of a history of the League of Nations (RF 46122).....

300.61 ..... .

Research program (RF 45044).....

34,082.09 ..... 21,646.80

School of Social Sciences, Helsinki, Finland			
Expenses of a study of the assimilation of displaced people of Finland (RF 48069).....	\$7,714.63	\$.....	\$5,017.02
Social Science Research Council, New York			
Administrative budget (RF 48022).....	100,000.00	.....	40,000.00
Conferences and planning (RF 44077, 49046).....	12,500.00	150,000.00	37,500.00
General research projects (RF 31126).....	21,954.43	.....	8,204.37
Grants in aid of research (RF 46054, 49047).....	28,500.00	50,000.00	32,500.00
Joint Social Science Research Council — National Research Council Committee on the Measurement of Opinion, Attitudes and Consumer Wants.			
Study of the reliability of various methods of sampling (RF 45117)....	500.00	.....	489.84
Purchase and distribution of social science publications to European institutions (RF 48046).....	17,000.00	.....	.....
Research in economic history of the United States, the islands and nearby territory (RF 40116).....	125,625.00	.....	40,625.00
Research planning in housing (RF 47020).....	22,000.00	.....	6,984.07
Expenses of its Committee on the Social Implications of Atomic Energy (RF 48128).....	10,000.00	.....	10,000.00
Study of the specific ways in which social science analysis can contribute to an understanding of ethical issues and value problems in our society (RF 48129).....	8,750.00	.....	Cr. 2,212.02
Special staff in international relations (RF 49118). ....	.....	30,000.00	5,000.00
Stanford University, Palo Alto, California			
Food Research Institute			
International history of food and agriculture during World War II (RF 46041), .....	150,178.35	.....	60,177.50
Study of Soviet economic development (RF 48042).....	18,750.00	.....	5,092.99

**SOCIAL SCIENCES — *Continued***

State University of Iowa, Iowa City

Study by Child Welfare Research Station of social and cultural factors in child development (RF 47032). . . . .

**APPROPRIATIONS**  
**PRIOR YEARS****1949****1949  
PAYMENTS**

\$46,612.45 \$..... \$5,619.80

Swarthmore College, Swarthmore, Pennsylvania

To complete the catalogue of its Peace Collection (RF 48137). . . . .

10,000.00 ..... 4,450.00

Tufts College, Medford, Massachusetts

Experimental program in the psychiatric approach to training and research in sociology (RF 45019, 48087). . . . .

12,257.65 ..... 7,500.00

University of British Columbia, Vancouver, Canada

Development of a program in Slavic studies (RF 49080). . . . .

..... 45,000.00 4,750.00

University of California, Berkeley

Bureau of Business and Economic Research. Research program (RF 46111)

12,500.00 ..... 7,500.00

Institute of Industrial Relations. Studies of the impact of an aging population on American society (RF 49139). . . . .

..... 125,000.00 .....

University of Cambridge, England

Department of Applied Economics. General budget (RF 46001). . . . .

50,794.31 ..... 20,156.25

University of Chicago, Illinois

History of Sears, Roebuck and Company, with emphasis on its implications for American society and economy (RF 46004). . . . .

3,000.00 ..... 3,000.00

Program of the Cowles Commission for Research in Economics (RF 48047)

100,000.00 ..... 30,000.00

Program in education, training and research in race relations (RF 47031)..

60,000.00 ..... 7,500.00

Program of research in agricultural economics (RF 48085). . . . .

37,500.00 ..... 14,800.00

Research project on the determinants of constructive union-management relations (RF 48086). . . . .

11,250.00 ..... 7,500.00

University of Glasgow, Scotland				
Development of research and training in the social sciences (RF 45026)...	\$14,354.83	\$.....	.....	\$12,701.72
University of Manchester, England				
Economics Research Section. Research program (RF 46112).....	40,622.81	.....	.....	13,670.00
University of Michigan, Ann Arbor				
Survey Research Center. Study of the validity and reliability of survey data and of basic determinants of economic behavior (RF 49013) .....	.....	19,500.00	.....	19,500.00
University of Minnesota, Minneapolis				
Industrial Relations Center. General expenses (RF 47021).....	22,500.00	.....	.....	14,958.29
Research in the field of intergovernmental relations (RF 46052, 49086)...	29,905.59	14,000.00	.....	27,236.50
University of North Carolina, Chapel Hill				
Institute for Research in Social Science. Study of the Coker family (RF 47023).....	5,000.00	.....	.....	5,000.00
University of Notre Dame, South Bend, Indiana				
Research in international relations (RF 49091).....	.....	69,000.00	.....	13,750.00
University of Oslo, Norway				
Institute of Economics. Research program (RF 46058, 49097).....	10,000.00	30,000.00	.....	20,000.00
University of Oxford, England				
Agricultural Economics Research Institute				
Studies of the relations between agriculture and industry (RF 47074)...	7,177.19	.....	.....	6,441.70
Nuffield College				
Additional research faculty in the social sciences (RF 46132).....	162,000.00	.....	.....	2,802.50
University of Pennsylvania, Philadelphia				
Wharton School of Finance and Commerce				
Industrial Research Department. General budget (RF 44111, 49128)...	35,000.00	35,000.00	.....	26,250.00
University of Toronto, Canada				
Development of Slavic studies (RF 49054).....	.....	45,000.00	.....	4,500.00

	PRIOR YEARS	APPROPRIATIONS 1949	1949 PAYMENTS
<b>SOCIAL SCIENCES — Continued</b>			
University of Virginia, Charlottesville			
Bureau of Public Administration. General budget (RF 46082).....	\$12,500.00	\$.....	\$12,500.00
University of Wisconsin, Madison			
Program of research in housing (RF 46081).....	22,026.98	.....	10,392.14
Study of the law and the lumber industry in Wisconsin (RF 48051).....	32,700.00	.....	6,712.50
World Peace Foundation, Boston, Massachusetts			
Preparation of volumes in the <i>Documents on American Foreign Relations</i> (RF 49043).....	.....	15,000.00	7,000.00
Yale University, New Haven, Connecticut			
Institute of International Studies. Research program (RF 44022, 49062) ..	12,500.00	75,000.00	12,500.00
Labor and Management Center. Study of labor market structure and wage determination (RF 46056, 48103).....	7,747.57	.....	7,747.57
Studies of communication and attitude change (RF 48003).....	45,600.00	.....	9,171.29
<b>TOTAL — SOCIAL SCIENCES.....</b>	<b>\$5,710,570.25</b>	<b>\$1,796,625.00</b>	<b>\$2,200,713.07</b>

**HUMANITIES****Studies in Language and Foreign Cultures**

American Board of Commissioners for Foreign Missions, Boston, Massachusetts

Studies in intellectual and cultural movements in Turkey (RF 49138) ..

American Council of Learned Societies, Washington, D. C.

Committee on Far Eastern Studies (RF 41029).....

Committee on Near Eastern Studies (RF 47094).....

\$..... \$25,000.00 \$.....

1,016.29 .....

6,000.00 .....

2,000.00

Preparing materials for Slavic studies in the United States (RF 43099, 47049, 49053).....	\$15,000.00	\$20,500.00	\$15,000.00
Procurement and reproduction of materials on Slavic subjects (RF 47127)	98,000.00	.....	.....
Program of translation into English of modern materials in Near Eastern languages (RF 48125).....	75,000.00	.....	.....
American University of Beirut, Lebanon			
Interpretative studies of the modern Arab Middle East (RF 49071)....	.....	83,000.00	14,425.00
Colegio de México, Mexico, D. F.			
Programs for advanced study and for training of personnel (RF 48033)..	50,640.00	.....	25,500.00
Preparation of a history of modern Mexico (RF 48023). ....	7,500.00	.....	7,500.00
Program in linguistic studies (RF 47026).....	2,180.00	.....	2,180.00
Columbia University, New York. Department of Slavic Languages			
Development of teaching materials and methods of research (RF 47047)	16,000.00	.....	2,000.00
Cornell University, Ithaca, New York			
Support of Division of Modern Languages (RF 45091, 48098).....	90,000.00	.....	57,475.00
Duke University, Durham, North Carolina			
Purchase of books and other documentation in field of Latin American studies (RF 40049).....	5,500.00	.....	5,500.00
Grants in Aid			
Special fund for temporary addition of representative Chinese scholars to teaching staffs and projects in the United States (RF 44044).....	7,819.12	.....	.....
Indiana University, Bloomington			
Development of East European studies (RF 47002).....	16,500.00	.....	5,500.00

**HUMANITIES — *Continued*****Studies in Language and Foreign Cultures — *Continued*****Korean Language Society, Seoul, Korea**

To provide essential materials to publish 20,000 copies each of the five unpublished volumes of a new dictionary of the Korean language (RF 48082).....

\$3,179.04	\$.....	\$1,050.44
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**National Institute of Anthropology and History, Mexico, D. F.**

Development of teaching and research program and reorganization of library resources (RF 43083, 48034).....

26,481.12	.....	9,600.00
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**National Tsing Hua University, Kunming, China**

Support of work in humanities (RF 47099).....

15,000.00	.....	.....
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Development of teaching program in humanities (RF 44076).....

1,446.78	.....	.....
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**New York Public Library, New York**

Maintenance and development of the Slavonic division of its reference department (RF 49063).....

.....	60,000.00	60,000.00
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**Occidental College, Los Angeles, California**

Developing humanistic studies in the southwest area of the United States and in northern Mexico (RF 49024).....

.....	35,000.00	9,150.00
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**Pomona College, Claremont, California**

Development of Far Eastern and Slavic studies (RF 44131).....

14,500.00	.....	2,300.00
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**Princeton University, New Jersey**

Development of Near Eastern studies (RF 46066).....

29,750.00	.....	8,500.00
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**Stanford University, Palo Alto, California**

Development of Far Eastern and Slavic studies (RF 44130).....

31,625.00	.....	6,575.00
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Development of teaching and research in the areas and languages of the Pacific, Eastern Asia and Russia (RF 45009).....

16,060.33	.....	10,861.02
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Hoover Institute and Library on War, Revolution and Peace. Slavic studies (RF 46092).....	\$51,185.90	\$.....	\$30,652.01
University of British Columbia, Vancouver, Canada Development of a program in Slavic studies (RF 49080).....	.....	45,000.00	4,750.00
University of California, Berkeley Development of Slavic and Far Eastern studies (RF 44129),.....	17,200.00	.....	.....
Development of Far Eastern language and area courses (RF 47063).....	15,000.00	.....	9,940.00
Development of personnel in Slavic studies (RF 47128).....	72,160.00	.....	29,245.21
University of Chicago, Illinois Analysis and evaluation of methods of teaching modern languages (RF 44100).....	11,781.08	.....	.....
Advanced work in ethnology, linguistics and archaeology in Central America (RF 49017).....	.....	8,000.00	8,000.00
University of Colorado, Boulder Development of Far Eastern studies (RF 44042).....	1,890.34	.....	1,890.34
University of Leiden, Netherlands Chinese Institute. Training of personnel and purchase of books (RF 46023)	3,324.13	.....	2,734.87
University of Pennsylvania, Philadelphia Work in modern Indian languages and literatures (RF 47129).....	60,000.00	.....	.....
University of the Philippines, Manila Library development and research in Philippine history (RF 48111)....	18,000.00	.....	5,991.00
University of Stockholm, Sweden Training in Far Eastern studies of students from Sweden, Norway and Denmark (RF 48035).....	35,615.00	.....	15,662.17
University of Toronto, Canada Development of Slavic studies (RF 49054).....	.....	45,000.00	4,500.00

		APPROPRIATIONS PRIOR YEARS	1949	1949 PAYMENTS
<b>HUMANITIES — <i>Continued</i></b>				
<b>Studies in Language and Foreign Cultures — <i>Continued</i></b>				
University of Washington, Seattle				
Development of Far Eastern and Slavic studies (RF 44128).....	\$37,933.06	\$.....	\$13,214.30	
Far Eastern Institute, Research on the Far East (RF 47035).....	70,000.00	.....	19,745.87	
English translations of source materials on Chinese history (RF 47036).....	12,500.00	.....	12,499.85	
Purchase of materials for Far Eastern and Slavic studies (RF 45111)....	9,438.06	.....	9,438.06	
Wayne University, Detroit, Michigan				
Preparation of a frequency list of Russian words (RF 48126, 49137)....	40,000.00	38,000.00	22,610.00	
Yale University, New Haven, Connecticut				
Support of Far Eastern studies (RF 45110).....	36,500.00	.....	18,250.00	
Development of personnel in the field of Chinese studies (RF 47064)....	8,700.00	.....	5,250.00	
American Studies				
Abraham Lincoln Association, Springfield, Illinois				
Preparing annotated edition of writings of Abraham Lincoln (RF 47038, 49131).....	10,000.00	12,000.00	16,000.00	
Henry E. Huntington Library and Art Gallery, San Marino, California				
Regional studies of the Southwest (RF 43096).....	4,478.65	.....	4,478.65	
Library of Congress, Washington, D. C.				
American Studies (RF 43095).....	44,000.00	.....	25,000.00	
McGill University, Montreal, Canada				
Studies in the public and private life of W. L. Mackenzie King (RF 49060)	.....	100,000.00	20,000.00	
Michigan State College, East Lansing				
Studies in Midwestern life and history (RF 49025).....	.....	30,000.00	5,000.00	

National Archives, Washington, D. C.				
Special fund for producing basic microfilm stocks of research materials and for copying files of the National Archives in the service of scholars (RF 48061).....	\$1,881.16	\$.....		\$1,835.56
Newberry Library, Chicago, Illinois				
Studies in midwestern culture (RF 47034).....	32,500.00	.....		15,997.33
Northwestern University, Evanston, Illinois				
Teaching and field studies in American culture (RF 46067).....	10,000.00	.....		5,000.00
Princeton University, New Jersey				
Program in American civilization (RF 45092).....	32.95	.....		Cr. 597.60
Texas State Historical Association, Austin				
Southwestern history study (RF 46119).....	3,275.00	.....		3,000.00
University of Minnesota, Minneapolis				
Studies in Northwestern history (RF 48080).....	25,000.00	.....		12,500.00
University of Munich, Germany				
Expenses of visiting professors from the United States or Canada and purchase of library materials for its Amerika Institut (RF 49096).....	.....	50,000.00		1,500.00
University of New Brunswick, Fredericton, Canada				
Studies of the history of New Brunswick (RF 44040).....	1,564.66	.....		Cr. 926.23
University of Oklahoma, Norman				
Development of archival resources on the history and contemporary life of Oklahoma (RF 48062).....	30,750.00	.....		12,551.47
University of Wisconsin, Madison				
Program of research and teaching in the materials of American civiliza- tion (RF 46011, 49081).....	15,345.02	22,500.00		12,327.19

**HUMANITIES — Continued****Libraries**

American Library Association, Chicago, Illinois

Selection and purchase for libraries in war areas of reference books published during the years 1939-1946 (RF 45038).....

APPROPRIATIONS  
PRIOR YEARS

1949

1949  
PAYMENTS

\$49.06 \$..... \$ Cr. 210.40

Association of Special Libraries and Information Bureaux, London, England

Preparation of a catalogue of periodicals in British libraries (RF 44004)

26,998.21 ..... 4,030.00

British Museum, London, England

Establishment of a microfilm laboratory (RF 47087).....

10,899.50 ..... 10,899.50

To enable the museum to offer to American libraries, at a discount, subscriptions to the new edition of its *Catalogue of Printed Books* (RF 30076).....

77,009.25 ..... 462.12

University of Buenos Aires, Argentina

Expenses of establishing a bibliographical center and an institute of library practice (RF 42128).....

173.53 ..... .....

University Research Fund, University of São Paulo, Brazil

Bibliographical information service (RF 45035).....

14,640.69 ..... .....

Woodrow Wilson Foundation, New York

Cataloguing of a collection of documents of the League of Nations (RF 47086).....

7,875.00 ..... 7,875.00

Drama, Film and Radio

Columbia University, New York

Training program for German radio personnel (RF 47130).....

12,500.00 ..... 12,500.00

Program of study for Korean broadcasters (RF 49005).....

..... 21,000.00 21,000.00

Program of study for Japanese broadcasters (RF 49006).....

..... 29,000.00 29,000.00

National Theatre Conference, Cleveland, Ohio				
Support of activities, projects and fellowships (RF 45028, 49106).....	\$41,904.29	\$10,000.00	\$23,000.00	
University of Bristol, England				
Development of university program in drama (RF 49119).....	.....	20,000.00	.....	
University of Wisconsin, Madison				
Development of the state program in drama and allied arts (RF 48100).	11,250.00	.....	3,750.00	
Other Subjects				
American Council of Learned Societies, Washington, D. C.				
General support, planning and development (RF 41029, 46089, 47025) ..	165,772.38	.....	65,000.00	
Pacific Coast Committee, Activities in the humanities (RF 46091) .....	21,000.00	.....	10,500.00	
Study of scholarly publishing in the United States by the Association of American University Presses (RF 47033).....	20,000.00	.....	20,000.00	
Study of personnel problems in the humanities (RF 49052).....	.....	31,000.00	.....	
American Philosophical Association, Philadelphia, Pennsylvania				
To enable colleges and universities to invite Latin American philosophers to the United States as visiting professors (RF 47024).....	10,000.00	.....	10,000.00	
American School of Classical Studies, Athens, Greece				
Museum to house objects excavated in the Agora (RF 37089).....	138,354.94	.....	.....	
Columbia University, New York				
For use by the American Press Institute in a training program for Japa- nese press personnel (RF 49112).....	.....	25,000.00	25,000.00	
Committee of Vice-Chancellors and Principals of the Universities, Great Britain				
Purchase of foreign books and journals for special programs in humanities and social sciences (RF 48036).....	50,000.00	.....	50,000.00	

**HUMANITIES — *Continued*****Other Subjects — *Continued***

Cornell University, Ithaca, New York

Development of methods, materials and personnel for the teaching of the history of modern science (RF 48124).....

Downing College, University of Cambridge, England

Toward the salary of an assistant for the director of English studies (RF 49016).....

Humanities Research Council of Canada, Toronto

Support of activities in planning and development (RF 48017).....

Italian Institute of Historical Studies, Naples

Library materials, scholarships and general support (RF 49007).....

Kenyon College, Gambier, Ohio

Expenses of a School of English Studies (RF 47098).....

Toward fees for articles published in the *Kenyon Review* (RF 47037)...

Princeton University, New Jersey

Establishment of an experimental group in literary criticism (RF 49023)

St. Vladimir's Orthodox Theological Seminary and Academy, New York

General expenses (RF 49055).....

Society of Biblical Literature and Exegesis, Philadelphia, Pennsylvania

Organizing and beginning a cooperative Critical Apparatus of the New

Testament (RF 49040).....

Special microfilming projects in England in connection with the program of the American Council of Learned Societies (RF 43064).....

University of Birmingham, England

Awards in literature and for administration expenses (RF 48099).....

APPROPRIATIONS PRIOR YEARS	1949	1949 PAYMENTS
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THE ROCKEFELLER FOUNDATION

\$37,500.00	\$.....	\$6,500.00
.....	8,080.00	1,866.47
11,192.53	.....	2,771.29
.....	21,000.00	3,365.65
28,000.00	.....	14,666.66
14,119.95	.....	3,757.14
.....	30,000.00	5,000.00
.....	5,000.00	5,000.00
.....	12,500.00	12,500.00
2,143.13	.....	.....
15,000.00	.....	15,000.00

University of Bordeaux, France Development of work in humanities (RF 47061).....	\$22,227.65	\$.....	\$9,140.84
University of Lyon, France Development of work in humanities (RF 47060).....	18,233.15	.....	7,831.25
University of Oslo, Norway Development of work in the humanities (RF 46047).....	7,273.88	.....	5,012.01
University of the South, Sewanee, Tennessee Toward fees for articles published in the <i>Sewanee Review</i> (RF 48011)...	23,468.50	.....	5,513.75
University of Toulouse, France Development of work in the humanities (RF 47062).....	17,331.04	.....	475.11
Yale University, New Haven, Connecticut Research for a study of the characteristics of the history of the twentieth century (RF 48081).....	20,000.00	.....	10,000.00
Selection, purchase and shipment of Western literature to centers for its study in the Far East (RF 49026).....	.....	20,000.00	10,000.00
<b>Fellowships and Grants in Aid</b>			
<b>Fellowships</b>			
Administered by The Rockefeller Foundation (RF 46104, 46138, 47137, 48141, 49147).....	240,797.40	125,000.00	108,661.91
American Council of Learned Societies, Washington, D. C. Fellowships in the humanities (RF 48059).....	250,000.00	.....	100,000.00
Special fellowship fund for postwar development of personnel in the United States (RF 44132, 45052, 46038).....	63,956.35	.....	22,713.10
<b>Grants in Aid</b>			
Administered by The Rockefeller Foundation (RF 44146, 46121, 46142, 47109, 47141, 48084, 48145, 49151).....	390,271.35	250,000.00	197,310.08
Surveys, Studies and Conferences (RF 48083).....	22,179.65	.....	9,820.62
	<b>\$2,001,374.12</b>	<b>\$1,181,580.00</b>	<b>\$1,442,868.61</b>

**MISCELLANEOUS**

	PRIOR YEARS	1949	1949 PAYMENTS
American Association of Colleges for Teacher Education, Oneonta, New York Visit and study in this country by group of German leaders in teacher education (RF 49111).....	\$.....	\$35,000.00	\$17,500.00
American Council of Learned Societies, Washington, D. C. Administration of foreign scholarships under the Fulbright program by the Conference Board of the Associated Research Councils (RF 48010)....	20,000.00	.....	Cr. 10,291.02
Association of American Universities, New York Study of the financing of higher education and research (RF 49065).....	.....	400,000.00	65,500.00
European Rehabilitation (RF 48052, 48120, 49038).....	237,445.08	150,000.00*	189,543.47
Exchange Fund (RF 46123).....	12,349.62	.....	.....
Fellowships, China Foreign and local (RF 43021, 44038).....	4,928.46	.....	.....
Fund for miscellaneous expenses in connection with the United Nations organization (RF 46039).....	4,666.08	.....	.....
General Education Board, New York Support of program (RF 46125, 47119, 48122).....	7,500,000.00	.....	1,500,000.00
Goethe Bicentennial Foundation, Chicago, Illinois Travel expenses of foreign visitors to a conference in the United States during the summer of 1949 (RF 49037).....	.....	20,000.00	20,000.00
Grants in Aid. Administered by The Rockefeller Foundation China (RF 42041, 43021, 44038).....	10,964.52	.....	377.59
For allocation during 1950 by the President within categories described by Trustee action and within specified limitations of amount and duration (RF 49152).....	.....	50,000.00	.....

History of the Rockefeller Boards. Expenses (RF 48029).....	\$75,995.97	\$.....	\$37,403.69
Institute of International Education, New York			
Support of program of international student interchange and the services related thereto (RF 47085, 49089).....	25,000.00	37,500.00	43,750.00
McGill University, Montreal, Canada			
For the use of the Executive Council of the Universities of the British Commonwealth in connection with its meeting in 1949 (RF 49039).....	.....	10,000.00	3,261.46
Midwest Inter-Library Corporation, Chicago, Illinois			
General expense of a central depository library (RF 49045).....	.....	250,000.00	10,000.00
National Research Council, Washington, D. C.			
Conference Board of the Associated Research Councils. Study of Human resources and the fields of higher learning (RF 49088).....	.....	120,000.00	.....
Pacific Science Association, Washington, D. C.			
Establishment of permanent secretariat (RF 49153).....	.....	12,000.00	.....
Rockefeller Foundation Fellowship Directory. Preparation and distribution (RF 49143).....	.....	25,000.00	.....
United States Book Exchange, Inc., Washington, D. C.			
Program of international exchange by institutions of books, periodicals and similar materials (RF 48127).....	90,000.00	.....	45,000.00
University of Chicago, Illinois			
Expenses of sending faculty members to a German university (RF 48007)	60,000.00	.....	60,000.00
University of Texas, Austin			
Research on the biochemical aspects of alcoholism (RF 49066).....	.....	25,000.00	12,500.00
<b>TOTAL — MISCELLANEOUS.....</b>	<b>\$8,041,349.73</b>	<b>\$1,134,500.00</b>	<b>\$1,994,545.19</b>

	PRIOR YEARS	1949	1949 PAYMENTS
<b>ADMINISTRATION AND SCIENTIFIC SERVICES</b>			
Scientific Services			
Prior Years.....	\$41,249.74	\$.....	\$15,549.08
1949.....	1,006,793.00	7,759.00	954,475.07
1950.....	.....	1,034,753.00	.....
General Administration			
Prior Years.....	24,808.94	.....	15,134.34
1949.....	341,942.00	8,246.00	329,960.88
1950.....	.....	366,195.00	.....
<b>TOTAL — ADMINISTRATION.....</b>	<b>\$1,414,793.68</b>	<b>\$1,416,953.00</b>	<b>\$1,315,119.37</b>
	<b>\$31,441,422.91</b>		
Less			
Unused balances of appropriations allowed to lapse			
The Rockefeller Foundation.....	8530,333.01		
International Health Division.....	188,358.34	718,691.35	
<b>GRAND TOTALS.....</b>	<b>\$30,722,731.56</b>	<b>\$11,036,428.00</b>	<b>\$12,903,380.98</b>

#### REFUNDS ON PRIOR YEAR CLOSED APPROPRIATIONS

American Film Center, New York.....	(RF 44092)	\$72.57
American Library Association, Chicago, Illinois.....	(RF 46022)	2.75
American Library Association, Chicago, Illinois.....	(RF 47015)	4,062.01

British Medical Students, Scholarships.....	(RF 40127)	\$200.01
Child Research Council of Denver, Colorado.....	(RF 46086)	1,085.00
Columbia University, New York.....	(RF 45058)	143.02
Columbia University, New York .....	(RF 48079)	4,851.25
Encyclopaedia of the Social Sciences, New York.....	(RF 32114)	2,565.64
Forsyth Dental Infirmary for Children, Boston, Massachusetts.....	(RF 47011)	432.59
Grants in Aid		
Medical Sciences.....	(RF 40094)	142.18
Medical Sciences.....	(RF 41038)	1,331.67
Natural Sciences.....	(RF 38110)	600.00
Humanities.....	(RF 43125)	267.59
Special Grant-in-Aid Fund.....	(RF 41032)	400.00
Harvard University, Cambridge, Massachusetts.....	(RF 44075)	.12
Johns Hopkins University, Baltimore, Maryland.....	(RF 44048)	615.32
Library of Congress, Washington, D. C.....	(RF 48073)	2,879.06
National Research Council, Washington, D. C.....	(RF 32010)	300.48
University of Alabama, University.....	(RF 46003)	1.50
University of Chicago, Illinois.....	(RF 46042)	209.27
University of Minnesota, Minneapolis.....	(RF 41062)	2,800.74
University of Puerto Rico, Rio Piedras.....	(RF 48048)	1.93
University of Pennsylvania, Philadelphia.....	(RF 44050)	15,518.80
University of Southern California, Los Angeles.....	(RF 40124)	1,413.08
University of Zürich, Switzerland.....	(RF 46016)	.24
Washington University, St. Louis, Missouri.....	(RF 45011)	10.76

\$39,907.53

## INTERNATIONAL HEALTH DIVISION

DESIGNATIONS DURING 1949, UNPAID BALANCES AS AT DECEMBER 31, 1948  
OF PRIOR YEAR DESIGNATIONS, AND PAYMENTS THEREON DURING 1949

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THE ROCKEFELLER FOUNDATION

	PRIOR DESIGNATIONS	1949 DESIGNATIONS	1949 PAYMENTS
<b>CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES</b>			
<b>Malaria</b>			
Caribbean Area			
Tobago. 1948-1950 (IH 47031, 49023).....	\$10,635.31	\$7,740.00	\$8,418.72
Europe			
Corsica. 1948-1949 (IH 48001, 48037).....	3,398.25	12,000.00	14,797.46
Italy			
Field laboratory for study of insecticides in Latina. 1949-1950 (IH 48018, 49007).....	.....	6,000.00	2,000.00
University of Pavia. Research on cytogenetics of anopheline mosquitoes. 1949-1950 (IH 49003).....	.....	5,000.00	.....
Italy-Sardinia. Anopheles eradication program. 1949-1950 (IH 48038).....	.....	100,000.00	35,803.63
Netherlands. Control demonstration. 1947-1948 (IH 44006, 46032, 47003).....	1,022.12	.....	15.81
Far East			
China. 1948-1949 (IH 47037, 48024).....	16,212.31	25,000.00	34,667.91
Mysore. Studies and control demonstration. 1949-1950 (IH 49027).....	.....	10,000.00	.....
Pakistan. Malaria Institute and Laboratory. 1949-1950 (IH 49004).....	.....	5,000.00	1,742.28
Mexico			
Investigations in Veracruz. 1948-1950 (IH 47034, 48022, 49018).....	1,934.26	4,400.00	2,556.75
Instituto de Salubridad y Enfermedades Tropicales. Insectary. 1948-49 (IH 48006).....	881.06	.....	721.59
Studies on control of insect vectors with DDT. 1948-1950 (IH 47045, 48023, 49019).....	4,192.69	17,500.00	6,593.59

<b>South America</b>				
Colombia. 1947-1948 (IH 46040, 47035).....	\$23,208.71	\$.....	\$15,491.14	
Peru. 1946-1950 (IH 45055, 47036).....	10,567.55	.....	3,339.64	
Venezuela. 1946-1950 (IH 46021, 47060).....	14,251.43	.....	8,642.36	
<b>Mental Hygiene</b>				
United States				
Johns Hopkins University, Baltimore, Maryland				
School of Hygiene and Public Health. 1946-47 to 1949-50 (IH 46029)...	33,232.19	.....	12,324.76	
<b>Nutrition</b>				
Canada				
University of Toronto, Ontario. 1947-48 to 1949-50 (IH 46042).....	5,523.72	.....	4,079.44	
Far East				
Mysore. Anemia studies. 1949-1950 (IH 49009).....	.....	10,000.00	.....	
United States				
Vanderbilt University, Nashville, Tennessee. School of Medicine. 1947-48 to 1951-52 (IH 46041, 49016).....	20,500.00	12,000.00	13,591.17	
<b>Syphilis</b>				
United States				
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health. 1945-46 to 1948-49 (IH 45048, 45049).....	29,410.63	.....	13,227.97	
North Carolina. 1948-49 to 1949-50 (IH 47038, 48010).....	12,540.00	.....	8,970.00	
<b>Tuberculosis</b>				
United States				
Tennessee. 1945-46 through 1950 (IH 44028, 47012, 49014).....	18,306.12	15,000.00	13,286.06	
<b>Typhus Fever</b>				
United States				
Florida. 1947-1950 (IH 47059, 48025, 49012).....	1,604.52	44,000.00	21,654.84	

	PRIOR DESIGNATIONS	1949 DESIGNATIONS	1949 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i></b>				
<b>Yellow Fever</b>				
Africa				
Central and East Africa. 1945-1949 (IH 44034, 45034, 46047, 47041, 48016)	\$39,748.93	\$.....	\$8,017.81	
West Africa. 1947-1949 (IH 46048, 47042, 48017).....	42,608.03	.....	9,951.36	
South America				
Brazil. 1948-1949 (IH 47040, 48026).....	16,022.30	60,000.00	56,903.82	
Colombia				
Control and investigation. 1947-1948 (IH 46044, 47039, 48002).....	6,179.34	.....	2,661.99	
Laboratory construction and equipment. 1945-48 (IH 44058).....	2,467.13	.....	1,222.70	
Ecuador. 1947 (IH 46046).....	5,230.47	.....	4,551.15	
Peru. 1943-1948 (IH 45056).....	15,477.47	.....	1,099.36	
Other Studies				
Investigation of disease closely resembling poliomyelitis				
Iceland. 1949-1950 (IH 49040).....	.....	1,000.00	.....	
Rodent Ecology and Control				
Johns Hopkins University, Baltimore, Maryland				
School of Hygiene and Public Health. 1948-49 to 1950-51 (IH 47043, 48009, 49013).....	29,900.00	18,000.00	19,851.24	
Taxonomic Center and Insectary				
Johns Hopkins University, Baltimore, Maryland				
Department of Parasitology. 1947-48 to 1949-50 (IH 47001, 47044).....	8,150.00	.....	4,437.70	
<b>LABORATORIES OF THE INTERNATIONAL HEALTH DIVISION</b>				
Maintenance. 1948-1949 (IH 47046, 48027).....	11,559.64	150,000.00	145,555.56	

## STATE AND LOCAL HEALTH SERVICES

## State Health Services

## Canada

## Manitoba

Bureau of Maternal and Child Hygiene and Nutrition. 1946-47 to  
1948-49 (IH 46019)..... \$4,531.17 \$..... Cr. 8798.54

## New Brunswick

Division of Nutrition. 1945-46 to 1947-48 (IH 43003)..... 1,072.08 .....  
Division of Sanitary Engineering. 1947-48 to 1950-51 (IH 46033)..... 7,703.93 ..... 4,429.98

## Prince Edward Island

Provincial Laboratory. 1946-47 to 1950-51 (IH 38035)..... 7,151.55 .....

## Caribbean Area

Dominican Republic  
General health survey. 1947 through 1948-49 (IH 46020)..... 6,068.63 ..... 3,426.35  
Public Health Laboratory. 1946-1948 (IH 45053)..... 9,125.75 ..... 756.90  
Endemic Disease Control Service. 1949-50 to 1950-51 (IH 48019, 49022)..... 18,000.00 .....

## Europe

Norway  
Statistical Division. 1947-1949 (IH 46027)..... 2,142.43 .....

## Mexico

Office of Special Sanitary Service (Cooperative Central Office). 1948-1950  
(IH 47047, 48028, 49017)..... 1,942.79 7,285.00 2,637.38  
Training Center and Demonstration Health Unit. 1948-1950 (IH 47048,  
48011, 49020)..... 3,694.60 250.00 1,605.14

## South America

Bolivia  
Division of Rural Endemic Diseases. 1948-1950 (IH 44044, 47049)..... 56,521.40 .....

Chile  
Tuberculosis survey. 1945-1950 (IH 45009)..... 34,254.49 .....

	PRIOR DESIGNATIONS	1949 DESIGNATIONS	1949 PAYMENTS
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**STATE AND LOCAL HEALTH SERVICES — *Continued*****State Health Services — *Continued*****South America — *Continued*****Peru**

Division of Development of Program in Ministry of Health. 1945-1951  
(IH 44015, 45054, 46034, 47025, 47026, 47027, 48036).....

\$185,962.79      \$56,185.00      \$49,020.54

**United States****California**

Virus Laboratory — Research and diagnosis. 1947-48 to 1948-49 (IH  
46051).....

14,500.00      .....      14,500.00

**Mississippi**

Coordinated School-Health Nutrition Service. 1946-47 to 1948-49 (IH  
46003).....

43.01      .....      .....

**New York City**

Department of Health — Statistical Service. 1945-1949 (IH 44014)....

12,100.46      .....      6,744.03

**North Carolina**

Public Health Education and School Health Service. 1944-45 to 1948-49  
(IH 43014).....

8,291.09      .....      4,415.90

**Local Health Departments****Africa**

Egypt. 1948-1949 (IH 47032, 48029).....

2,541.89      20,000.00      15,044.24

**Canada**

British Columbia. 1936-52 (IH 36021, 38024).....

14,943.80      .....      .....

**Europe**

Finland. 1950-51 through 1953 (IH 49025).....

.....      36,000.00      .....

**Far East**

India, Bengal. 1945-46 to 1947-48 (IH 44046).....

2,146.19      .....      941.39

Mexico. 1944-1950 (IH 43052, 44042).....	\$21,522.27	\$.....	\$4,172.91
South America			
Bolivia. 1945-1950 (IH 44044).....	3,493.51	.....	3,493.51
Chile. 1943-1951 (IH 42014, 47050, 48015, 49024).....	56,871.17	3,000.00	14,237.38
Peru. 1947-1949 (IH 46030, 47024).....	10,298.82	.....	10,298.82
Survey of an area for possible regional planning as basis for public health services.			
1948 (IH 47065).....	5,148.96	.....	5,148.96
MEDICAL CARE			
American Public Health Association, Washington, D. C. 1949-1953 (IH 48035, 49010).....	.....	72,500.00	22,500.00
Educational Trust of the American Hospital Association, Chicago, Illinois			
National study of the financing of hospital care. 1950-1951 (IH 49011).....	.....	50,000.00	.....
PUBLIC HEALTH EDUCATION			
Schools and Institutes of Hygiene and Public Health			
Asia Minor			
Turkey			
School of Hygiene, Ankara. 1940 (IH 39059).....	1,680.61	.....	.....
Canada			
University of Toronto, Ontario			
Additional teaching personnel. 1946-47 to 1949-50 (IH 46005).....	12,861.97	.....	7,562.18
Field training facilities. 1948-49 to 1950-51 (IH 47052).....	10,467.29	.....	4,532.70
Instruction and studies in medical care. 1949-50 to 1950-51 (IH 48021).....	.....	17,000.00	3,852.80
Europe			
England			
London School of Hygiene and Tropical Medicine. 1949-1952 (IH 49001).....	.....	39,950.00	2,132.23
Finland			
Helsinki Institute of Industrial Hygiene. 1949-1950 (IH 49026).....	.....	50,000.00	.....

PRIOR DESIGNATIONS	1949 DESIGNATIONS	1949 PAYMENTS
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**PUBLIC HEALTH EDUCATION — *Continued*****Schools and Institutes of Hygiene and Public Health — *Continued*****Europe — *Continued*****Netherlands**

Institute of Preventive Medicine, Leiden. 1948 (IH 47064)..... \$2,027.70 \$..... 8605.73

**Sweden**

State Institute of Public Health, Stockholm. 1947-1949 (IH 46036)..... 10,000.00 ..... .....

**Far East****China**

National Institute of Health. 1944, 1947-1949 (IH 43043, 46054, 47053, 48031)..... 18,138.79 5,000.00 22,800.30

**South America****Chile**

School of Public Health, Santiago. 1944-1950 (IH 43055, 48014)..... 28,516.47 ..... 3,662.31

**Colombia**

National School of Hygiene, Bogotá. 1948-1951 (IH 48007)..... 30,000.00 ..... .....

**United States**

## Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health

Developmental aid. 1944-45 to 1948-49 (IH 43049)..... 29,516.88 ..... 20,004.38

Field Training and Study Area. 1944-45 to 1948-49 (IH 47009)..... 7,701.90 ..... 4,692.61

## University of California, Berkeley

Department of Public Health and Medical Administration. 1948-49 to 1950-51 (IH 47051, 48030, 49015)..... 14,000.00 38,400.00 28,200.00

**Schools of Nursing****Europe****Finland**

Helsinki College of Nursing. 1948-1950 (IH 47062)..... 28,000.00 ..... 7,241.00

<b>Switzerland</b>				
Le Bon Secours School of Nursing, Geneva. 1948-1952 (IH 47033).....	\$32,701.78	\$.....	\$4,660.49	
<b>Far East</b>				
Ceylon				
National School of Nursing, Colombo. 1948-49 to 1952-53 (IH 48005)...	22,264.17	.....	3,497.86	
Ceylon and India				
Developmental aid to nursing education. 1946 (IH 45058).....	1,011.51	.....	1.79	
<b>South America</b>				
Brazil				
University of São Paulo. 1942-1945 (IH 41084).....	521.94	.....	20.84	
Colombia				
National Superior School of Nursing, Bogotá. 1943-1951 (IH 42061, 48013)	18,364.51	.....	4,838.32	
Ecuador				
School of Nursing, Quito. 1943-1950 (IH 42065, 47023).....	11,443.45	.....	3,703.99	
Uruguay				
University Nursing School, Montevideo. 1945-1950 (IH 44061, 47054) ..	23,767.88	.....	980.23	
Venezuela				
National School of Nursing, Caracas. 1947-1950 (IH 46022).....	20,247.40	.....	2,149.85	
<b>United States</b>				
National League of Nursing Education, New York. 1949-50 (IH 49006)....	.....	7,000.00	7,000.00	
Fellowships, Travel of Government Health Officials and Teachers of Public Health, and Training of Health Workers. 1945-1949 (IH 44048, 45044, 46055, 47055, 48032).....	220,343.85	250,000.00	270,485.03	
<b>Other Training</b>				
<b>Caribbean Area</b>				
British West Indies Training Station, Jamaica. 1945-46 to 1950-51 (IH 44050, 47022, 48012, 49021).....	22,571.58	12,000.00	16,732.52	413

**PUBLIC HEALTH EDUCATION — *Continued*****Other Training — *Continued*****Europe****Italy**

University of Naples. School of Public Health Engineering. 1950 (IH 49008).....

\$..... \$3,500.00 \$.....

University of Rome Engineering School. 1948-1951 (IH 48008).....

8,000.00 ..... .....

**Mexico**

Training of health personnel in the United States. 1946-1948 (IH 45052) .....

10,582.31 ..... .....

**South America****Brazil**

Araraquara Health Training Center. 1948-1950 (IH 47061).....

21,798.53 ..... 12,954.18

**FIELD SERVICE****Field Staff. 1947-1949 (IH 46056, 47029, 47056, 48033, 49002)**

Salaries.....	243.83	522,000.00	490,929.16
Commutation.....	11,593.74	65,000.00	63,976.96
Travel.....	23,114.75	248,591.00	227,885.09
Medical Examinations.....	123.15	1,500.00	923.02
Field Equipment and Supplies.....	624.10	5,500.00	4,547.32
Reprints and Publications.....	169.16	7,500.00	5,067.09
Express, Freight and Exchange.....	82.37	1,000.00	117.17
Insurance and Retirement.....	15,070.84	56,000.00	44,301.72
Bonding.....	177.39	2,000.00	1,294.52

**Field Offices. 1948-1949 (IH 47057, 48034, 49005)****Africa and Asia Minor**

Egypt (Cairo).....	2,346.60	12,750.00	11,130.07
Iran (Tehran).....	.....	5,000.00	3,210.79

Canada (Toronto).....	\$1,905.87	\$3,500.00	\$3,083.00
Caribbean Region			
Central Office (Miami).....	1,042.67	6,400.00	5,033.66
Dominican Republic (Ciudad Trujillo).....	954.50	4,150.00	3,384.17
Europe			
England (London).....	246.12	.....	154.65
Far East			
China and India.....	6,812.11	22,100.00	19,936.81
Japan (Tokyo).....	.....	500.00	92.48
South America			
Argentina (Buenos Aires).....	2,589.94	8,800.00	8,437.09
Bolivia (Cochabamba).....	3,078.75	5,250.00	5,808.35
Brazil (Rio de Janeiro).....	1,964.92	19,600.00	7,425.20
Chile (Santiago).....	1,283.70	5,625.00	4,799.50
Colombia (Bogotá).....	3,300.00	4,500.00	550.37
Peru (Lima).....	5,711.19	3,875.00	4,353.65
Miscellaneous.....	354.06	.....	.....
Population Studies, 1949-1950 (IH 48039).....	5,600.00	.....	2,667.42
Director's Fund for Miscellaneous Expenses (IH 46031, 48004).....	5,467.56	.....	585.62
Director's Fund for Supplementing Approved Projects (IH 44006).....	3,581.43	.....	.....
Exchange Fund (IH 33077).....	21,365.22	.....	.....
 TOTAL — INTERNATIONAL HEALTH DIVISION.....	 \$1,582,171.45	 \$2,199,851.00*	 \$2,019,594.54

\* The Foundation appropriated \$2,200,000.00 for the work of the International Health Division during 1949, the undesignated balance of \$149.00 being allowed to lapse as of December 31, 1949.

## THE ROCKEFELLER FOUNDATION HEALTH COMMISSION

UNPAID BALANCES AS AT DECEMBER 31, 1948  
OF PRIOR YEAR DESIGNATIONS, AND PAYMENTS THEREON DURING 1949

	UNPAID BALANCES OF DESIGNATIONS	1949	
	DECEMBER 31, 1948	PAYMENTS	
<b>STUDY AND CONTROL WORK</b>			
<b>Malaria</b>			
Europe			
Corsica. 1947-1948 (HC 47019).....	\$347.56	\$.....	
Italy-Sardinia anopheles eradication program. 1947-1948 (HC 47004, 47021, 47028).....	76,380.79	76,380.79	
<b>STATE AND LOCAL HEALTH SERVICES</b>			
<b>State Health Services</b>			
Europe			
Norway			
Ministry of Social Welfare. Salary increases in Health Department. 1946-51 (HC 46014)...	10,000.00	.....	
Local Health Departments			
Far East			
China			
Kiang Ning Hsien Health Unit. 1947-1949 (HC 47011).....	10,700.90	1,345.62	
<b>PUBLIC HEALTH EDUCATION</b>			
<b>Schools and Institutes of Hygiene and Public Health</b>			
Europe			
Institute of Hygiene, Zagreb, Yugoslavia			
Equipment and maintenance. 1946-50 (HC 46016).....	9,191.08	356.76	

Institute and School of Hygiene, Warsaw, Poland Equipment and supplies. 1946-1948 (HC 46025).....	83,506.06	Cr. \$1,656.44
London School of Hygiene and Tropical Medicine, England Purchase of laboratory centrifuges. 1947-48 (HC 47017).....	2,000.00	.....
Rehabilitation of teaching and public health personnel. 1945-1950 (HC 45002).....	48,927.27	10,715.12
State Institute of Public Health, Oslo, Norway Equipment and supplies. 1945-1948 (HC 45022, C-11).....	3,654.41	3,653.83
State Institute of Public Health, Utrecht, Netherlands Equipment and supplies. 1946-47 (HC 46013).....	2,048.19	10.41
Microfilm readers for institutes of hygiene in Europe. 1946-49 (HC 46024).....	323.46	198.77
<b>Far East</b>		
National Institute of Health, China Equipment and supplies. 1947-1948 (HC 47005).....	6,604.16	6,604.16
Institute of Public Health, Tokyo, Japan Books, periodicals and teaching aids. 1948-1949 (C-11).....	1,523.85	1,113.96
University of the Philippines, Manila Equipment and supplies. 1947-1948 (HC 47006).....	13,672.68	6,698.12
<b>Schools of Nursing</b>		
<b>Europe</b>		
Ministry of Social Welfare, Norway Postgraduate course of study in public health and development of practice fields. 1946-51 (HC 46015).....	9,000.00	.....
School of Nursing, Zagreb, Yugoslavia Emergency aid. 1946-48 (HC 46026).....	1,542.54	10.89

	UNPAID BALANCES OF DESIGNATIONS	1949 DECEMBER 31, 1948 PAYMENTS
<b>PUBLIC HEALTH EDUCATION — <i>Continued</i></b>		
Schools of Nursing — <i>Continued</i>		
Europe — <i>Continued</i>		
University of Cracow School of Nursing, Poland	\$1,329.67	\$33.03
Emergency aid. 1947-1948 (HC 47020).....	40,999.56	33,685.37
Fellowships, Travel and Training Grants. 1945-1948 (HC 47016, 47030).....		
MISCELLANEOUS		
Journals, periodicals and books for public health institutions and schools in need of assistance as a result of the war. 1945-1949 (HC 45012, C-11).....	6,152.93	3,224.95
Pasteur Institute at Dakar, French West Africa		
Materials for repair of refrigeration plant. 1945 (HC 45015).....	55.37	.....
Pasteur Institute at Paris, France		
Equipment. 1947-1948 (HC 47018).....	508.40	.....
FUND FOR COMMITMENT BY DIRECTOR AND COMPTROLLER (C-11).....	2,530.50	206.75
<b>TOTAL — THE ROCKEFELLER FOUNDATION HEALTH COMMISSION.....</b>	<b>\$250,999.38</b>	<b>\$142,582.09</b>

## TRANSACTIONS RELATING TO INVESTED FUNDS

FOR THE YEAR ENDED DECEMBER 31, 1949

## PURCHASED

\$2,870,500	American Telephone & Telegraph Co. Ten Year Conv. Deb. 3½s/59 @ 107.185.....	83,076,758.75
129,500	American Telephone & Telegraph Co. Ten Year Conv. Deb. 3½s/59 by subscription at par and the surrender of 7,770 American Telephone & Telegraph Co. rights @ \$1.15625 each, resulting in a ledger price of 106.937.....	138,484.06
500,000	USA Treasury Bonds, 2½s/6/15/67-72 @ 102.344.....	511,718.75
3,000	Shares Aluminum Company of America Com. Stock (No par) @ \$50.226 per share...	150,677.11
4,000	Shares International Nickel Co. of Canada, Ltd. Com. Stock (No par) @ \$27.967 per share.....	111,867.11
5,000	Shares Peoples Gas Light & Coke Co. Com. Stock (Par \$100) @ \$128.608 per share...	643,041.21
10/100ths	of one share Standard Oil Co. of California Cap. Stock (No par) @ \$59.625 per share.	5.96
		<hr/> 84,632,552.95 <hr/>

## RECEIVED IN EXCHANGE

\$4,000,000	USA Treasury Certificates of Indebtedness, Ser. H, 1½s/10/1/50 for \$4,000,000 USA Treasury Certificates of Indebtedness, Ser. G, 1¾s/10/1/49.....	<hr/> \$4,000,000.00
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## OTHERWISE ACQUIRED

30,000	Shares American Telephone & Telegraph Co. Cap. Stock (Par \$100) received through conversion of \$3,000,000 American Telephone & Telegraph Co. Ten Year Conv. Deb. 3½s/59, plus a cash payment of \$30.00 per share or \$137.175 per share total, as follows:	
	Ledger value of bonds.....	\$3,215,242.81
	30,000 shares @ \$30.00 per share.....	900,000.00
		<hr/> \$4,115,242.81

TRANSACTIONS RELATING TO INVESTED FUNDS—*Continued*

273.39	Shares Indiana Gas & Water Co., Inc. Com. Stock (Par \$10), received as a dividend on 9,113 shares Public Service Co. of Indiana, Com. Stock (No par). These shares were taken into the books @ \$15.375 per share and the value credited to income.....	\$4,203.37
3,050.9	Shares Standard Oil Co. of California Cap. Stock (No par), received on account of the ownership of 61,018 shares of said stock of record December 10, 1948. Taken into the books at no value thereby reducing the per share price of the stock owned.....	— 0 —
20,500	Shares Standard Oil Co. (New Jersey) Cap. Stock (Par \$25), received as a dividend on 1,025,000 shares of said stock owned of record April 22, 1949. Taken into the books at no value thereby reducing the per share price of the stock owned.....	— 0 —
6,522	Shares Standard Oil Co. (New Jersey) Cap. Stock (Par \$25), received as a dividend on 652,200 shares Standard Oil Co. (Indiana) Cap. Stock (Par \$25) owned of record November 10, 1949. Taken into the books at the average market price on December 12, 1949, or \$68.625 per share and the value credited to income.....	447,572.25
2,000	Shares El Paso Natural Gas Co. Com. Stock (Par \$3), representing additional shares received on account of the ownership of 1,000 shares of said stock which was split on a three for one basis. Taken into the books at no value thereby reducing the per share price of the stock owned.....	— 0 —
34,175.5	Shares Kentucky Utilities Co. Com. Stock (Par \$10), received on account of the ownership of 68,351 shares The Middle West Corp. Cap. Stock (Par \$5). These shares were taken into the books @ \$10.50 per share and the value used as follows: To write down the ledger value of The Middle West Corp. shares..... \$102,526.50 Credited to Surplus or Deficiency Account..... 256,316.25	358,842.75
7,775	Rights American Telephone & Telegraph Co., received on account of the ownership of 7,775 shares American Telephone & Telegraph Co. Stock. These rights were taken into the books @ \$1.15625 each and the value used to reduce the ledger price of said stock.....	8,989.84

34,175	Rights Central Illinois Public Service Co., received on account of the ownership of 34,175 shares Central Illinois Public Service Co. Com. Stock (Par \$10). These rights were taken into the books @ \$3.699 per 1,000 and the value used to reduce the ledger price of said stock.....	8126.43
68,351	Rights Central & South West Corp., received on account of the ownership of 68,351 shares Central & South West Corp. Com. Stock (Par \$5). These rights were taken into the books @ \$6.756 per 1,000 and the value used to reduce the ledger price of said stock.....	461.81
34,175	Rights Kentucky Utilities Co., received on account of the ownership of 34,175 shares Kentucky Utilities Co. Com. Stock (Par \$10). These rights were taken into the books @ \$0.2295 each and the value used to reduce the ledger price of said stock.....	7,843.75
9,113	Rights Public Service Co. of Indiana, received on account of the ownership of 9,113 shares Public Service Co. of Indiana Com. Stock (No par). These rights were taken into the books @ \$2.766 per 100 and the value used to reduce the ledger price of said stock.....	252.03
		<hr/>
		\$4,943,535.04

**ADDITIONS TO LEDGER VALUE**

Interest increment on USA Savings Bonds, Ser. F (12 year appreciation bonds)		
\$67,500 (Maturity value) due May 1, 1953.....		\$1,755.00
67,500 (Maturity value) due Jan. 1, 1954.....		1,755.00
67,500 (Maturity value) due July 1, 1954.....		1,755.00
135,000 (Maturity value) due Jan. 1, 1955.....		3,510.00
		<hr/>
		\$8,775.00
		<hr/>
		\$13,584,862.99

## TRANSACTIONS RELATING TO INVESTED FUNDS—Continued

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THE ROCKEFELLER FOUNDATION

SOLD		TOTAL PROCEEDS	LEDGER VALUE
\$2,000,000	USA Treasury Bonds, 2½s/6/15/59-62 @ 100.875 .....	\$2,017,500.00	\$2,000,000.00
500,000	USA Treasury Bonds, 2½s/9/15/67-72 @ 105.094 .....	525,468.75	500,000.00
1,000,000	USA Treasury Certificates of Indebtedness, Ser. C, 1½s/3/1/49 @ 100.0018 .....	1,000,018.28	1,000,000.00
2,000,000	USA Treasury Certificates of Indebtedness, Ser. G, 1¼s/10/1/49 @ 100.0355 .....	2,000,711.16	2,000,000.00
5	Rights American Telephone & Telegraph Co. @ \$1.02 each .....	5.10	5.78
34,175	Rights Central Illinois Public Service Co. @ \$3.699 per 1,000 .....	126.43	126.43
68,351	Rights Central & South West Corp. @ \$6.756 per 1,000 .....	461.81	461.81
34,175	Rights Kentucky Utilities Co. @ \$0.2295 each .....	7,843.75	7,843.75
9,113	Rights Public Service Co. of Indiana @ \$2.766 per 100 .....	252.03	252.03
68,351	Shares The Middle West Corp. Cap. Stock (Par \$5) @ \$2.0325 per share .....	138,923.39	68,351.00
4,000	Shares Potash Company of America Com. Stock (Par \$5) @ 24.685 per share .....	98,741.31	94,000.00
48,400	Shares Standard Oil Co. (Indiana) Cap. Stock (Par \$25) @ \$43.099 per share .....	2,086,000.37	1,398,793.17
39/100ths	of one share Indiana Gas & Water Co., Inc. Com. Stock (Par \$10) @ \$16.113 per share .....	6.29	6.00
50/100ths	of one share Kentucky Utilities Co. Com. Stock (Par \$10) @ \$10.88 per share .....	5.44	5.25
		<hr/>	<hr/>
		\$7,876,064.11	\$7,069,845.22

**REDEEMED OR PAID AT MATURITY**

\$1,527,000	USA Treasury Certificates of Indebtedness, Ser. D, 1½s/4/1/49, paid at maturity @ par.....	\$1,527,000.00	\$1,527,000.00
380,000	USA Treasury Bonds, 2s/9/15/49-51, redeemed @ par.....	380,000.00	380,000.00
		<b>\$1,907,000.00</b>	<b>\$1,907,000.00</b>

**SURRENDERED IN EXCHANGE AND FOR CONVERSION**

\$4,000,000	USA Treasury Certificates of Indebtedness, Ser. G, 1¼s/10/1/49, surrendered in exchange for \$4,000,000 USA Treasury Certificates of Indebtedness, Ser. H, 1½s/10/1/50.....	\$4,000,000.00	\$4,000,000.00
3,000,000	American Telephone & Telegraph Co. Ten Year Conv. Deb. 3½s/59 (plus a cash payment of \$30.00 per share) surrendered for conversion into 30,000 shares American Telephone & Telegraph Co. Cap. Stock.....	3,215,242.81	3,215,242.81
7,770	Rights American Telephone & Telegraph Co., surrendered upon subscription to \$129,500 American Telephone & Telegraph Co. Ten Year Conv. Deb. 3½s/59.	8,984.06	8,984.06
		<b>\$7,224,226.87</b>	<b>\$7,224,226.87</b>

**LEDGER VALUE OF STOCK REDUCED BY THE VALUE OF RIGHTS RECEIVED ON ACCOUNT OF THE  
OWNERSHIP THEREOF**

7,775	Shares American Telephone & Telegraph Co. Cap. Stock by the value of 7,775 rights	\$8,989.84	\$8,989.84
34,175	Shares Central Illinois Public Service Co. Com. Stock (Par \$10) by the value of 34,175 rights.....	126.43	126.43
68,351	Shares Central & South West Corp. Com. Stock (Par \$5) by the value of 68,351 rights.....	461.81	461.81

TRANSACTIONS RELATING TO INVESTED FUNDS — *Continued*

		TOTAL PROCEEDS	LEDGER VALUE
34,175	Shares Kentucky Utilities Co. Com. Stock (Par \$10) by the value of 34,175 rights.	\$7,843.15	\$7,843.15
9,113	Shares Public Service Co. of Indiana Com. Stock (No par) by the value of 9,113 rights.	252.03	252.03
Ledger value of 68,351 shares The Middle West Corp. Cap. Stock (Par \$5), reduced by a part of the value of 34,175½ shares Kentucky Utilities Co. Com. Stock (Par \$10) received in partial liquidation thereof.		358,842.75	102,526.50
		<hr/>	<hr/>
		\$376,516.01	\$120,199.76
		<hr/>	<hr/>
		\$17,383,806.99	\$16,321,271.85
		<hr/>	<hr/>
<b>AMORTIZATION OF PREMIUM PAID ON PURCHASE OF SECURITIES</b>			
\$6,200,000	USA Treasury Bonds, 2½s/12/15/59-62..	.....	\$2,688.68
3,500,000	USA Treasury Bonds, 2½s/6/15/67-72..	.....	289.88
		<hr/>	<hr/>
			\$2,978.56
<b>LEDGER VALUE OF DEPRECIATED SECURITIES WRITTEN DOWN</b>			
£189,000	Imperial Chinese Government, Hu Kuang Rys. S.F. Loan of 1911 5s/75.....	.....	\$321,299.00
94,684	Shares The Ohio Oil Co. Com. Stock (No par).....	.....	250,000.00
54,000	Shares International Nickel Co. of Canada, Ltd., Com. (No par).....	.....	491,236.14
		<hr/>	<hr/>
			\$1,062,535.14
		<hr/>	<hr/>

## RECONCILIATION

Ledger value of securities, December 31, 1948.....	\$151,390,412.52
Purchased.....	\$4,632,552.95
Received in exchange.....	4,000,000.00
Otherwise acquired.....	4,943,535.04
Additions to ledger value.....	8,775.00      13,584,862.99
	<hr/>
	\$164,975,275.51
Sold.....	\$7,069,845.22
Redeemed or paid at maturity.....	1,907,000.00
Surrendered in exchange and for conversion.....	7,224,226.87
Ledger value reduced.....	120,199.76
Amortization.....	2,978.56
Ledger value of securities written down.....	1,062,535.14      17,386,785.55
	<hr/>
Ledger value of securities, December 31, 1949.....	\$147,588,489.96

## SCHEDULE OF SECURITIES ON DECEMBER 31, 1949

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## BONDS

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
American Telephone & Telegraph Co. 15 year Conv. Deb. 2 3/4%, Dec. 15, 1961.....	\$110,000	111.28	\$122,408.00	107.5	\$118,250.00
Imperial Chinese Government Hu Kuang Rys. S. F. Loan of 1911 5s, June 15, 1975.....	£189,000		1.00		18,900.00
Morris & Essex R. R. 1st Ref. 3 1/2%, Dec. 1, 2000.....	\$39,000	82.75	32,272.50	55.	21,450.00
Standard Oil Co. (New Jersey) 25 year Deb. 2 3/8%, May 15, 1971.....	8,499,000	98.	8,329,020.00	98.125	8,339,643.75
United States of America Treasury Certificates of In- debtedness: 13 1/8%, Series H, due Oct. 1, 1950.....	4,000,000	100.	4,000,000.00	100.02	4,000,800.00
United States of America Treasury Bonds:					
<i>Int.                  Dated                  Due</i>					
2% — Apr. 15, 1943 — Sept. 15, 1950-52.....	6,000,000	100.	6,000,000.00	100.71875	6,043,125.00
2% — Sept. 15, 1943 — Sept. 15, 1951-53.....	5,000,000	100.	5,000,000.00	101.34375	5,067,187.50
2% — June 26, 1944 — June 15, 1952-54.....	4,500,000	100.	4,500,000.00	101.84375	4,582,968.75
2% — Dec. 1, 1944 — Dec. 15, 1952-54.....	6,600,000	100.	6,600,000.00	102.09375	6,738,187.50
2 1/4% — June 1, 1945 — June 15, 1959-62.....	7,000,000	100.	7,000,000.00	103.34375	7,234,062.50
2 1/4% — Nov. 15, 1945 — Dec. 15, 1959-62.....	6,200,000	100.434	6,226,886.74	103.28125	6,403,437.50

THE ROCKEFELLER FOUNDATION

## TREASURER'S REPORT

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$2\frac{1}{2}\%$ — May 5, 1942 — June 15, 1962-67 .....	6,000,000	100.	6,000,000.00	105.59375	6,335,625.00
$2\frac{1}{2}\%$ — June 1, 1945 — June 15, 1967-72 .....	3,500,000	100.327	3,511,428.87	103.8125	3,633,437.50
$2\frac{1}{2}\%$ — Nov. 15, 1945 — Dec. 15, 1967-72 .....	2,000,000	100.	2,000,000.00	103.8125	2,076,250.00
<b>United States of America Savings Bonds, Series F</b>					
(12 year appreciation bonds):					
Due May 1, 1953 — Maturity value.....	67,500	88.7	59,872.50	88.7	59,872.50
Jan. 1, 1954 — Maturity value.....	67,500	86.1	58,117.50	86.1	58,117.50
July 1, 1954 — Maturity value.....	67,500	84.8	57,240.00	84.8	57,240.00
Jan. 1, 1955 — Maturity value.....	135,000	83.5	112,725.00	83.5	112,725.00
<b>TOTAL BONDS.....</b>	.....	.....	<b>\$59,609,972.11</b>	.....	<b>\$60,901,280.00</b>

## PREFERRED STOCKS

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Atlantic Refining Co. Cum. 3.75% Series B (Par \$100)	10,000	\$100.00	\$1,000,000.00	\$101.50	\$1,015,000.00
Chicago City & Connecting Rys. Participation Certificates (No par) (C/D).....	17,530		1.00		- 0 -
Connecticut Light & Power Co. \$2.00 Cum. (No par).....	5,000	54.26	271,300.00	50.875	254,375.00
Consolidated Edison Co. of New York, Inc. \$5. Cum. (No par).....	9,500	91.75	871,625.00	108.25	1,028,375.00
International Harvester Co. 7% Cum. (Par \$100).....	15,000	115.00	1,725,000.00	180.50	2,707,500.00
Monsanto Chemical Co. \$4. Cum. Ser. B (No par).....	1,000	101.00	101,000.00	111.125	111,125.00
Philadelphia Electric Co. 3.80% (Par \$100).....	2,000	102.70	205,400.00	103.625	207,250.00
Philip Morris & Co., Ltd., Inc. 4% Cum. (Par \$100).....	4,000	105.35	421,400.00	103.00	412,000.00
Tennessee Gas Transmission Co. 4.25% Cum. (Par \$100).....	5,000	96.675	483,372.50	101.25	506,250.00
United States Rubber Co. 8% Non-cum. 1st (Par \$100).....	1,500	150.892	226,337.50	130.00	195,000.00
United States Steel Corporation 7% Cum. (Par \$100).....	6,600	133.858	883,462.50	139.00	917,400.00
<b>TOTAL PREFERRED STOCKS.....</b>	.....	.....	<b>\$6,188,898.50</b>	.....	<b>\$7,354,275.00</b>

## COMMON STOCKS

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Aluminum Company of America (No par).....	3,000	\$50.226	\$150,677.11	\$51.50	\$154,500.00
American Telephone & Telegraph Co. Cap. (Par \$100).....	37,775	143.673	5,427,254.91	146.50	5,534,037.50
The Buckeye Pipe Line Co. Cap. (No par).....	107,763	11.791	1,270,627.60	11.125	1,198,863.38
Central Illinois Public Service Co. (Par \$10).....	34,175	11.996	409,973.57	16.75	572,431.25
Central & South West Corporation (Par \$5).....	68,351	9.383	641,328.93	14.50	991,089.50
Chicago City & Connecting Rys. Participation Certificates (No par).....	10,518		1.00		— 0 —
Chicago, Milwaukee, St. Paul & Pacific R. R. Voting Trust Certificates for common shares.....	20,709	32.125	665,276.62	8.00	165,672.00
Consolidated Natural Gas Co. Cap. (Par \$15).....	127,174	28.392	3,610,705.40	43.50	5,532,069.00
Continental Oil Co. (Delaware) Cap. (Par \$5).....	60,664	11.164	677,258.83	60.00	3,639,840.00
El Paso Natural Gas Co. (Par \$3).....	3,000	11.917	35,750.00	27.75	83,250.00
Indiana Gas & Water Co., Inc. (Par \$10).....	273	15.375	4,197.37	19.25	5,255.25
International Nickel Co. of Canada, Ltd. (No par).....	54,000	40.818	2,204,163.04	28.125	1,518,750.00
Interstate Natural Gas Co., Inc. Cap. (No par).....	33,765	14.959	505,106.25	30.00	1,012,950.00
Kennecott Copper Corporation Cap. (No par).....	35,100	58.539	2,054,731.03	50.875	1,785,712.50
Kentucky Utilities Co. (Par \$10).....	34,175	10.271	350,994.35	14.00	478,450.00
National Fuel Gas Co. Cap. (No par).....	381,018	7.75	2,952,889.50	10.25	3,905,434.50
The Ohio Oil Co. (No par).....	94,684	32.735	3,099,446.50	27.50	2,603,810.00

## COMMON STOCKS — Concluded

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Peoples Gas Light & Coke Co. (Par \$100).....	5,000	128.608	643,041.21	133.375	666,875.00
Phelps Dodge Corporation Cap. (Par \$25).....	37,600	52.717	1,982,151.40	48.625	1,828,300.00
Public Service Co. of Indiana (No par).....	9,113	20.597	187,703.59	27.00	246,051.00
Standard Oil Co. of California Cap. (No par).....	64,069	16.445	1,053,599.21	65.00	4,164,485.00
Standard Oil Co. (Indiana) Cap. (Par \$25).....	642,843	28.901	18,578,603.33	44.75	28,767,224.25
Standard Oil Co. (New Jersey) Cap. (Par \$25).....	1,052,022	28.848	30,348,678.84	66.75	70,222,468.50
Standard Oil Co. (Ohio) (Par \$10).....	352,920	8.816	3,111,512.54	25.75	9,087,690.00
Union Tank Car Co. Cap. (No par).....	240,000	6.692	1,606,087.97	31.125	7,470,000.00
Wisconsin Power & Light Co. (Par \$10).....	17,087	12.75	217,859.25	17.00	290,479.00
<b>TOTAL COMMON STOCKS.....</b>			<b>\$81,789,619.35</b>		<b>\$151,925,687.63</b>

SUMMARY	LEDGER VALUE	MARKET VALUE
Bonds.....	\$59,609,972.11	\$60,901,280.00
Preferred Stocks.....	6,188,898.50	7,354,275.00
Common Stocks.....	81,789,619.35	151,925,687.63
	<b>\$147,588,489.96</b>	<b>\$220,181,242.63</b>

*Opinion of Independent Public Accountants*

PRICE, WATERHOUSE & CO.  
56 PINE STREET, NEW YORK 5

March 28, 1950

TO THE BOARD OF TRUSTEES OF  
THE ROCKEFELLER FOUNDATION:

We have examined the balance sheet of The Rockefeller Foundation as at December 31, 1949 and the related statements and summaries of funds and appropriations for the year 1949 and the list of investment securities as of December 31, 1949. 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 accordance with the policy of the Foundation, no effect has been given in the accompanying statements to accrued income not received or to expenditures made from advance accounts not reported in time to be recorded when the books were closed as of December 31, 1949.

In our opinion, with the foregoing explanation, the accompanying balance sheet and related statements and summaries of funds and appropriations and the list of investment securities present fairly the position of The Rockefeller Foundation as of December 31, 1949, and the results of its transactions for the year 1949, in conformity with generally accepted accounting principles.

PRICE, WATERHOUSE & CO.



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