The Rockefeller Foundation

Annual Report

1936

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New York

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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, 1936, to December 31, 1936, together with detailed reports of the Secretary and the Treasurer of the Foundation, the Director of the International Health Division, the Directors for the Medical Sciences, the Natural Sciences, the Social Sciences, and the Humanities, and the Vice-President in charge of the program in China.

Respectfully yours,

RAYMOND B. FOSDICK

President

THE ROCKEFELLER FOUNDATION
PRESIDENT'S REVIEW FOR 1936

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PRESIDENT'S REVIEW

The Year in Brief

In giving away $11,300,000 during 1936 in connection with its world-wide program, The Rockefeller Foundation cooperated financially with 130 agencies, in amounts varying from several thousand to several hundred thousand dollars; made available to scholars engaged in advanced scientific work 222 grants in aid, ranging in amount from a few hundred to a few thousand dollars; provided some 700 fellowships for postgraduate training of young men on whom will fall the burden of future leadership in fields of science, public health, and social welfare; made two large grants for endowment in connection with the closing out of a former program; and conducted, by means of its own field staff of about seventy public health experts, researches in yellow fever, malaria, hookworm disease, tuberculosis, yaws, diphtheria, schistosomiasis, and influenza.

The agencies aided by The Rockefeller Foundation include 41 local and national governments, 44 educational institutions, such as schools, colleges, and universities, 20 research institutes, 2 libraries, and 23 councils, associa-

tions, societies, and commissions, most of them national or international in scope.

Work in 53 foreign countries was included in the Foundation's program of activities. The agencies with which it cooperated financially have a geographical range all the way from Scandinavia to Java. The funds appropriated for projects located in countries other than the United States amounted to $3,621,000, or about one-third of the total expenditures of the year. The balance was appropriated for projects conducted by organizations within the United States.

The Purpose and Method of the Foundation

The purpose of The Rockefeller Foundation, written into its charter in 1913, is "to promote the well-being of mankind throughout the world." Changing conditions in scientific and social development must necessarily affect decisions as to how that purpose can best be realized. Nevertheless, for a decade or more, the advance of knowledge, with research as the chief tool, has been the definite objective and method of Foundation action. The program has extended into the fields of natural science, social science, medical science, the humanities, and public health. Except in public health, the Foundation is not an operating organization. It conducts no

researches of its own. Its efforts are limited to the support of other agencies—universities, laboratories, research institutes—where the promise of results seems particularly bright.

A program concerned with the advance of knowledge runs the risk of scattering its resources over too wide a field unless a fairly definite policy of concentration is adopted. Consequently, in natural science the Foundation has for several years placed its emphasis largely on experimental biology; in the social sciences, it has been particularly interested in problems relating to social security, international relations, and public administration; its work in the medical sciences has chiefly to do with psychiatry, broadly interpreted; in the humanities, it is working not so much on the content of humanistic studies as on the techniques by which cultural levels are affected, i.e., radio, non-professional drama, museums, libraries, and language problems.

These immediate interpretations of the ultimate objective of the Foundation are, of course, subject to adjustment and alteration as conditions dictate. A program that is too narrowly conceived and perhaps too long maintained can become ineffective and even sterile. There must always be the possibility and the inclination to change the strategy of attack in order to meet human problems that are new and challenging.

"The Proper Study of Mankind . . ."

A foundation that elects to follow a selective program in enlarging the boundaries of knowledge is confronted with difficult questions. What special branches of knowledge should be enlarged? Is all knowledge equally important? Is anybody wise enough to determine the relative significance of different types of knowledge to a social order struggling for equilibrium?

The debate on these questions is, of course, world-wide. Uneasiness and even alarm are growing as the belief gains ground that the contributions of the physical sciences have outstripped man's capacity to absorb them. As General Smuts pointed out in his presidential address before the British Association for the Advancement of Science, there can be but little question that a serious lag has developed between our rapid scientific advance and our stationary ethical development, a lag which has already found expression in the greatest tragedy of history. A more recent president of the same Association, Sir Josiah Stamp, expressed the idea in these words: "We are like a contractor who has too many men bringing materials on to the site, and not enough men to erect the buildings with them. . . . We are producing progressively more problems for society than we are solving. . . . Additional financial resources should be applied

more to the biological and human sciences than to the applied physical sciences."

It has been estimated that of all the money spent on research in Great Britain and the United States, one-half of the total goes for industrial research and for the underlying pure research in physics and chemistry. Of the remaining half, 50 per cent is spent on research in connection with military questions. Of the remaining quarter of the total sum, the larger part is devoted to research in agriculture and the branches of biology which support it. Further down the list is research in medicine and public health. Finally come the social sciences with an infinitesimal fraction of the total devoted to their development. For research in the humanities the amount is relatively so small as to be scarcely discernible.

It is this consideration, among others, which has led the Foundation to sharpen its program. "The proper study of mankind is man." For the time being at least, this dictum governs the policy of the trustees. In the work which the Foundation is supporting in the natural sciences, it is the underlying mechanisms of the human body upon which attention is being focused through research in biology. In the medical sciences, it is the problem of human behavior which is being probed. In public health, it is the study

and control of human disease. In the social sciences, it is obviously the problem of man in relation to his fellow men which, in special fields, is being subjected to scrutiny. In the humanities, it is the possibility of a wider and deeper human culture which is being explored.

There is, therefore, an essential unity in the program of the Foundation, although it covers wide and diverse fields. The underlying interest is in the general problem of individual and social living, with the aim of progress through understanding. While, necessarily, the old classifications are employed, such as medical science, natural science, and social science, an endeavor is being made to think of the objective in coordinated and synthetic terms and to shape the program toward what has been called the science of man.

Making Work for Health Workers

In the field of public health, the policy of the Foundation is necessarily realistic. No attempt is made to cover the whole complex domain of present day sickness prevention. Instead, work is concentrated on certain diseases where there is a reasonable expectation that they can be transferred from the non-preventable to the preventable class.

To control a widespread disease, it is not

enough to know how a single case can be cured. Methods must be developed which will turn the disease over to the public health worker, who thinks not in terms of the single individual but in terms of the community. Thus in diseases like hookworm or malaria or yellow fever, the objective is to discover methods of prevention or treatment applicable to great numbers of people. One of the difficulties about such a program is that existing knowledge is too often inadequate. Unless public health work goes hand in hand with research, it soon bogs down in methods that are outworn and in ideas that are expensive to apply or that do not fit particular localities.

The approach which is now being followed is laboratory research, tested by field experimentation and demonstration under actual practice conditions. This combination of laboratory and field service the Foundation is in a unique position to undertake, because it is not tied to any one country or region but can make its studies and set up its laboratories wherever necessary. Most of the health work which the Foundation is at present carrying on under this plan is being done in cooperation with governmental agencies, both national and local.

Every disease which is placed definitely in the preventable class makes more work for health workers. Ever since the days of smallpox vac-

cination, and increasingly within the past fifty years as the germ origin of disease has been laid bare, one disease after another has been added to the public health program. In this broad movement, the Foundation has attempted to play a part. In health work, as perhaps in many other of its activities, the function of a foundation is to blaze a trail, to try out techniques, to experiment with new methods. If its funds are wisely spent, a foundation can be an advance guard. It can skirmish ahead into the realm of the unknown and the unexplored, and pass back to the public health authority of the state the new ideas that are captured.

The work of the International Health Division of The Rockefeller Foundation in 1936 was conducted on a budget of $2,100,000 in 30 states of the United States and in 41 foreign countries. The major portion of the budget went to laboratory and field services and to the control and investigation of specific diseases. About one-fourth of the amount was devoted to public health education, and to the aid of state and local governments in setting up model health centers and demonstrations.

The Jungle Strikes Back

Reports of The Rockefeller Foundation prior to 1929 expressed the belief not only that yellow

fever was fast disappearing as a human menace but that it had been practically eliminated. Indeed, in 1925, only three cases of yellow fever were reported from the entire Western Hemisphere; in the eleven months following April 1927, no cases were reported; and it was assumed that the battle, which had cost the lives of research workers and millions of dollars, was practically won. Then almost without warning, the South American jungle struck back, and in a few years' time the epidemiological strategy of the battle had to be completely altered.

To understand what happened, one has to go back to the early ideas with which the widespread campaign against yellow fever was launched. The first idea was that yellow fever was largely an urban disease, transmitted solely by the *Aedes aegypti* mosquito (called the *Stegomyia* mosquito in the early days). According to this theory, the disease depended for its maintenance upon the simple cycle, man—mosquito—man, and was spread from one point to another, either by the movement of the human host during the period of incubation, or by the accidental transportation of the infected mosquito from place to place.

The second idea had to do with what was called the key-center theory; that is, that there were a few key centers of the disease, and if

these were controlled, through the destruction of the breeding places of the *Aedes aegypti* mosquito, yellow fever would disappear.

As it turned out, both these ideas were only partly true. The *Aedes aegypti* mosquito is certainly a carrier of the disease, and the cleaning up of its breeding places has often served completely to eliminate yellow fever in the area involved. This has been proved conclusively in the coast cities of South America. For example, before 1918 in Guayaquil, Ecuador, yellow fever had been present for generations. For several years the average number of cases had been 259. In May 1919, six months after mosquito control work was started, the last case of yellow fever was recorded, and in the seventeen years that have elapsed since then, there have been no recognized cases in all of Ecuador. This same illustration could be given in connection with other communities.

But one of the upsetting factors in this apparently hopeful picture was the discovery that an endemic type of yellow fever could occur—and did occur—in districts where there were no *Aedes aegypti* mosquitoes. In earlier days, this was considered an impossibility. Indeed, in 1916, General Gorgas, representing the Foundation in a survey of Muzo, Colombia, where yellow fever had been reported, declared that the disease did

not exist and had not recently been present because no *Aedes aegypti* mosquitoes or their larvae could be found—and this in face of the fact that five cases with two deaths had been reported as yellow fever within the year, and that locally there was a general belief that the disease existed permanently in the region. This belief has recently been adequately substantiated.

If this seems a critical comment, it must be remembered that earlier workers were groping in the dark, without the knowledge which recent laboratory research has given us. There were—and are—many missing pieces in the picture puzzle. For one thing, it was difficult to obtain experimental animals susceptible to yellow fever. It was not until the rhesus monkey was imported from India that satisfactory results could be obtained. And it was three years later before it was discovered that white mice, infinitely more convenient for laboratory purposes, could be used. In the second place, yellow fever was difficult of accurate diagnosis. It was this situation which led Noguchi astray. He isolated a spirochete from the blood of reported yellow fever patients which produced in guinea pigs lesions suggestive of yellow fever. To this he gave the name *Leptospira icteroides* ("slim spiral, the jaundice maker"), and after prolonged study he came to the conclusion that it was the cause of yellow

fever. He prepared a vaccine and an immune serum, both of which were effective in animals experimentally infected with *Leptospira icteroides* and were frequently reported, in publications of The Rockefeller Foundation and elsewhere, as effective in the prevention and cure, respectively, of yellow fever in man.

But Noguchi was mistaken. He had not discovered the germ of yellow fever. Instead, he had isolated the germ of Weil's disease, or infectious jaundice, either erroneously diagnosed as yellow fever, or concomitant with yellow fever.

Since Noguchi's tragic death in Africa in 1928 while working on the problem of yellow fever, laboratory research has provided techniques hitherto unknown. Prominent among them is viscerotomy—or liver examination—by which the disease can now be diagnosed with far greater accuracy in cases which have proved fatal. A blood test has also been devised by which, through samplings, previous outbreaks of the disease in specific regions can be determined. It is now possible, therefore, to chart the geographical distribution of yellow fever in systematic fashion, and discover where it has been. No longer is it necessary to rely, as Gorgas had to, on neighborhood tradition and the presence or absence of *Aedes aegypti* mosquitoes; or as

Noguchi had to, on clinical diagnoses which may prove inaccurate.

It is these advances in laboratory methods which have given us the new picture of yellow fever—a picture darker than we had supposed. The *Aedes aegypti* mosquito is no longer the sole villain in the piece. There is another unknown villain, or villains, and perhaps other hosts than man. Vast areas of the hinterland of both South America and Africa are endemic centers of the disease. This "jungle yellow fever," as it is called, apparently differs from the aegypti-transmitted type only in that it occurs under conditions of rural or forest environment as distinguished from urban environment. Certainly, jungle yellow fever, in the absence of adequate methods for its control, must be considered as a possible permanent source of virus for the reinfection of cities and towns where high densities of *Aedes aegypti* mosquitoes are tolerated.

This serious condition, recently uncovered, is, of course, not new. The application of fresh methods has resulted in a slight lifting of the veil which previously had covered all but a small part of the epidemiology of this disease. However, it can truthfully be said that yellow fever, to the extent that it was thought to exist a decade ago, has been brought under control.

Since the International Health Division of the

Foundation began its work in yellow fever in 1915, it has spent approximately $6,000,000 in an attempt to solve the problem. During the past year about $290,000 went for this purpose. Activities in this field at the moment are as follows: (a) cooperation with the National Health Department of Brazil in both control and investigation, (b) cooperation with the National Department of Health of Colombia in investigation, (c) cooperation in control or surveys in other countries of South America, (d) prosecution of research at the Laboratories of the International Health Division in New York, and (e) study of jungle yellow fever in East Africa, by invitation of the British Government.

The Foundation's work in this direction will, of course, be continued. Intensive study and research are necessary. A bright spot in the situation is the development in the New York Laboratories of the International Health Division of a method of vaccination which, since its initiation in 1931, has successfully protected the field and laboratory staffs working with this disease. In six years, we have had no case of yellow fever. Prior to that date, five scientists working on the staff of the International Health Division died of the disease. Science, like war, has its heroes; but they fight for causes that are generally better worth dying for.

Working with Other Diseases

Another genus of mosquitoes, *Anopheles*, of which there are about 150 known species, is responsible for malaria, a disease that affects millions of people in tropical and subtropical regions around the world. In India alone there are 53 species, of which at least 13 are malaria carriers. Each species has peculiarities and habits which make the control of malaria a highly specialized problem from country to country. Methods of control which have proved effective in one locality may be useless when tried in another. In the United States, the *Anopheles* responsible for most of the malaria breeds in ponds, marshes, and quiet waters. In the Philippines, on the other hand, the only *Anopheles* that transmits malaria breeds in the rapidly flowing foothill streams. The demonstration of methods of control of mosquitoes infected with malaria and investigations of the disease itself constituted an early interest of the Foundation and have continued to be among its major objectives in the field of public health. Although much is known about the disease, additional knowledge is still badly needed to make more effective the efforts of governments to curb it. In 1936 the Foundation supported research and control demonstrations in malaria, both in the laboratory and in the field, in the United States, Central

and South America, the West Indies, Europe, Egypt, Cyprus, and India. For this, approximately $170,000 was appropriated.

Yellow fever and malaria are diseases which require an intermediate host for their transmission to man and are limited mostly to the tropical and subtropical areas. On the other hand, diseases like tuberculosis and influenza are transmitted directly from man to man and are worldwide in distribution. Although brilliant contributions have been made to our knowledge of tuberculosis, additional information is required to develop a more effective program for its control. In 1936, studies in the laboratory and in the field were supported by the Foundation in a metropolitan district and hospital, and in two rural areas in the Southern United States. In one of these areas, the population is mostly white; in the other, it is predominantly colored. A similar program under Central European conditions was aided in Austria, and under tropical conditions in the island of Jamaica.

Since 1918, public health officials have contemplated with dread the possibility of another devastating epidemic of influenza such as encompassed the world at that time. However, investigations of the disease in various parts of the world have added much to our understanding of its cause. Independent workers in England

succeeded in isolating from human cases the virus that produces the disease. In 1935, the same virus was isolated in this country from material sent by the Foundation field force in Puerto Rico; and the Laboratories of the International Health Division in New York are now giving intensive study to the problem.

Yaws is a dread disease which is widespread throughout the tropics. It is highly contagious, is contracted in early childhood, and cripples and disfigures the victim. Although the causative agent is known, its epidemiology is not clearly understood. In coöperation with the Government of Jamaica, a study of the disease in that island was made in which members of our field staff participated. As a result, an effective method of treatment has been developed, and the possibilities of controlling the disease have been satisfactorily demonstrated.

In Egypt, where the Foundation has been of assistance in promoting hookworm campaigns, another serious public health problem exists, namely schistosomiasis, a disease caused by the liver fluke, a small organism carried by certain species of snails living in the canals of irrigated lands. The research in this disease has involved an extensive study of snails and snail habits; and the Egyptian Government is cooperating in working out practical methods of cleaning canals

in order to rid the waterways of the offending animal.

Similarly, the Foundation has for some time supported studies of the "common cold," chiefly those now being carried on at Columbia University.

In 1936, the Foundation began laboratory and field work in relation to rabies, which has become an increasing menace, particularly in some of the Southern States. Little has been done on this disease since Pasteur's day; and it is hoped that a quicker and more positive test for rabies in animals may be developed, and perhaps a less cumbrous method of vaccination.

In all this work with these various diseases, the criterion of judgment is simply this: Is there an opportunity, by combining field studies and laboratory experimentation, to make the control of these diseases more simple, easy, and sure? No one can predict in advance whether new studies will be successful. The principal reason for undertaking them is that they represent a type of research work for which public health departments do not usually have either time or funds. When, however, efficacious and simplified methods of control have been worked out and demonstrated to be feasible, the resulting procedures can be quickly adapted and put into practice by health departments over wide areas.

In 1936, the Foundation expended roughly $200,000 in the study and control of diseases other than hookworm, malaria, and yellow fever.

The World of the Mind

Out of the experience of the International Health Division in the control and prevention of disease in this country and abroad, it became evident that the quality of medical education is an essential factor in effecting not only the prevention but the relief or cure of disease. The Foundation, therefore, beginning in 1916, undertook an extensive program in aid of medical training. The interest of the General Education Board in this field within the United States was taken as the basis of a procedure which left the Foundation free to concentrate its attention outside the United States. For well over a decade, the funds of the Foundation, in so far as they were applied to this general purpose, were devoted largely to aiding medical schools as institutions of teaching. If the expenditures for the building and support of the Peiping Union Medical College are included, a total sum of roughly $64,000,000 was spent on this program. The General Education Board in the similar work which it was carrying on in the United States appropriated $84,000,000; so that the combined grants of the two boards to improve the quality

of medical education both here and abroad approximated $148,000,000.

But there is a law of diminishing returns which operates in relation to the programs of a foundation as it operates in relation to most human activities. A change of emphasis, a shift of strategy, is occasionally necessary to preserve balance and judgment. Beginning in 1929, therefore, the Foundation laid stress upon the advancement of medical knowledge through research; and out of this interest developed an increasing emphasis on the field of mental hygiene.

Why mental hygiene? Because it is the most backward, the most needed, and potentially the most fruitful field in medicine today. The number of hospital beds devoted to the care of mental cases exceeds in many countries the number of hospital beds for all other diseases put together. If there were any way of knowing the number of hospital patients whose apparent bodily illnesses are the result or concomitant of mental disorders, the picture would expose even more vividly the discrepancy in our effectiveness against "diseases of the mind" as contrasted with "diseases of the body." Our tragic lack of knowledge in this backward field may be deduced from the economic, moral, social, and spiritual losses occasioned by the feeble-minded, the delinquents, the criminal insane, the emotionally

unstable, the psychopathic personalities, and—less dramatic but far more widespread—the preventable anxieties, phobias, tantrums, complexes, and anomalous or unbalanced behavior of otherwise normal human beings.

If a foundation is looking for immediate results, the field of mental hygiene is not the field to enter. It is not a field intrinsically easy for the application of scientific method, nor is there an abundance of well trained men to carry on the work. And yet with all its difficulties, it is perhaps the most significant, as it is the most challenging, field in which modern medicine is engaged. Body and mind cannot be separated for purposes of treatment; they are one and indivisible. Whether he will or no, the doctor's office is a confessional of spiritual as well as physical disability. "Mankind's eternal cry is for release, and the physician must answer it with something more than a test tube."

Eggs in Many Baskets

What is meant by "mental hygiene"? Admittedly, it is a loose term. There is no single word satisfactorily comprehensive of the fields which it covers. Perhaps "psychiatry" comes closest to the meaning of the Foundation's present program, with the understanding that the word must be given a broad interpretation. It must

mean far more than the traditional interests of the clinical psychiatrist. If it is to be truly comprehensive, it must range all the way from anatomy to psychology. It must deal with the function of the nervous system, the role of internal secretions, the factors of heredity, the diseases affecting mental and psychical phenomena—in brief, it must lay a factual foundation for what is often called psychobiology.

The Foundation has no illusion that the complete answer to the problem of mental abnormality lies in any particular approach. In this field of mental behavior, as in all other fields, there is no exclusive or predetermined way to knowledge. Amid too much shouting disagreement among the doctors and too many schools of thought, it is best to seek competent, serious workers who offer reasonable hope of adding helpful scaffolding or permanent bricks to the edifice of verifiable knowledge of man and his behavior.

A foundation in a situation of this kind can assist scientifically promising work in many directions. Out of the present dissents among the specialists, out of the controversies which now mark the field, the hope is that agreements will emerge and techniques will be developed as more light is shed on factors and phenomena at present unknown or imperfectly understood.

In 1936, as in previous years and in other programs, the Foundation followed a policy of putting its eggs into more than one basket. Appropriations now operative under this Foundation program include such diverse approaches as the University of Illinois, for teaching and investigative work in psychiatry; Johns Hopkins University, for the development of neurology; the Institute of Child Welfare of the University of California; the Institute for Psychoanalysis in Chicago; the Institute of Human Genetics at the University of Copenhagen; the National Committee for Mental Hygiene; Galton Laboratory, University of London, for research in genetics; Maudsley Hospital, London, for research in psychiatry; College of Physicians and Surgeons of Columbia University, for psychiatric research; Worcester State Hospital, Massachusetts, and the University of Amsterdam, Netherlands, for work in dementia praecox; University of Leiden, Netherlands, for research in child psychology; and other institutions and agencies.

For the year 1936, $1,073,050 was appropriated by the Foundation for the support of this general program.

The Importance of Very Small Quantities

Some of the most dramatic developments which have come from experimental biology in

the last quarter century are those tending to show the importance, in terms of human welfare and behavior, of substances so minute in quantity that only the most exact and delicate techniques of science are able to identify and measure them.

Foremost in this catalogue of the infinitesimal stand the genes. So small are they that presumably no microscope can see them; they must be measured in terms of their effect. And yet the genes are the cargo ships of heredity, carrying compacted in their minuteness the whole load of inheritance from one generation to the next. Our bodily structure, the color of our eyes, our immunity to disease—all except that which we gain from environment—were potential or inherent in the genes of our two parents. It has recently been estimated that if all the human sperm cells which are to be responsible for the two billion individuals who will constitute the next generation were gathered together they would occupy the space of half an aspirin tablet. If, of the corresponding egg cells, only the nuclei, which carry the stuff of life, be taken, they too would occupy the same space. It may be said, therefore, that the original and essential substance for the development of two billion individuals could be contained in a capsule no larger than an aspirin tablet.

Equally small in quantity and extremely powerful in their influence are the hormones, chemical regulators secreted by the ductless glands. A third classification in this list of the infinitesimal would be the enzymes, which constitute another important group in the chemical machinery of the body. Scientists in many countries are now exploring the functions of the hormones and enzymes; they are learning to identify and isolate them; and they are beginning, in some cases, to produce them synthetically.

In this whole area of the infinitesimal, experimental biology is faced with the necessity of doing quantitative analyses of an uncommon delicacy and accuracy. The microscope and ordinary chemical analyses are not enough. The exact techniques developed in studies of the inorganic are being adapted to the study of the organic. Micromanipulators enable operations to be performed within a single cell; protoplasm is being subjected to the terrific forces of the ultracentrifuge in order that information may be obtained as to its molecular structure; the penetrating eye of the spectroscope is being turned from the stars to the blood stream; even the skill developed in radio engineering is employed when science needs to raise infinitely weak energies to the perceptible level.

The problems in this field are complex and difficult, but there is evidence of definite headway. Balanced against this are many failures and disappointments. In this, perhaps even more than in other scientific fields, there is no easy path, no promise of immediate and revolutionary results. Medicine is not yet ready to describe an emotion in terms of a chemical reaction or prescribe a hormone for a mental state. Press announcements, simplified for the lay public, sometimes encourage an optimism which is unjustified. The problems involved in this field require patience and a long look ahead. They constitute a relatively new and important factor in man's struggle to become a rational animal.

During 1936, the Foundation gave assistance in an amount approximating $900,000 to work in many aspects of the field of experimental biology of the type just outlined. In this brief report, it is possible to mention only one group of grants, those in support of research into the nature and function of the endocrine or ductless glands.

Studies of the Ductless Glands

"We are what we are, bodily, mentally, sexually, emotionally, facially, largely through the balance or imbalance of certain secretions discharged in minute quantities into the blood by the ductless glands." This generalization, by an

eminent authority, outlines the field and something of the problem of endocrinology. Although certain phases of it were understood even by the early Romans, the modern study of the subject is about forty years old, and the greater part of the advance has been made in the last twenty years. The field, therefore, in comparison with other sciences relating to medicine, is relatively new and undeveloped.

All sorts of unanswered questions lie before the investigator. To what extent is old age determined by hormone factors? What could be done by hormone control to delay its approach or mitigate its effects? What effect does parathyroid deficiency have upon the amount and composition of the bile? Is our incapacity to cure childlessness in some cases due to an ignorance of endocrine factors? To what extent can the development of the brain be stimulated by hormone control? How far will we be able to modify character and habits through the application of the techniques of this new science?

In a recent report by a special committee of the National Research Council under the chairmanship of Dr. Walter B. Cannon of Harvard (prepared for The John and Mary R. Markle Foundation), the following experiment is described, bearing on the last question in the foregoing paragraph. A rat, at first completely

oblivious to offspring that may be offered to her for adoption, will, after a few injections of prolactin (a pituitary hormone), eagerly adopt and mother as many as may be placed in the cage with her. Her maternal yearning seems to become universal. She will cherish not only infants of her own species but baby mice, baby rabbits, or, indeed, even baby squabs. "For a healthy adult rat," says the report, "to do other than make a prompt meal of the proffered squab betokens a fundamental change in her disposition. What is the explanation of the change? The reacting organs are the same, the energy of the system is the same, yet the reaction is strikingly different. We seem to be introduced here to what may well prove to be a far-reaching biological principle that may be designated as 'chemical conditioning.'"

Of the twenty-seven grants given by The Rockefeller Foundation to workers in the field of endocrinology and operative during 1936, four may be mentioned for purposes of illustration. Three of them went respectively to the University of California, Harvard University, and the Philadelphia Institute for Medical Research, covering periods of from one to three years. At the University of California, a group has been working for a number of years on research centering upon the anterior pituitary, but including

also related problems in connection with other hormones and the vitamins. At Harvard University research work is being conducted on the sex hormones. Studies of the effect of extracts of the thymus and pineal glands upon growth are being carried on at the Philadelphia Institute for Medical Research.

Renewing a contribution which had been given annually for a number of years, the Foundation, in 1936, appropriated $75,000 to the National Research Council toward support of the work of its Committee for Research in Problems of Sex. These funds are, as in the past, allocated by the Committee to research projects which it will itself select. The Committee, made up of members of the faculties of Harvard, Rochester, Chicago, Johns Hopkins, and Yale Universities, represents varied approaches to the problem. Beginning work in 1920, it has demonstrated what careful planning can accomplish in a formerly undeveloped field of research.

In all this work, science is standing on the shore of a new continent. By and large, our knowledge of the control of hormone secretion is in a fragmentary state. What lies ahead, what secrets of human well-being may be discovered, what techniques for the shaping of human personality may be developed, only time and long patience can tell.

Science and Social Progress

When, at the end of 1928, the Laura Spelman Rockefeller Memorial was merged with The Rockefeller Foundation, the latter took over the work in the social sciences which for six years the Memorial had been developing. The Foundation thus assumed responsibility for a program considerably larger than it had been handling.

Work in the medical and natural sciences, even when pointed toward a fuller understanding of human behavior, leaves untouched possibilities of fundamental significance in the social realm. Natural science does not hold itself responsible for the intelligence or the capacity of those who apply its findings. Its discoveries are left on the doorstep of society with no directions as to how they are to be cared for. Under the urge perhaps of profit or of consumer desire, they just "happen," commonly without regard to social consequences; and the disequilibrium which ensues, as a result of the lag between the advance of science on the one hand and our faltering and haphazard methods of social adaptation on the other, is bringing the world face to face with questions far more ominous than any with which the race has hitherto been confronted. To sum up in Sir Alfred Ewing's words: "The command of Nature has been put into man's hand before he knows how to command himself."

Can the so-called social sciences be developed to play an effective part in this problem of social progress? What are the methods applicable in studying man in relation to his fellow man? Are there "laws" in human behavior which can be objectively established? Can we avoid in social studies the emotional interests and valuations which secretly, but powerfully, intervene in the processes of seemingly disinterested observation? Or—to put the question in a less ambitious fashion—in our studies of human behavior and social change, can we take over the aims and something of the mood of the natural sciences? With all their admitted inadequacies and handicaps, is it worth while to pursue the newer sciences that relate to society?

Ever since Herbert Spencer's day, these questions have received an emphatic affirmative answer from the world of scholarship. Economics, political science, sociology, anthropology, criminology—it is to research in subjects like these that increasing attention is being given. The difficulties of transferring the results of this research into everyday life are staggering; but unless we are to adopt a defeatist attitude and take the position that human intelligence is powerless to plan a more rational life for mankind, we are bound to support the attempt, faulty as it may be in many of its approaches,

to make knowledge available for social purposes.

In the six years during which the Laura Spelman Rockefeller Memorial was working in the field of the social sciences, roughly $21,000,000 was appropriated, a large part of which went for research purposes in connection with universities and special research centers. Since The Rockefeller Foundation took over the program in 1928, approximately $28,000,000 has been appropriated for the social sciences. The program of the Foundation today, however, represents an attempt at concentration. In order to avoid too wide a spreading of effort, the Foundation adopted in 1935 an approach which placed emphasis on the fields of social security, international relations, and public administration. The work in these areas is briefly discussed in the following paragraphs.

"Arrows of Outrageous Fortune"

The events of recent years have made dramatically vivid the enormous social losses involved in the fluctuations of modern business enterprise. Here are the underlying forces in which much of our physical suffering, illness, mental disorder, family disintegration, crime, political upheaval, and social instability have their origin. There is something fundamentally wrong with a society in which raw materials

exist in plenty, workers are more than ready to apply their productive capacities, adequate industrial plants and equipment are at hand, and yet enterprise is periodically halted and millions find themselves out of employment and unable to command the necessities of life. In these recurrent periods of general depression lie many of the most pressing problems of the present social order. In so far as some of the distressing phenomena—for example, unemployment—tend to become chronic in character, the need of constructive work becomes even more evident. The entire situation is so unmistakably one of maladjustment that the possibilities of ultimate remedy, or at least of some substantial degree of amelioration, seem promising. Certainly, the opportunities for scientific attack on the problem are clear.

There are obvious restrictions, of course, upon what a foundation can wisely do in a field of this kind. If it confines itself to the support of research, however, through agencies which have a recognized standing for detachment and objectivity, there is at least the possibility that it can stimulate the development of factual bases for the adaptations which social ideas and institutions must make in a changing world.

The Foundation's program in this field of social security has two main objectives:

a) Research directed to the description and measurement of cyclical and structural change and to the analysis of the causes of instability.

b) Research directed to the question of protection against the main hazards that confront the individual, such as sickness, accident, old age dependency, and unemployment.

The program thus aims at both prevention and protection. On the protective side, the Foundation has supported a special research committee of the Social Science Research Council. With respect to the preventive side, where patient, fundamental economic research is involved, the emphasis has been upon strong, well staffed organizations such as the National Bureau of Economic Research and the Brookings Institution in the United States, and the national research institutes in France, Belgium, the Netherlands, Norway, Austria, Sweden, Denmark, and Bulgaria. A coordinating center for European research is gradually developing in connection with the work of the Financial Section and the Economic Intelligence Service of the League of Nations and of the Graduate Institute of International Studies at Geneva, both of which have had Foundation support.

"Another Ice Age"

In a world like this, no foundation, working in the field of social progress, need explain its reasons for including a program in international relations. However great the difficulties or unpromising the outlook, the trustees would scarcely be justified in neglecting an area where understanding and intelligence may yet prove effective in warding off disaster. Such a disaster, if it comes, might easily make a mockery of all efforts for human welfare. Much that is being attempted to advance mankind in health and knowledge would be wrecked, and in Lord Bryce's arresting words, another ice age would settle down upon the human mind.

The work of the Foundation in this field of international relations has to do with the study and dissemination of information relating to the specific causes of friction between nations. While it is difficult to influence opinion in a realm where emotion and tradition rather than reason often predominate, the increase of public understanding is bound to be a helpful and perhaps determining factor. The program of the Foundation is directed toward (1) the support of the research activities of such organizations as the Institute of Pacific Relations and the International Studies Conference, organizations having an international membership and undertaking studies in

which the representatives of many nations cooperate; and (2) the support of national organizations, both academic and non-academic in character, which are contributing toward an intelligent comprehension of international affairs among large numbers of people.

In 1936, the Foundation appropriated approximately $250,000 for its program in international relations. Grants were made to the International Studies Conference with headquarters in Paris; the Royal Institute of International Affairs in London; the Council on Foreign Relations and the Foreign Policy Association in New York; the Geneva Research Centre; the Canadian Institute of International Affairs; the Library of International Relations in Chicago; and to other organizations and agencies of similar type.

Public Administration

Whatever analyses may be made of social problems and whatever insights may be gained into their underlying causes, actual social progress is vitally dependent upon the efficiency of performance of the functions of government. The rapidly increasing scope of governmental responsibility involves new alignments of administrative organizations, and demands new resources of intelligence and knowledge on the part of governmental agencies.

For a number of years, the Foundation made occasional appropriations in the general field of public administration. For example, it made grants to the Universities of Chicago, California, and Syracuse for research and training programs, and it contributed to the endowment of the National Institute of Public Administration which is associated with Columbia University. It provided, too, for the establishment of the Committee on Government Statistics and Information Services to advise upon the correlation and improvement of the work of the various Federal statistical offices.

These grants, however, were more or less isolated in character, and in 1935 the Foundation decided to make public administration a definite field of concentration as part of its interest in the social sciences. The approach is through the support not only of research projects but of training programs designed to promote the recruiting and education of better qualified government personnel.

Through the Public Administration Committee of the Social Science Research Council, an agency has been established to serve as a liaison between public officials and academic groups, and as a planning body and clearing house for those who are working upon public administration problems. This idea of bringing

together "mace and gown" has also been followed in local projects: for example, at the University of Virginia where both the faculty of the University and a number of state and local public officials are represented upon the body responsible for selecting and supervising research enterprises in the administrative field.

Since there is general recognition that effective public administration cannot be achieved without a personnel of high ability and sound training, the Foundation has supported a number of projects designed to offer advanced training not only to promising recruits for public service but to outstanding men and women already established in governmental positions. Perhaps the most interesting feature of the pre-entry training experiment is the incorporation of the "internship" principle under which periods of practical experience in a government office are combined with classroom work. A central agency has been established in Washington to develop "internship" opportunities, and to supervise the selection and activities of the "interns." This agency has received exceptionally cordial cooperation from both the Federal offices and the leading American colleges and universities.

In the support of this general program in public administration, the Foundation appropriated in 1936 approximately $350,000.

The Role of the Humanities

In any race with the sciences, the humanistic studies are a long way behind. Viewed without relation to the reasons which have led to this result, this is a strange phenomenon because for centuries the humanities had no competitors; they occupied in the universities of the world the whole field of knowledge. But the rise of science and the vast material expansion which has followed in its wake have tended to reduce everywhere the immediate importance of cultural studies. The world today is scientifically minded, and scholarship as well as popular taste has simply reflected the dominant forces of the time.

But men cannot live by comfort and convenience alone. Even if the social sciences were adequately developed and a substantial measure of intelligent control were introduced into the complex mechanism which the natural sciences have created, the total result, without the contributions to esthetic and cultural development which the humanities must make, would still be distorted and incomplete. In the long run, a civilization or a community is judged not by its factories but by its libraries and museums; not by the physical and material basis of its life but by its architecture, its schools, its music, its drama, and its general esthetic resources. We are not so much interested in the conveniences

which the Athenians possessed in 400 B.C.; what has held men spellbound for generations is the public attitude which made possible the matchless lines of the Parthenon.

In any attempt today, however, to give the humanities a better position in the race with science, difficulties are immediately encountered. One of the reasons for these difficulties is that humanistic research, certainly as it has been conducted in many of our universities, is often too cloistered, too isolated from contact with daily living. The effect of much of it has been confined to narrow circles, to limited numbers of highly specialized students. There is undoubted value for scholars in a dictionary of Indo-European synonyms and in an exegetical commentary on the fourth book of Virgil's Aeneid—and the Foundation in earlier years contributed to both these items and to many others like them. But this kind of work gives us facts and not necessarily followers. In this mechanized age, something more than this is needed, some method by which the esthetic and spiritual meanings of human life can be interpreted over wider areas.

Without in any degree underestimating the significance of specialized research in the development of the humanities, the Foundation, in 1934, decided to put greater emphasis upon the attempt to bring the results of humanistic

study from books, seminars, and museums more directly into the current of modern life. If we should ask ourselves what forces today are largely instrumental in determining esthetic values, surely one of the first answers would be the radio and the moving picture. Another answer would relate to libraries, museums, and orchestras. A third might include the development of drama as a form of expression. A fourth would probably be the work which many of our schools are carrying on in handicrafts, painting, and modeling. And there would undoubtedly be other answers. It is influences like these that are shaping the cultural values of the coming generation.

An experimental approach to this problem of popular appreciation seems to the Foundation worth making, as part of its program in the humanities. When some future archeologist digs down through the crust of our civilization, it would be a sad reflection on our sense of balance and proportion if he had to report that ours was a day of steel and speed and material comforts, and of some measure of social control, but with only faint traces of esthetic appreciation.

The Program in the Humanities

A modest experimental beginning has been made by the Foundation looking toward the

improvement of radio programs. For example, in 1936, $40,000 was appropriated to the World Wide Broadcasting Foundation for trial work in the development of radio programs of cultural and educational value. Similar appropriations have been made to other agencies. Through special studies, experiments are also under way to determine whether radio audiences are not prepared for far better programs than they customarily receive. Moreover, with Foundation support, an effort is being made to bring the radio industry and the universities into closer understanding and cooperation. The results of these various approaches, while promising, are still too tentative to admit of any definite conclusions.

In the motion picture field an interesting experiment may be recorded. To the Museum of Modern Art in New York, the Foundation appropriated $120,000 to enable its motion picture department to establish a library of films. The department, in its task, has secured the cooperation of commercial producers, both here and abroad. A card index of all films of interest produced since 1889, both American and foreign, has been compiled; and the most important of these films are being secured, as rapidly as possible, for permanent preservation. From its collections, the motion picture department has prepared representative programs for non-profit

showing by colleges, museums, and local organizations. In addition to its films, the library is collecting books and periodicals, musical scores and other information relating to motion pictures, and is prepared to act as a clearing house in the subject. In experiments like this, it is possible that a public consciousness may be created of the ways in which motion pictures are effective, and thus, in general, a more discriminating attitude may be developed toward motion picture content.

Work in the promotion of non-professional drama during 1936 has been supported at Cornell University, Northwestern University, Yale University, Leland Stanford, Jr., University, and in the State of Washington under the State Board of Education.

Activities are also being undertaken in the extension of library facilities, both here and abroad. Considerable support has been given to the development of microphotography as the most promising method of preserving copies of the quantities of material required by scholars who work with rare books, documents, manuscripts, and newspaper files.

"East is East"

Kipling's dictum that East and West can never meet is based not only upon almost in-

superable language barriers but upon fundamental differences in racial traits, habits, and institutions. In the physical unity of the world which the new methods of communication and transportation have created, these intellectual and psychical divergencies must be met by a wider and more sympathetic understanding if friction and conflict are to be avoided. Physical propinquity is not enough. Unless it goes hand in hand with knowledge, based on interest, it will breed more difficulties than it cures.

The Foundation has attempted, through its work in the humanities, to meet this need and opportunity by promoting the teaching of Oriental languages, history, art, and political economy in American universities. During 1936, for example, a grant was made to Pomona College, California, for the development of courses on Japanese life and institutions. Another appropriation was made to Princeton University for instruction in Far Eastern subjects in the School of Public and International Affairs. Aid was given to the Institute for Advanced Study located at Princeton toward the purchase of the Gest Chinese Research Library. Next to the Chinese collection of the Library of Congress, this is the largest collection outside of China and Japan. To the University of California, a grant was made for the development of Russian lan-

guage seminars. A command of this language has become increasingly necessary to students of Far Eastern affairs. Similar grants were made in 1934 to the Institute of Pacific Relations for seminars at Harvard and Columbia Universities. At the Library of Congress, work is continuing under a grant from the Foundation to give advanced students, who have had at least two years' residence in the Orient, an opportunity to carry on individual programs of study under Chinese and Japanese instructors.

To the University of Chicago, an appropriation was made in 1936 for the support of a five-year program of intensive investigation of methods of teaching Chinese to Western students, with a secondary object of developing a suitable series of textbooks. Similarly, the Institute of Pacific Relations received a grant for a three-year experiment in cooperation with Yale University. In general, the aim at Yale is the mastery of the modern colloquial Chinese language, while the work at the University of Chicago has for its purpose the preparation of the scholar for historical research in both ancient and contemporary documents written in classical Chinese.

To balance the effort on this side of the Pacific, the Foundation is giving support to the teaching of English in the Orient, and more particularly in China where English is already officially a

second language. There are many disadvantages in connection with the translation into Chinese of advanced Western scientific and technical terms alien to the spirit and modes of thought inherent in the Chinese language. These locutions, torn out of their English context, are apt to remain unassimilated and meaningless. There are obvious advantages to be gained by approaching a science through a language in which it has developed, if methods of learning that language can be simplified.

In 1936, the Foundation made a grant to the Orthological Institute in China for preparing a series of books for Chinese readers in what is called Basic English. In recent years, the Orthological Institute in London, of which the above organization is a branch, has received aid from the Foundation in support of language research work. The purpose of the Orthological Institute, with headquarters in Cambridge and London, is to devise a means of simplifying international communication through the use of English, which is already the natural language, or the language of the governments, of more than 500,000,000 persons. After careful research, a vocabulary of 850 words from ordinary English has been chosen; and with this as a base, there is excellent promise that methods of teaching will be developed which will quickly give stu-

dents in China and elsewhere in the Orient sufficient command of the language to put them in touch with Western forms of thought.

If through activities of this kind, East and West can be helped to meet on a basis of knowledge and understanding, then it would seem as if there were a brighter hope, at least in the area of the Pacific, for friendly relations. Certainly, this knowledge and understanding will in the long run enrich the intellectual and cultural life on both sides of the ocean.

Appropriations by the Foundation in 1936 in the field of the humanities outlined in the two foregoing sections approximated $665,000. In addition, a final appropriation of $2,000,000 was made to the Oriental Institute of the University of Chicago, an enterprise to which in the last ten years, the Foundation, the General Education Board, and the International Education Board have contributed roughly $10,000,000.

The Foundation and China

The interest of the Foundation in China runs back to 1913, the year the Foundation was established. One of the first steps taken after the organization meeting was the sending of a commission to China to study medical needs. Out of this beginning grew both the China Medical Board, Inc., to which the Foundation has given

over $14,500,000, and the Peiping Union Medical College, toward the building and support of which the Foundation has thus far contributed roughly $18,000,000.

But there are needs in China other than those relating to medical education. In her evolution into a modern state, China is bound by few hampering traditions, and the plastic condition of her life and institutions at the present moment is an inviting challenge to a positive kind of service.

In 1934, therefore, the Foundation appropriated a million dollars for expenditure over a three-year period for a program of rural reconstruction and for the correlation of the Foundation's existing medical program with public health work. This represents a regional or geographic endeavor, and consequently differs from activities of the Foundation carried on under specialized headings.

China today stands on the threshold of a renaissance. The Chinese National Government, together with many provincial and county authorities and private organizations, are attempting to make over a medieval society in terms of modern knowledge. In this endeavor, the condition of the Chinese farmer, who constitutes 85 per cent of the population, is easily the crucial issue. The per capita income in the rural parts

of China which have been investigated approximates $10 per year. Figures for the United States (1929) published by the Brookings Institution indicate that the lowest per capita annual income of the farm population in this country was $137 (in Tennessee), and that the average per capita farm income for the four lowest states was $150. Any program for rural reconstruction in China has to be realistically based. It would be a disservice to China to create in a rural region an organization which, although desirable from an ideal point of view, would be obviously beyond the financial possibilities of the local population. China is, therefore, driven to the hard necessity of developing a program involving local government, security, education, livelihood, and public health, which can be supported with the meager existing resources.

In this work the Foundation has attempted to be of practical assistance at certain strategic points. Appropriations have been made to the Chinese Mass Education Movement which, under the direction of Y. C. James Yen, created an important experimental program in rural reconstruction in China. Grants have been given also to Yenching University and Nankai University, the ultimate object of which is the training of men and women for administrative posts in rural work. Similarly appropriations have

been made to the Department of Agricultural Economics at the University of Nanking, which represents one of the strongest activities in this field in the country. Assistance was also given to the Department of Animal Husbandry and Veterinary Medicine of the National Central University and to the National Agricultural Research Bureau.

In the field of public health, financial assistance has been given to the National Health Administration for public health training, and to the Ministry of Education toward the expenses of its Commission on Medical Education. The grants are being used chiefly to extend and intensify the educational courses which are now being given under government auspices in order to meet the growing demand for trained public health personnel, such as medical officers of health, public health nurses, and sanitary inspectors.

In addition to these specific grants, an extensive program of Chinese fellowships has been initiated. Assistance is thus given to promising men and women who are trained for careers in the rural and public health field. To date, something more than $150,000 has been appropriated for this special purpose.

The impact of Western civilization upon the East is not without the possibility of grave dan-

ger. The gifts of our industrial life, if indiscriminately accepted, may do incalculable damage. A high degree of selection is called for if China and her neighbors are to preserve without contamination their own great civilizations. But Western medicine and sanitation and perhaps the inductive methods of Western science do seem to offer unchallengeable means for promoting the well-being of mankind around the world. With their aid, and with the knowledge of the mistakes which our industrial civilization has made, China in her evolution may avoid some of the distressing difficulties which have come to us, and may thus make a unique contribution to the future, a contribution which the ability and high quality of her people seem clearly to promise.

Training for Leadership

Knowledge is a commodity against which the world has raised few customs barriers. Since civilization began, there has been a constantly increasing international traffic not only in goods, but in ideas. The migration of students in the Middle Ages carried the spark of learning from one country to another. With the exception of those countries where an exaggerated nationalism has raised insuperable barriers, knowledge still travels the highroads of the world.

The Foundation has always been interested in encouraging this transmission of ideas and this interchange of experience from one country to another. Since 1915, the Foundation (together with the former International Education Board and Laura Spelman Rockefeller Memorial) has expended about $19,000,000 on fellowships, largely international, in various fields. Over 5,500 individuals have thus received fellowships. These men and women represent a group who have obtained, in so far as it has been humanly possible to devise it, the best training open to them anywhere in the world at the time when that training was most useful. In almost every case, they now occupy the posts for which their fellowship experience was intended to equip them. As a group, although scattered throughout the world, they have had a common experience; spiritually, if not linguistically, they speak a common language. Although not the primary purpose of the fellowship program, one of its important by-products has been its tangible contribution to international understanding.

The award of fellowships on an international basis constitutes in the Foundation the most important single device for the training of competent personnel for future leadership. It is an investment in brains. It is a gamble, if you will, with promising talent. It is an attempt to under-

write at least a portion of the future of scientific thinking. In addition to the fellowships awarded directly by the Foundation, funds are also appropriated to various representative national agencies, such as the National Research Council, the Social Science Research Council, and the American Council of Learned Societies, to be expended for fellowships which these councils themselves award. In general, the fellowships supported by the Foundation are limited to those students who have finished their graduate work and have had several years of practical experience in their chosen fields. The initial application does not come from the candidate himself, but from his superior who has had an opportunity to gauge his work. One of the usual conditions of the fellowship is the assurance that a post will be waiting for the candidate in his native country upon his return. The Foundation guards carefully against the danger of allowing the fellowship experience to expatriate the fellow.

As one reviews the history of the men and women who over the last twenty years have received fellowships from the Foundation, the record appears most gratifying. Today, they are occupying positions of importance and distinction in nearly every country of the world. They are on university faculties; they are connected with research laboratories; they hold strategic

governmental positions; they are carrying on significant and productive work in wide fields of knowledge. Some of them, indeed, have gained outstanding recognition, such as the award of the Nobel prize. It would be idle to assume, of course, that their leadership and their contribution to scientific thought are the results solely of their fellowship experience. Doubtless, many of them would have gained eminence without this experience, or would have obtained the experience in other ways. But it is a satisfaction to record the subsequent success of highly promising men and women, picked largely from the younger generation, to whom the Foundation is proud to have been of some assistance.

During the year 1936, directly and indirectly, the Foundation, with the cooperation of the General Education Board, supported a total of approximately 700 fellowships at a total cost of roughly $1,210,000.

Of the total number of fellowships in 1936, 504 were awarded directly. The fields represented by these fellowships were as follows: public health, 202; medical sciences, 77; natural sciences, 89; humanities, 52; social sciences, 84. The other fellowships active during 1936 were awarded by other agencies. The National Research Council was responsible for 91; the American Council of Learned Societies for 15; the

Social Science Research Council for 26; the Peiping Union Medical College for 14 for foreign study; the Medical Research Council, London, for 6; and the American School of Classical Studies at Athens for 13.

Scholars in Exile

In the fall of 1936, with the financial assistance of the Foundation, there was published in London a book of 125 pages entitled *List of Displaced German Scholars*. This book is probably unique in academic history. It contains the names of 1,639 men who, in 1932, were German citizens holding positions as teachers and research workers in institutions throughout Germany. Some, although dismissed from their posts, are still resident in their native land. The majority of them are exiles in other countries. The list includes Nobel prize winners and other men of international repute and distinction. Over sixty academic disciplines are represented in the specialties of those listed, among which might be mentioned such varied subjects as anthropology, architecture, bacteriology, biology, chemistry, economics, engineering, forensic medicine, history, hygiene, law, mathematics, medicine, neurology, pathology, philology, philosophy, physics, physiology, sociology, surgery, and zoology.

The list includes the names of many Jewish scholars, of scholars with Jewish antecedents, in some cases remote, and of scholars connected with Jews by marriage. It also includes a considerable number of scholars who, in the German definition of the term, are pure "Aryans," but whose convictions make them unacceptable to the present German Government.

Of the total number of scholars listed, 835 had, at the time the report was issued, found positions in the academic and scientific institutions of other lands. Of these, 432 appear to have obtained permanent positions. The exiled scholars are scattered in 46 different countries.

The expulsion of German scholars was followed by the organization of national committees in a large number of countries. Through the efforts of these and other interested groups, positions, some temporary, some permanent, have been found for many scholars in universities and research institutions throughout the world. Because of its interest in the continuance of important scientific work, the Foundation has been glad to assist in these efforts. Since 1933, dealing only with universities and research institutions, the Foundation has, in response to their requests, contributed toward the salaries of those deposed scholars for whom there seemed a strong probability of permanent employment.

At the end of 1936, the Foundation had, under this program, granted a total of $532,181 on behalf of 151 individual scholars, the great majority of whom have found permanent posts in the countries of their adoption. This has involved Foundation aid to institutions in 11 countries.

Applications for Aid

In 1936, the Foundation was obliged to decline 920 of the applications for aid which it received, inasmuch as the type of assistance requested therein did not fall within the scope of the activities of the organization as determined by its present policies. The Foundation does not make gifts or loans to individuals, or finance patents or altruistic movements involving private profit, or contribute to the building or maintenance of churches, hospitals, or other local institutions, or support campaigns to influence public opinion on any social or political questions, no matter how important or disinterested these questions may be.

The applications declined during 1936 may be classified under the following headings: research projects, 270; local institutions (including hospitals, libraries, churches, museums), 229; development of educational institutions and projects, 130; publications, 75; public health proj-

ects, 24; cures, remedies, and investigations of theories, 74; and miscellaneous, 118. This list does not include many tentative requests made to the central office and to staff officers in the field, or a large number of requests for personal aid and fellowships.

REPORT OF THE SECRETARY

SECRETARY'S REPORT

The members and trustees of The Rockefeller Foundation during 1936 were:

John D. Rockefeller, Jr., *Chairman*

Winthrop W. Aldrich	Max Mason[1]
John W. Davis	Thomas I. Parkinson
Lewis W. Douglas	John D. Rockefeller, 3rd
John Foster Dulles	Walter W. Stewart
Raymond B. Fosdick	Harold H. Swift
Walter S. Gifford	George H. Whipple
Jerome D. Greene	Ray Lyman Wilbur
Ernest M. Hopkins	Owen D. Young

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

The President, *Chairman*

Lewis W. Douglas	Jerome D. Greene
John Foster Dulles	Thomas I. Parkinson
Raymond B. Fosdick	John D. Rockefeller, 3rd

Walter W. Stewart

The officers of the Foundation were:

John D. Rockefeller, Jr.	*Chairman, Board of Trustees*
Max Mason	*President*[1]
Raymond B. Fosdick	*President*[2]
Thomas B. Appleget	*Vice-President*
Selskar M. Gunn	*Vice-President*
Alan Gregg, M.D.	*Director for the Medical Sciences*
Warren Weaver	*Director for the Natural Sciences*
Edmund E. Day	*Director for the Social Sciences*
David H. Stevens	*Director for the Humanities*
W. A. Sawyer, M.D.	*Director, International Health Division*
Norma S. Thompson	*Secretary*
Lefferts M. Dashiell	*Treasurer*
George J. Beal	*Comptroller*
Thomas M. Debevoise	*Counsel*
Chauncey Belknap	*Associate Counsel*

[1] Retired July 1, 1936.
[2] From July 1, 1936.

The following served as scientific directors of the International Health Division of the Foundation during 1936:

Rufus Cole, M.D., *Chairman*
Albert J. Chesley, M.D. Waller S. Leathers, M.D.
John G. FitzGerald, M.D. Eugene L. Opie, M.D.
Thomas Parran, Jr., M.D.
The Director of the Division, *Secretary*

Meetings

Regular meetings of The Rockefeller Foundation were held on April 15 and December 16, 1936. Seven 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 Account of the Foundation for the year 1936 and a statement of its Principal Fund are given below.

Summary of Appropriations Account

Funds Available		*Funds Appropriated*	
Balance from 1935..	$3,435,472	Appropriations:	
Income during 1936.	9,497,685	Public health.....	$2,460,000
Transferred from Principal Fund in accordance with resolution of the trustees of December 16, 1936..	2,200,000	Medical sciences..	1,623,750
		Natural sciences..	1,370,350
		Social sciences....	1,581,550
		Humanities.....	3,073,416
		China program...	342,540
		Miscellaneous....	65,000

Unexpended balances of appropriations allowed to lapse and refunds on prior year grants.....	$1,115,828	Administration...	$815,517
			$11,332,123
		Authorizations for later appropriations by the Executive Committee.....	985,377
			$12,317,500
		Balance: Available for appropriation in 1937.....	3,931,485
	$16,248,985		$16,248,985

Principal Fund

Book value as of December 31, 1935.....	$153,659,942	
Add:		
The unused balance of a grant returned to principal fund.....	500,000	$154,159,942
Deduct:		
Amounts withdrawn from principal in accordance with resolutions of the trustees, as follows:		
April 15, 1936, for transfer to Contingent Projects Account.....	$500,000	
December 16, 1936, for transfer to Appropriations Account.....	2,200,000	2,700,000
Principal Fund as of December 31, 1936.....		$151,459,942

INTERNATIONAL HEALTH DIVISION

CONTENTS

INTERNATIONAL HEALTH DIVISION

Public Health Program in 1936

The activities of the International Health Division of The Rockefeller Foundation concern the field of public health. This is the only division of the Foundation which is organized as an operative agency. Its staff is composed of a Director, two Associate Directors, three Assistant Directors, and sixty-eight staff members, many of whom are assigned to duties in foreign countries.

During 1936 the program of The Rockefeller Foundation in public health proceeded along the principal lines laid down in former years. Concentrated work in connection with the investigation and the control of certain diseases went forward on all fronts. As general procedure, field work, chiefly studies of diseases in their natural surroundings, was supported, strengthened, and guided by investigative work in field or central laboratories with the use of modern scientific methods. Aid to state and local health services and efforts in behalf of public health education were continued.

In connection with two diseases, scarlet fever and influenza, which were added to the program

a short time ago, reports of promising initial work are coming in. Investigations of other diseases, in which the International Health Division has in most cases been engaged for a number of years, made progress during the year. Among these are yellow fever, malaria, hookworm disease, schistosomiasis, tuberculosis, and yaws.

In public health education, an important role is played by schools and institutes of hygiene, and to many of these institutions the Foundation has at various times given support. In the United States, in Japan, and in ten countries of Europe, namely, Bulgaria, Czechoslovakia, Denmark, Hungary, Italy, Norway, Poland, Rumania, Turkey, Yugoslavia, it has cooperated in the creation of such institutions. When the history of public health education in the Old World comes to be written, it seems likely that the schools and institutes of hygiene will bulk large, both in significance and in importance. It has been widely recognized that these schools, now carried on in nearly every case by government effort, are making a valuable contribution to present-day public health in Europe.

If these institutions were to be classified as to their efficiency and value, the classification would in no wise follow size of institution or excellence of equipment. Superiority would instead be much more likely to be correlated directly

with the competence and the enlightenment of the men chosen to direct the institutions. The importance of this human element has always been recognized by the International Health Division, which has awarded fellowships and travel grants to a large number of men who subsequently have been appointed by their governments to responsible positions in the technical and administrative branches of schools and institutes of hygiene.

These institutions were conceived and brought to fruition by the health departments and not by schools of medicine, although it would have been logical for them to have developed from university chairs of hygiene. It is characteristic of hygiene institutes in Europe that they are manned in considerable part by individuals imbued with the ideals of preventive medicine, and supported by government departments that recognize the value of specialization and competence in public health. In general they follow an enlightened program of administrative and investigational work. They are not only administrative centers, but also schools and laboratories.

The Role of the Laboratory in Public Health Work

Laboratories such as those mentioned above are not solely devoted to research work. They

have wide duties of coordination, training of personnel, and maintenance of high standards in the official public health services of the countries concerned. The laboratories maintained by the International Health Division in connection with its world-wide program are, on the other hand, strictly research institutes, only incidentally used to provide training for staff members, but primarily occupied in the investigation of scientific problems connected with the field work.

The importance of such laboratory work is brought out by the experience of the International Health Division in its yellow fever work. This work would never have progressed, either in revealing new and dangerous aspects of the disease or in gradually perfecting the safeguard of vaccination, if it had not been for the strong reliance placed on laboratory technique. From the beginning of its yellow fever work, The Rockefeller Foundation has maintained laboratory activities in close contact with the field work. From 1925 to 1932 it operated a central yellow fever laboratory at Lagos, Nigeria. In recent years laboratories have been maintained at Bahia and Rio de Janeiro, Brazil, and in New York City.

In order to study an infectious disease thoroughly, it is necessary that the infectious agent be continuously available and that it be main-

tained under the type of control which it is possible to exercise only in a laboratory. In the study of diseases caused by bacteria, the causative agents can be grown in an artificial culture medium. For the maintenance of viruses such as the one responsible for yellow fever, which fail to grow on dead matter, living animal tissues are necessary, hence the importance of laboratory animals in yellow fever studies. After the initial work done in connection with yellow fever by the United States Army Commission under Walter Reed in 1900–1901, little progress was made in the investigation of that disease until 1927, when an animal was found which could be infected with yellow fever in the laboratory.

Although there were many years of futile attempts before such an animal was found and the virus of yellow fever was definitely established in the laboratory, today it is known that there is a wide variety of animals susceptible to the disease. The most susceptible of these is the Asiatic monkey, *Macacus rhesus*. Next comes the *Macacus cynomolgus*, but among this species there seem to be a number of individuals that are totally refractory. In addition to the Asiatic monkeys, there are several species of African and South American monkeys in which a multiplication of the virus takes place with or without fever, but this is seldom followed by death. It has

recently been shown, also, that European hedgehogs can be infected in the laboratory, with a resulting high mortality. Shortly after the virus was established in monkeys, Dr. Max Theiler, then at the Harvard Medical School, succeeded in transmitting the infection to white mice.

It had long been known that an attack of yellow fever leaves a high degree of immunity which lasts over a considerable period of time. With the discovery of susceptible animals, this finding was confirmed. Early experiments showed that persons who had had yellow fever from thirty to seventy years before still harbored substances in their blood which were capable of protecting susceptible animals against yellow fever virus. Use was made of this fact to locate permanent endemic areas of the disease in Africa and South America. In the early work in this field, monkeys were used, but the scope of the investigations was limited because of the excessive cost of these animals. In the meantime, surmounting many difficulties, a successful method was worked out which made possible the use of mice for epidemiological studies and for extensive surveys.

Based on this laboratory technique, a survey of the world for yellow fever immunity in man has been carried on during the past five years by the International Health Division, with the co-

operation of the many governments concerned. The surveys of Africa and South America produced evidence of a much wider distribution of yellow fever than had been suspected. Details on the findings in Africa, and preliminary data on immunity in South America have been published in previous annual reports of The Rockefeller Foundation. During 1936 there was published in the medical press information obtained in the yellow fever immunity survey of parts of the world other than Africa and South America. These investigations covered as many countries as seemed necessary to determine the general boundaries between the recently infected and non-infected regions, and to show where intensive local surveys were required.

In addition to this method of obtaining information on the presence of yellow fever, now or in the past, another method has been developed which is based on the fact that yellow fever in man does much damage to the liver. In fatal cases a histopathological examination of the liver alone is frequently sufficient to establish positive or negative diagnosis of yellow fever. For the difficult conditions such as exist in rural areas in Brazil, where medical personnel is often not available to perform an autopsy when a fatal suspect case occurs and thus obtain a full set of tissues for examination, an instrument known as

a viscerotome was developed by the Yellow Fever Service. With this instrument a small portion of liver can be removed from a cadaver without an autopsy. The specimen thus removed is placed in a fixative and sent to the laboratory for examination. The viscerotome service is now so organized that in all cases in which death was preceded by acute fever a piece of liver tissue is removed by the local official who issues the burial permit. Up to the present time over 60,000 liver specimens have been examined at the laboratories in Rio de Janeiro and Bahia.

When specimens showing pathological lesions suggestive of yellow fever are received at the laboratory from localities in rural areas, members of the field staff go into those localities and make a careful study of the conditions prevailing, and of any clinical cases that may occur there. If any of the persons examined show symptoms resembling those of yellow fever, blood is taken for intracerebral inoculation into mice for the purpose of isolating the virus. In addition, specimens of blood are taken from persons who have recently recovered from attacks of illness of a suspicious nature, and their sera are tested for yellow fever immunity.

It was by these procedures that frank cases of yellow fever were found and strains of virus isolated in rural areas where the inhabitants lived

in widely scattered farmhouses with little communication among them, and where there were no stegomyia mosquitoes, and even no mosquitoes of any kind. In other words, it was shown that yellow fever exists in the South American jungles, with an epidemiology that does not fit in with our past knowledge of the disease, which was based on information and data obtained in cities and densely populated areas. This has opened up a very broad and immensely difficult problem for study and it may be some time before there is full clarity in the picture of the so-called jungle yellow fever.

Control and Investigation of Specific Diseases

Yellow Fever Vaccination

Another field in which the laboratory has played a decisive part in the yellow fever problem is that of vaccination. Shortly after a susceptible animal was discovered in the rhesus monkey, there were a number of accidental infections among laboratory workers which, terminating fatally, caused a severe loss to medical science. A study was undertaken almost immediately to devise means by which the infectious agent could be so controlled as not to cause a severe infection when injected but still render the subject immune to further attacks. Various physical and chemical means were employed for

the purpose of attenuating the virus, but these failed to produce the desired results.

It was early noticed that when monkeys were given immune serum followed by an injection of virulent yellow fever virus, the animals showed no reaction and were subsequently immune to the disease. This fact was utilized for human immunization. In the early studies of vaccination, human immune serum and a modified virus from mice were used. The required amount of serum to be given was determined in monkeys on the basis of body weight, and a corresponding amount in terms of cubic centimeters per kilogram was given to the person being vaccinated, followed several hours later with an injection of living virus. Reactions following this procedure have usually been absent or slight. There are data to show that the active immunity resulting from such vaccination lasts at least for several years, during which time the presence of the protective bodies in the blood can be experimentally demonstrated.

The vaccination of persons against yellow fever by the staff of the laboratories of the International Health Division began in 1931 and has progressed in three stages. The first, which lasted from May 1931 to January 1935, and employed the technique described above, accomplished its immediate purpose of preventing further cases of

yellow fever among investigators. It was not practicable for large-scale use in yellow fever control on account of the difficulty in obtaining and administering the necessary amount of immune serum. Research was therefore persistently directed toward the production of a strain of yellow fever virus that could be used safely without immune serum. As a result, the second or intermediate stage was reached in March 1935, when a beginning was made in vaccinating persons with a virus strain modified by prolonged propagation in tissue culture. This strain was still not sufficiently low in virulence to permit its use without immune serum. The threshold of the third stage has now been reached through further modification of virus strains by cultivation in tissues, an essentially time-consuming procedure. On November 30, 1936, it became possible to use a modified virus strain of exceedingly low virulence, without previously injecting immune serum. It is hoped that this will make it feasible to apply active immunization to a much greater number of persons than was heretofore possible.

Studies on the Nature of Viruses

The group of infectious agents known as the filtrable viruses has aroused much interest in recent years. A great deal is known regarding their harmful effect upon a susceptible host,

whether plant, animal, or man. Nothing is known, however, of their exact nature. A fundamental study of the physical nature of viruses is exceedingly difficult. They do not exist in nature in a pure and concentrated form but are always associated with a large amount of protein matter originating from the host which they attack. They are strictly parasitic and propagate only upon living cells. Separation of viruses from the protein with which they are associated is very difficult, as most viruses are labile and easily inactivated by the chemical processes involved in such separation. No chemical or physical test is known by which the presence of a virus in a given material can be detected except by its specific action on a susceptible host.

Another reason why so little is known about this extremely important group of disease-producing agents is the lack of suitable methods and apparatus for their study. Through the ultrafiltration work undertaken in 1933 and carried on since, a considerable amount of information has been added to our knowledge regarding the particle size of viruses. It is known that their sizes vary from the relatively large globoid particles of the vaccinia virus, which are on the border line of microscopic resolution, down to very small particles, such as the viruses of yellow fever, poliomyelitis, and foot-and-mouth dis-

Photograph Excised Here

A "doctor" of the Carajá tribe, in the State of Goyaz, Brazil, being examined by a member of the staff of the Cooperative Yellow Fever Service during a survey which led to the discovery of the presence of jungle yellow fever in a large area of the State.

Photograph Excised Here

Isolated Brazilian farm where cases of yellow fever occurred. The forest in the background, where the infection is believed to have been acquired, is typical of the wooded regions in which jungle yellow fever is contracted.

ease. The particle diameter of the last two viruses is smaller than that of some protein molecules.

During the past three years much time has been spent also in developing high speed centrifuges which could be used with advantage in the study of viruses. The construction of a high speed vacuum centrifuge was completed early in 1936 in which the concentration and purification of even the smallest viruses are possible. It is driven by compressed air and has been operated at a speed of 30,000 revolutions per minute. It has been successfully employed for the concentration of yellow fever virus, and can be used for the concentration and purification of the smallest filtrable viruses now known.

It was considered as the most promising approach for the study of viruses to consider them, for practical convenience, as living protein molecules, and to attempt to apply to their study the techniques, with certain modifications, developed in the field of physical chemistry. Professor Svedberg of the University of Uppsala, in a study of protein chemistry during the past fifteen years, has worked out a method by which exact information regarding the physical properties of protein molecules can be obtained by ultracentrifugal analysis. After the viruses have been obtained in purified and concentrated form, it is

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[illegible] The Foundation is cooperating in a [illegible]

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hoped that much can be learned regarding their physical nature from the study of their sedimentation characteristics in the intense centrifugal field. Accordingly, a considerable amount of research has been carried out with a view to developing an air-driven molecular ultracentrifuge suitable for the study of viruses. Toward the end of the year this centrifuge was nearly completed. The rotating part of the instrument is provided with a transparent quartz cell in which the sedimentation velocity of the material studied is recorded photographically while the centrifuge is running. The centrifuge has been run repeatedly at a speed of 60,000 revolutions a minute, and a centrifugal force of 260,000 times gravity has been obtained in the cell. It is hoped that this ultracentrifuge will be an important tool for research, not only in the study of viruses but also in protein chemistry in general.

Some progress was made during the year in devising chemical procedures for the separation of the yellow fever virus from the associated protein without inactivating the virus itself. Virus-containing materials such as blood or tissues from infected animals were desiccated in the frozen state, fat was extracted by ether or petroleum ether, and separation of the various protein constituents from the virus was accomplished by fractional precipitation with satu-

rated solutions of different salts. After most of the proteins were removed, the virus suspension was rendered salt-free by quick dialysis. The results indicate that yellow fever virus, although extremely labile under ordinary conditions, is relatively stable when kept in an anhydrous condition such as obtains in ether mixtures or saturated salt solutions. The final product, which shows only traces of protein by ordinary chemical tests, has lost a relatively small portion of active virus during the process. In its final stage it is highly diluted, but can be easily concentrated in the high speed vacuum centrifuge mentioned above.

Influenza Studies

Influenza studies which had been carried on during the two previous years by the Rockefeller Institute for Medical Research were taken over by the International Health Division of The Rockefeller Foundation at the beginning of 1936. Four members of the International Health Division staff devoted their entire time to these studies. A number of fundamental problems, chiefly relating to the characteristics of the virus of epidemic influenza, were investigated during the year.

Shortly after this work was begun epidemics of influenza were reported in various parts of the

United States. Circular letters were sent to the health officers of the states asking them to forward for laboratory investigation nasal washings from patients reported to have influenza. Areas in California, Mississippi, Missouri, and New York State where epidemics were occurring were visited by the laboratory staff and material was collected for study.

A large number of specimens of throat washings were obtained in the California epidemic, and attempts were made to isolate the virus by injecting this material into ferrets and mice. In no instance was influenza virus isolated. Tests with material from the Mississippi and Missouri epidemics gave similar results. It was concluded that although clinically the epidemics were considered to be influenza, the causative agent apparently did not give the disease to ferrets and mice and appeared to be different from the virus known in the literature as influenza virus.

Toward the end of the year a considerable number of cases diagnosed as influenza occurred in and around New York City. Epidemics were also reported in several other states. From the nasal washings of patients in various hospitals of New York City, as well as from autopsy material from fatal cases, a number of strains of influenza virus were isolated. These appeared to be the same as the so-called standard strains of

epidemic influenza virus previously isolated in such variously situated places as Puerto Rico, Philadelphia, and Alaska.

Scarlet Fever

A broad epidemiological study of scarlet fever was initiated during 1936 in Rumania, where conditions are favorable for the study of this disease. Interest centers upon factors producing epidemics, methods of spread, and development of control procedures.

Early in January of this year, Jassy, in the Province of Moldavia, was chosen as the center of the main study area. By March 1 laboratory work was under way, and in April field work was started. By the middle of the year laboratory headquarters were established in the Institute of Hygiene and Public Health of the University of Jassy, equipment was installed, personnel was trained, the immediate program was agreed upon, preliminary surveys were made, and areas were chosen for fixed study stations. The work under way during 1936 may be divided broadly into field program, laboratory program, hospital program, and statistical studies.

Three fixed study stations were selected, consisting of from one to three villages, each of about 1,000 inhabitants. By midsummer actual studies were under way. All families were investi-

gated for streptococcal diseases in an effort to relate such infections to the production of scarlet fever epidemics. The laboratory program embraced a variety of technical work, including the study of hemolytic streptococci from the throats of normal persons and scarlet fever patients for the purpose of classifying the organisms by types.

Studies were started in September at the Jassy Isolation Hospital with a view to establishing the actual clinical nature of scarlet fever as it exists in Rumania, ascertaining the causes of the high case fatality, and determining the effect of hemolytic streptococcus antitoxin in treatment of early cases. Statistical studies were also undertaken in cooperation with the National Institute of Demography, which has been compiling data on all fatal cases of scarlet fever during the past five years.

Yaws

Yaws is a disfiguring and disabling disease prevalent in warm countries. It is caused by an organism closely related to the spirochete of syphilis, and it is cured by the same drugs as syphilis. However, syphilis seems to be worldwide in its distribution, whereas yaws is limited to countries with tropical climates. Syphilis is a venereal disease; yaws is not. Yaws is acquired

mainly in childhood before the age of fifteen, and is transmitted by contact.

Yaws might conceivably be controlled in one of three ways. Susceptible individuals might be immunized. In yellow fever work much effort has been expended on perfecting an immunizing vaccine. At present there is no vaccine against yaws. Secondly, transmission might be interrupted. There has been some indication that a small fly called *Hippelates pallipes* might have something to do with yaws transmission. Such transmission in nature has not been proved. But even if these flies did mechanically transmit the disease, and if they could be controlled, the disease would still also be transmitted by contact. The third way in which yaws might be controlled is by treatment, and this is the method used in the yaws campaign in Jamaica with which the Foundation has been associated. By a comparatively simple form of treatment the individual can be rendered non-infectious. Such treatment relieves suffering and cuts down the source of infection.

In Jamaica yaws has been a serious public health problem for many years. The Foundation has cooperated with the Jamaican Government in a study of the disease for the purpose of finding the most practical way of controlling it in the colony. A yaws survey of the entire island has been made. Demonstration and treatment

units have conducted intensive work in several areas, and considerable research has been done. Control work has been successful in that it has been found possible to reduce yaws by at least 80 per cent. The Foundation's aid to this work was drawing to a close in 1936, and will be continued by the Jamaican Government.

Syphilis

Toward the end of 1936 the Foundation began cooperation with the Johns Hopkins University in a study of syphilis. The University has received, through the Maryland State Department of Health, a grant from funds allocated by the United States Public Health Service under the provisions of the Social Security Act. These funds are to be used to stimulate research and improve teaching facilities in the field of syphilis. The Foundation has been cooperating with the Johns Hopkins University School of Hygiene and Public Health in the development of a health district in the city of Baltimore. The district serves as a practice field for students in public health. The School has undertaken epidemiological studies of syphilis in this area, and the Foundation has assigned a staff member to assist in the investigations. Further aspects of the work include laboratory studies and the teaching of syphilis control to public health students.

Schistosomiasis

For some years the Foundation has cooperated with the Egyptian Government in studies aiming at the control of schistosomiasis, a disease caused by the liver fluke, and a serious public health problem in Egypt. This work was continued in 1936. The organism which causes the disease is carried by snails frequenting the numerous canals used in irrigation. Much research has been done on the life cycles of these snails for the purpose of arriving at a practical method of attacking the disease. To determine the effectiveness of canal clearance as a control measure alternate canals were cleared of weeds, plant refuse, snails, and ooze at two-month intervals, and others were left undisturbed for comparison. Surveys were made before clearance, during clearance, and after clearance, and snail reduction was found to be significant and gratifying. Clearance of canals is therefore proposed as a prime factor in any scheme for the control of human schistosomiasis in Egypt. It is efficient and inexpensive, and can be done satisfactorily by the ordinary workman.

Studies of Smallpox Vaccine

The Foundation has cooperated with the Tennessee State Health Department, and with the Department of Pathology of Vanderbilt University, in research on the preparation of small-

pox vaccine virus in embryo chicks within the egg. The efficacy of this new and simplified method of preparing smallpox vaccine has been subjected to close study. A study of the cultivation of the virus in chick embryo in the egg, or minced in tissue culture in flasks, was conducted in Spain at the smallpox vaccination laboratory of the National Institute of Hygiene with Foundation support. This work is directed by a former International Health Division fellow. Attention is centered on the large-scale production of the new embryo chick smallpox vaccine.

Rabies

During 1936 a rabies study was undertaken in Alabama in which the Foundation acted jointly with the State Department of Health. The rabies situation is serious in Alabama. Although control of rabies through vaccination of dogs has been attempted in certain large cities, and although there has been agitation to enact a state-wide compulsory dog vaccination law in Alabama, it is not generally believed that the disease can be controlled by this measure alone in the present state of our knowledge of rabies. Before an efficient control program can be instituted, more must be learned about the epidemiology of the disease and the production of immunity in man and animals. It is hoped that

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Children assembled for treatment at a yaws clinic, Skibo, Jamaica.

X-ray examination for the diagnosis of tuberculosis, Rønne, Denmark.

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The house-to-house antityphoid inoculation clinic of the Cuernavaca (Mexico) health unit at work.

some of the recent knowledge obtained in connection with the study of other virus diseases may be put to use in developing simpler methods of rabies control.

Hookworm Disease

The only country in which the Foundation is at present still cooperating directly in the control of hookworm disease is Egypt, where studies in the improvement of sanitation, especially by means of the bored-hole latrine, were continued during 1936. It is estimated that of the fifteen million inhabitants of Egypt, twelve million live under rural conditions and in small villages. Data from extensive examinations with regard to the presence of hookworm disease show that whereas this infestation is widespread, the individual worm burden is, as a rule, extremely low. In Egypt, as elsewhere, the prime emphasis in hookworm control has been on gradual improvement of methods of sanitation.

Diphtheria

For a number of years the Foundation has taken part in diphtheria studies in the Eisenstadt District of Austria. Accounts of this work have been given in former International Health Division annual reports. A grant was made in 1936 toward the completion of the study. Satisfactory

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Paving a drain with half tiles as an antimalaria measure at Puerto Cabello, Venezuela.

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Educational work in connection with the malaria survey of Oriente Province, Cuba. This traveling motion picture unit visits all parts of the province to exhibit films on malaria.

methods of diphtheria immunization have now been worked out for the district.

The Foundation is also giving support to an epidemiological study of diphtheria combined with an immunization program in the Peiping Health Demonstration Area in China. An attempt is being made to determine the cheapest and best method of protection against diphtheria in that part of the world. This field study is being conducted under the auspices of the Peiping Union Medical College. A rural study is being coordinated with the study in Peiping. The main objectives of this work are to demonstrate through actual field study the value of active immunization against diphtheria, and to find out the most suitable agent of immunization.

Tuberculosis

Tuberculosis studies were conducted with Foundation cooperation in 1936 in the United States, Denmark, Austria, and Jamaica. Cooperation in the United States included participation in a study of the epidemiology of the disease which is being carried out in the tuberculosis clinic of the New York Hospital and Cornell University Medical College. Information is sought concerning the frequency and mode of spread of tuberculosis in an urban population, with special reference to the progress of the dis-

ease in families. The foremost aim is to determine the success of segregation, nursing care, and other measures that may influence the spread of the disease. Another aim of these studies is to compare various procedures that have been proposed for protective inoculation, to test them under a variety of conditions, and to find improved methods of applying them. Support is also being given to studies of the epidemiology of tuberculosis in two rural communities in the United States, one in Williamson County, Tennessee, and the other in Lee County, Alabama. These investigations have been undertaken in order to determine the frequency, character, and mode of spread of tuberculosis in the areas and to find what procedures are best adapted to the control of the disease under conditions which exist in rural communities in the Southern United States. The studies are under the direction of the health departments of the two states.

Laboratory studies conducted at the Cornell University Medical College have led to the preparation of material for protective inoculations against tuberculosis in Jamaica. In Jamaica the high incidence of tuberculosis in the Mental Hospital of Kingston has offered the opportunity to test measures for its prevention. The use of tubercle bacilli killed by heat, as a means of in-

creasing resistance to grave infection, is under investigation at this hospital. Important work is being done at the Stony Hill Industrial School, Kingston, where an attempt is made to study the efficacy of the above-mentioned vaccine. These studies have been going on for a number of years with Foundation aid, and a considerable amount of information has been collected. An official report has not yet been issued. Further Foundation aid to tuberculosis work in Jamaica includes the establishment of a traveling x-ray unit for diagnostic purposes, which was taken over for complete operation by the government on June 30, 1936, and a demonstration of rural public health nursing in the parish of Manchester, with special emphasis on tuberculosis work. Valuable information has been gained from extensive tuberculosis surveys in Jamaica completed a short time ago. Results of these investigations have been published in former International Health Division annual reports.

During 1936 the Foundation continued to cooperate in tuberculosis work in Eisenstadt, Austria. This included the operation of a tuberculosis dispensary and the making of school and family surveys. Three hundred families came under observation during the year.

The support which the Foundation has given for several years to the State Serum Institute of

Denmark for field and laboratory research in various diseases, including tuberculosis, was terminated at the close of 1936. Work against tuberculosis has been carried on energetically in Denmark for thirty years. Recent studies have centered about the question: At what age do human beings become infected with tuberculosis? It was supposed that practically everybody was infected in childhood, but investigations in Norway and Sweden have shown that this is no longer the case. Another aim of recent studies has been to try to find the sources of the infecting tubercle bacilli, whether human or bovine. The State Serum Institute aided in this research by performing type determination of the tubercle bacilli as a routine measure of examination in the case of all sputum or other specimens received for examination for tuberculosis. Investigations have resulted in a thorough trying out of a definite technique of tuberculin test, the establishment and testing of a purified tuberculin, and a demonstration that yearly examinations of school children are both feasible and of practical value.

Malaria

In the field of malaria the Foundation has kept in mind that varied approach is not only desirable but necessary in dealing with this dis-

ease. Malaria is carried by many different types of anopheline mosquitoes, which vary in their breeding habits and in the types of localities they frequent, and which must be attacked in different ways. Moreover, malaria encircles the globe, and occurs among people living under vastly dissimilar conditions. The manner in which the disease is controlled in each community must be adapted to the habits, understanding, and economic resources of that community. During 1936 the Foundation cooperated in malaria work in the United States and in nineteen foreign countries.

Some of the most valuable early discoveries on malaria transmission were made many years ago in studies of malaria in birds. Research in avian and simian malaria has continued to be important, and the Foundation is supporting work in both of these aspects of malariology. Laboratory work of this type at the University of Chicago is receiving aid. Similar work aimed at clearing up important technical points in connection with malaria is being conducted at the Laboratories of the International Health Division in New York City.

Both at these Laboratories and at the Station for Malaria Research of the Florida State Department of Health, with which the Foundation is cooperating, research is being done on malaria

induced in man as a therapeutic measure in other diseases. In paresis and other serious nervous and mental diseases of the same nature, malaria is used to bring about cures or improvements. In this induced malaria it becomes important to have on hand an adequate supply of infected mosquitoes. Much work has been done, therefore, in connection with the artificial breeding of mosquitoes. During 1936 there was completed a study of the use of one particular type of malaria parasite (*Plasmodium vivax*) in the inoculation of mental patients. A comparison of results in patients inoculated with the parasite through mosquito bites with those in patients infected by blood inoculation indicated that a better effect was obtained by the former method.

Studies in connection with the treatment of paretics with induced monkey malaria were begun. As there is no known vector or parasite of monkey malaria in this country, the possibility that patients might serve as a potential source of infection for mosquitoes at a later date was thus considered eliminated.

By far the major part of the Foundation's work in malaria, however, concerns research and control efforts carried out in cooperation with communal and governmental authorities in many parts of the world. In Italy in 1936 it contributed to the malaria laboratory of the Institute of

Public Health, Rome, the malaria therapeutic laboratory in the Sant' Onofrio Insane Asylum, a school for practical instruction in malaria control in Fiumicino, and field stations for the study and control of malaria in Porto Torres, Sardinia, in Fiumicino at the mouth of the Tiber, and at Zapponeta in the Province of Foggia, South Italy. As the Foundation, following its usual policy, is preparing to withdraw from financial participation in these various activities by diminishing its contribution from year to year, the government is coming to their support with annual grants.

In the work in Italy an attempt has been made to solve the engrossing problem encountered not only in that country, but in many parts of Europe, of anophelines without malaria. Throughout Europe one type of mosquito, *Anopheles maculipennis*, was held chiefly responsible for the spread of malaria, yet there were many places on the Continent where this mosquito abounded and where there was no malaria. Studies indicated that the anopheline mosquitoes in these non-malarious areas had little or no contact with man. This was determined by examining the blood taken from thousands of mosquito stomachs and identifying the species of animal from which the blood had been drawn. This led to the hypothesis that the ano-

phelines in these places had a preference for animal blood, and that there were probably two biological races of *Anopheles maculipennis*, one a man biter, and the other predominantly a cattle feeder. In the absence of any physical difference between these two types, the theory found little acceptance. A search was instituted for an identification mark between these different races of *Anopheles maculipennis*. Finally the solution appeared where it was least expected, namely, in the complicated and varied patterns of the mosquito eggs. Certain patterns of eggs were always missing in malaria-free areas. It turned out that these missing egg patterns belonged to the man biters, and that the *Maculipennis* mosquito of Europe was not a homologous species, but divided into seven or more races or subspecies, all looking precisely alike, but laying different kinds of eggs. This clarified the whole malaria picture, both in Italy and in other European countries.

These diverse races of *Anopheles maculipennis* choose different types of surface water in which to lay their eggs. Some prefer marshes, some rivers, and some brackish water along the coast. It became possible to sharpen the attack on malaria by directing it against the dangerous forms of mosquitoes, ignoring the others entirely. The new light thrown on the subject of mosquito

classification, therefore, led to important practical results. Recent investigations in many parts of the world show that the same condition holds for other widespread *Anopheles* species that carry malaria; that is, certain species other than *Anopheles maculipennis* may also not be homologous, but may consist of different races with different life habits, all of which must be studied to make the attack on malaria more efficacious.

Malaria work similar in nature to that done in Italy has also been extensively carried out in Albania, where the emphasis has been on drainage projects, and in Germany, where particular attention has been paid to mosquito research.

With Foundation aid an extensive malaria survey has been made in the island of Cyprus. It was found that the topography of the island determines in a striking manner the breeding places of the *Anopheles* vector. The chief malaria carriers breed, for the most part, in the mountain streams which abound in the island. A less important carrier breeds in marshes. The ultimate measure for control of the dangerous type of mosquito would be permanent channeling and tiling of streams. Treatment of streams with Paris green mixed with dust is also being tried out. Use is likewise being made of kerosene spread rapidly on the streams in the form of a

fine spray. It has been of prime importance to find out just where and how the dangerous mosquitoes in Cyprus breed, because this makes possible effective methods aiming at their elimination.

The close of 1936 saw the conclusion of seven years of malaria work in Greece. This work consisted of extensive field surveys combined with laboratory investigation. Sixty-nine cities and villages selected in 1933 as samples of the important topographical regions of the country were resurveyed each year. Activities aimed at destroying the larvae of mosquitoes were carried on intensively at a number of stations for the purpose of demonstrating how this work could best be done. Many well known antimalaria measures were carefully tested. These included application of Paris green-kerosene mixtures, distribution of small larva-eating fish, and careful experiments in the use of screening.

In Bulgaria the Foundation has contributed for a number of years to experiments conducted at Petritch in the southwestern part of the country and at Plovdiv in the central part, in connection with the problem of malaria control in the rice fields. At Petritch attention has been given to the prevention of mosquito breeding by intermittent irrigation. At Plovdiv the work in 1936 consisted of investigating the possibilities

of mechanical distribution of Paris green in the rice fields.

In Portugal cooperative experiments on intermittent drainage for the control of mosquito breeding in rice fields are being conducted with the aid of the Director of the Agricultural Experiment Station in Coimbra. In this country all serious malaria occurs where rice is produced, and there is accordingly urgent need for finding some method of controlling rice field anopheline production.

In Spain a malaria control project in which the Foundation has assisted has been in operation since 1931 at Campo Lugar. Results up to the time of the revolution indicated that this project would be successful. Because of hostilities the antilarval work was halted. Within a month an outbreak of malaria swept the town. Thus the results of five years of work were lost.

In Cuba a Malaria Commission has been established as a division of the Secretariat of Health and Welfare to carry on malaria work which the government has undertaken with the assistance of The Rockefeller Foundation. Its program embraces a general malaria survey of the island and a demonstration in malaria control in the municipality of Marianao, which adjoins Havana on the west. The survey was begun in July 1936, and by the end of the year

investigations had been completed in the municipality of Bayamo and at Manzanillo and had been started in the large municipality of Holguin. The demonstration in Marianao, begun in August 1935, was continued through 1936, with emphasis upon permanent and semipermanent measures of anopheline control involving drainage and other sanitary engineering work. Contour maps have been made of the entire county of Marianao. Extensive mosquito breeding occurs in the Almendares River Valley section, which is utilized for small truck farms maintained by artificial irrigation, and which contains many lakes and pools. Elimination of crops grown in water has brought about a striking reduction in mosquito prevalence.

Considerable malaria work in which the Foundation has participated has been done in Puerto Rico. The study of the malaria mortality statistics of the island for the past twenty-five years indicates that there have been more or less regular periods of low mortality followed by periods of high mortality. The period 1934 to 1936 represents a downward swing, and the good results obtained may not be due entirely to the antimalarial measures which have been undertaken in various typical areas. In addition to mosquito control campaigns, experiments in screening houses have been conducted and spe-

cial studies have been made of the blood preference, human or animal, of some of the malaria-carrying mosquitoes. Work has also been done with the use of native fish which it is hoped will assist in reducing the algae mats which are one of the main causes of mosquito breeding. The various types of malaria work in Puerto Rico are under the direction of a Malaria Bureau which has been established as a section of the Health Department. The work of this Bureau, as organized at present, consists in handling outbreaks of malaria by the distribution of quinine, in conducting antimosquito campaigns and drainage operations, and in carrying out special studies to increase knowledge of malaria and improve methods of control. Studies have been made of the distribution of the disease on the island and the factors underlying this distribution, of the efficacy and limitations of chemotherapy and larvicides, and of the value of minor drainage methods as well as major drainage projects, which incidentally also increase the crops. These studies have been carried on at Fajardo, Patillas, San German, and Salinas. In the development of malaria work in Puerto Rico, local personnel including medical directors, engineers, entomologists, technicians, and inspectors have been trained.

During 1936 the Foundation cooperated with

the Republic of Panama in certain public health activities, including antimalaria work in seven typical areas. Systematic studies were organized to test the efficiency of drainage in malaria reduction. The emphasis was on paved-ditch and subsoil drainage.

A survey of malaria was made in Lower Egypt in August 1936. Malaria parasite indexes of varying magnitudes were found in every one of the twenty localities investigated. They were highest in localities in or near rice plantations and in the proximity of large lakes.

The Madras Presidency in India has been chosen as a suitable locality for malaria investigations in the East. Headquarters have been established at the King Institute of Preventive Medicine in Guindy, which is seven miles south of Madras city. Laboratory investigations of simian malaria have been undertaken, and field work includes anopheline studies and a survey of the many wells in this area, which would come under consideration as mosquito breeding places in any campaign for malaria control.

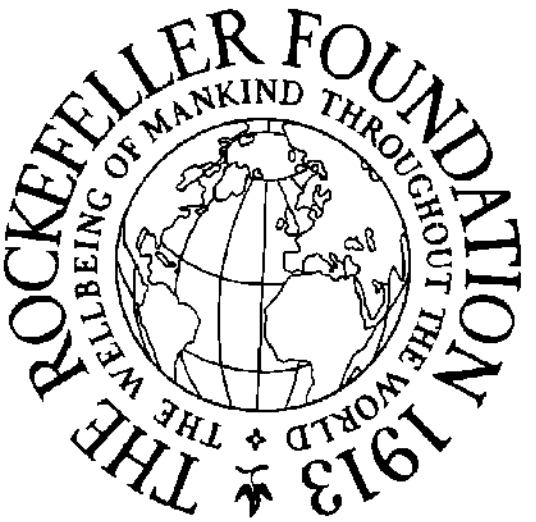
Aid to State and Local Health Services

United States, Canada, and Mexico

During 1936 the Foundation, through its International Health Division, entered into cooperative agreements with a number of state or

provincial governments in the United States, Canada, and Mexico for the purpose of aiding their central and local health services. Funds to the amount of $64,308 were provided, which sum represents approximately 20 per cent of the total budgets for the various projects involved. Typical of the aid to central health services is that given to the central public health administration of Maryland for fact-finding surveys of four representative county health departments and of the State Department of Health, and analysis of the data furnished by these surveys for the use of a committee appointed by the State Planning Commission to formulate recommendations. When this task has been completed the State Director of Health will have before him a plan to guide him in the future development of health work in Maryland.

In Canada aid was given to health activities in the Province of Quebec concerned with industrial hygiene and the hygiene of nutrition. The Provincial Bureau of Health in Quebec has established a Division of Industrial Hygiene which is developing a program for the reduction of mortality and morbidity rates among adults and the improvement of their general health level by means of the prevention and control of occupational diseases and the sanitation of industrial establishments. This Bureau has also



Photograph Excised Here

Weighing babies at a health center in Batavia, Java.

Photograph Excised Here

Health center in Istanbul, Turkey

established a Division of Hygiene of Nutrition to promote the maintenance or the improvement of the health of the population by an adequate diet and the observance of modern scientific rules of hygiene susceptible of favoring good nutrition in the population generally, and especially in pregnant women, nursing mothers, and growing children.

In Mexico the central health office was given aid to enable it to coordinate and supervise the various public health projects to which the Foundation is contributing in the country. The problem of expanding the Foundation's public health program in Mexico to include intensive work for malaria control is under consideration.

Aid to local health department projects was given in Maryland, Massachusetts, and New York State, in the United States; in the provinces of Alberta, British Columbia, Manitoba, Nova Scotia, and Ontario, in Canada; and in the states of Vera Cruz and Oaxaca and the Federal District, in Mexico.

The aid given in the State of Maryland concerns the Eastern Health District of Baltimore, which has a population of over 60,000 within an area of less than one square mile. This District surrounds the Johns Hopkins University School of Hygiene and Public Health. The Director of the District is associate professor in the Depart-

Photograph Excised Here

A public health nurse of the Philippine Islands on a round of home visits.

ment of Public Health Administration of the School. The various health and welfare agencies of the District have been coordinated into a decentralized urban health unit supplying a model health service to the District, and at the same time serving as an area for the training of students of the School of Hygiene and Public Health in the practical application of public health procedures. A somewhat similar procedure is followed in Massachusetts, where the Harvard School of Public Health has a field training unit in Newton, which has a population of approximately 70,000 and transportation facilities which make it accessible from the School of Public Health in only a few minutes.

In Canada a typical cooperative project concerns the Greater Vancouver Metropolitan Health District in British Columbia. Vancouver is an important seaport for Western Canada, with a population of 246,000. A plan was recently inaugurated to integrate the health activities of the major part of the Metropolitan Health District. The new organization provides for three divisions of service, a central administration, special or technical services, and decentralized health services. Official and non-official organizations engaged in public health work are being correlated as to function, so as to operate

as a unified organization under the direction of a senior medical health officer, who is selected by, and is responsible to, the metropolitan Board of Health.

In Mexico Foundation aid has been directed toward the establishment of full-time rural health units. Five of these were assisted during 1936. These health units were located at Tierra Blanca, Minatitlan, and Puerto Mexico, in the State of Vera Cruz; at Xochimilco in the Federal District; and at Tuxtepec in the State of Oaxaca.

Europe, Africa, and the Near East

In 1936 the Foundation aided state and local health services in Belgium, Hungary, Poland, Egypt, Greece, Turkey, Austria, Albania, Rumania, and Spain. A staff member was lent to assist in a general survey of public health service in Belgium. Hungary was likewise given aid in connection with reorganization problems in its public health service. Various sanitary engineering projects received aid in Egypt, Greece, and Turkey. In the last-named country special attention was given to the establishment of courses in sanitary engineering in the Institute and School of Hygiene at Ankara. District public health work was aided in the Province of Burgenland, Austria, and in Poland.

Local health departments received aid at selected centers in Albania, Greece, Hungary, Rumania, Spain, and Turkey. The work done in Tirana, Albania, and in the Ambelokipi section of Athens, Greece, is representative. The Tirana Health Center is making special effort to combat the high infant mortality of this region. Sick children are treated in the Division of Child Hygiene of the Health Center. Public lectures on child hygiene are given and home visits made by the doctor and the public health nurse. The total number of consultations in the Division of Child Hygiene was 7,038. The Health Center is notified of all newborn babies by the municipality. Thereupon the visiting nurses call upon the mothers to give advice. The milk center distributed 13,553 kilograms of milk during 1936. All families to whom milk is given free bring in their babies for consultation at least once a fortnight.

The Ambelokipi Health Center in Athens, which began to function in September 1935, was made possible through the support of the city of Athens, the School of Hygiene of the Ministry of Health, and The Rockefeller Foundation. It is a general cooperative project in which most of the health agencies, public and private, are participating. It is intended to be a model health organization of the city of Athens and the School of Hygiene. The following clinics are in opera-

tion: prenatal, infant, preschool, dental hygiene, tuberculosis, syphilis, and vaccination. Between 11,000 and 12,000 home visits were made by public health nurses during 1936 and the last three months of 1935. The Health Center serves also as a training school for health personnel.

Central America, South America, and the Caribbean Area

Public health laboratories were aided in Costa Rica, Puerto Rico, and Colombia. The Foundation provided the services of a sanitary engineer to assist in various sanitation projects in the Caribbean area, Central America, and certain parts of South America. Local health units were aided in Cuba, Guatemala, Costa Rica, Nicaragua, and Panama.

In Panama financial and administrative aid was given to the full-time health unit at Chitre, which is about 150 miles from the city of Panama. This unit functions in a manner similar to that of a full-time county health department. It serves an area of about 300 square miles, with nine towns and a population of 28,000. The control and training of midwives has been one of its noteworthy public health contributions. A rural teaching unit has been established at La Chorrera, about twenty-one miles from the Canal. There are about 800 families in this town and a considerable rural population in the surrounding

districts. This unit will be used to provide suitable rural public health field experience for student nurses at Santo Tomas Hospital in the city of Panama, all of whom are taught public health nursing as a part of their undergraduate training. A trained health officer, formerly in charge of the Chitre unit, will direct the La Chorrera unit.

In Cuba the government is organizing in Marianao an administrative health unit to be used as a teaching center for health workers in all parts of the island. In addition to its emphasis on malaria work, this health unit is active in connection with soil sanitation, prevention of soil pollution diseases, prenatal and child hygiene, registration of vital statistics, and public health education.

The East

An important rural health unit and training center in India is located at Mysore. This unit serves three useful purposes. It is intended to supply the State of Mysore with a modern, efficient health service, producing maximum results in the public and the individual health of the people concerned. It serves as a model unit in which methods, personnel, and budgets can be worked out for the establishment of similar services for other areas of the State. It is a center

for practical field experience in various types of public health work under expert supervision. The Foundation is contributing to this health unit as well as to a similar administrative health unit in Delhi, the purpose of which is to inaugurate sound rural health work of all types in a selected portion of that province.

In the Netherlands Indies a local health unit at Poerwokerto, Java, is receiving Foundation support. Much time has recently been given at this center to the preparation of plans for the opening of a new training school for health visitors which will play an important part in the development of the work. A further activity concerns the improvement of midwifery. The program of this unit includes general administration of health work; registration of vital statistics; prevention of soil and water pollution; prenatal, puerperal, and infant hygiene; school hygiene; inspection of food shops, markets, and drinking water; vaccinations; and special work in such diseases as yaws and hookworm.

Public Health Education

Schools and Institutes of Hygiene

Mention has been made in the first section of this report of the important role played in the public health services of Europe by the various

schools and institutes of hygiene. In 1936 two of these, one at Bucharest, Rumania, and the other at Sofia, Bulgaria, received aid from the Foundation for building and equipment. The one at Bucharest is still under construction, and the one at Sofia has been completed and will be ready for occupancy during the first semester of 1937.

Developmental aid was continued during the year to schools and institutes of hygiene at Ankara, Athens, Budapest, Rome, Warsaw, and Zagreb. In the new School of Hygiene at Ankara, Turkey, a first course for provincial officers of health was inaugurated on November 2, 1936. The Institute of Hygiene at Athens is stressing certain new activities related to public health nursing, improved vital statistics, and the development of plans for the establishment of health centers. The Institute of Hygiene at Budapest has received increasing government support, so that Foundation aid to its budget now amounts to less than 8 per cent. A diploma from the School of Public Health connected with this Institute is now required of any one applying for the post of public health officer.

In Italy the importance of the results achieved by the Malaria Experiment Station led to the incorporation of that institution with a group of

public health laboratories which, with Foundation aid, have acquired a new building and are now functioning as the Institute of Public Health. The malaria laboratory of this Institute has now broadened its studies to cover the entire field of medical parasitology. The publication of a journal of parasitology is planned.

Aid was continued to the Division of Mental Hygiene of the School of Hygiene at Warsaw, Poland. With a program oriented in every respect toward preventive work, this Division has established close relations with various societies of psychiatry, neurology, psychology, and eugenics in Warsaw. The program has recently expanded to include work among backward and problem school children. A course is given for nurses and instructors in mental hygiene.

The Institute and School of Hygiene at Zagreb, Yugoslavia, which has received both regular and emergency aid from the Foundation, has been expanding its teaching and public health education features. In this field and in sanitation the Institute has put through a program of sustained effort which is bringing practical results.

Schools of Nursing

At various places in Europe and in the United States and Canada, the Foundation is giving aid to institutions engaged in the teaching of public

health nurses. Funds were granted at the request of the Florence Nightingale International Foundation to make possible a survey of facilities for advanced nursing education in London. The survey was completed in 1936. Plans for the new building of the Bucharest School of Nursing were being perfected toward the end of 1936, and it was proposed to start construction in the spring of 1937. The School for Nurses in Public Health and Social Welfare at Prague, Czechoslovakia, was officially opened March 7, 1936. The Foundation is helping to defray maintenance costs.

The Department of Nursing and Health of the University of British Columbia, Canada, received Foundation aid for stabilizing and improving the course in public health given at the University. A grant was made to Western Reserve University, Cleveland, Ohio, in connection with the activities of the University District for Public Health Nurse Training. The District serves as a practice field in public health nursing for both graduate and undergraduate nurse students. Voluntary health agencies and the Cleveland Health Department cooperate in this District, and all public health nursing functions are under unified control and direction. A capital grant of $200,000 was authorized for the School of Nursing at Vanderbilt University, Nashville, Tennessee. A previous grant of $500,000 was

made to this School in 1934. The purpose of these grants was to aid Vanderbilt University in its experiment in establishing a school of nursing offering a new and different educational program. This program aims to integrate public health nursing in the nursing course of study so that students will receive the best possible preparation for meeting the nursing needs of the modern community effectually and adequately. This School of Nursing is operated exclusively as an educational unit rather than as a revenue-bearing or service unit.

Fellowships

In the field of public health the Foundation, through its International Health Division, administered 202 fellowships in 1936. The grants represent the continuation of a program going back as far as 1917, aimed at raising the standards of public health personnel through widely distributed fellowships for postgraduate training in public health subjects. These fellowships are granted only on the condition that the recipients will be appointed to posts in the public health services of their own countries upon completion of the fellowships. The number of public health fellowships granted since the inauguration of this program, from 1917 to 1936, inclusive, was 1268.

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[1] Appointed June 13, 1936.
[2] Resigned December 31, 1936.
[3] Assigned to China Program.
[4] Died June 2, 1936.

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[1] Resigned September 30, 1936.

THE MEDICAL SCIENCES

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THE MEDICAL SCIENCES

Since 1929 the interest of The Rockefeller Foundation in furthering the medical sciences has turned to the advancement of medical knowledge through aid to research. Development of this program brought increasing evidence that the most backward branch of medicine, and the one most in need of further development in practically every country, was that of mental and nervous diseases. The program of aid to this field has accordingly been receiving increasing emphasis, so that in 1936 the chief objective of the program in the medical sciences was assistance to teaching and research in psychiatry and allied subjects, including neurology, neurophysiology, and neuroanatomy, infections involving the nervous system, and certain related studies in human genetics. A secondary aim was to further teaching of preventive medicine and public health in medical schools.

Total appropriations for projects in the medical sciences amounted to $1,623,750 in 1936, of which $702,050 was devoted to psychiatry and allied subjects, $112,000 to the teaching of preventive medicine and public health, $130,000 to fellowships, $110,000 to small grants in aid,

and $569,700 to projects of the former program (principally to the China Medical Board, Inc., for maintenance of the Peiping Union Medical College).

The aid given in psychiatry has been of various types covering different avenues of approach to the general problem. In 1936 appropriations were made for the development of a number of psychiatric clinics and university departments of psychiatry or neurology; for the general diffusion of information on psychiatry and the improvement of psychiatric hospital service; and for research. Research projects receiving aid included, among investigations of many other problems of psychiatry and neurology, studies in child psychiatry and delinquency; studies of viruses affecting the nervous system, especially the virus of poliomyelitis; the role played by inheritance in the causation of mental disease and defect; studies of conditioned reflexes; and the interrelation of emotional and mental states with physical diseases and disabilities.

Teaching and Research in Psychiatry

Harvard Medical School and the Massachusetts General Hospital

The Harvard Medical School and the Massachusetts General Hospital have cooperated in establishing a psychiatric unit especially organ-

ized both for training medical students and for conducting research in psychiatry. In 1936 this project entered the third year of its experimental period, and the Foundation made its third annual grant toward the support of the work; this amounted to $78,000, of which Harvard received $48,000 and the Massachusetts General Hospital, $30,000. The unit has a small psychiatric ward, outpatient facilities, and special laboratories where neuropathological and neurophysiological techniques can be employed in connection with general medicine and biochemistry. The project, directed by Dr. Stanley Cobb, professor of neuropathology at the Harvard Medical School, represents an attempt to link psychiatry to the rest of medicine, to direct the interest of medical students to psychiatry, and to increase the recognition of the value of the psychiatric approach by clinicians heretofore depending principally on the established physiological and pathological point of view.

University of Illinois College of Medicine
Department of Psychiatry

A plan to teach psychiatry so as to inculcate in medical students the disposition to see in a patient not merely a disease or defect of some organ or system of organs, but a person, a "total organism," to whom should be applied all of the

medical disciplines, including psychiatry, was evolved in 1936 in the College of Medicine of the University of Illinois, under Dr. H. Douglas Singer, head of the Department of Psychiatry. The plan provided that the instruction should be given as a general, rather than as a separate and special, topic as far as possible, and that a special teacher, a physiologist working in close association with the Department of Psychiatry, should devote his entire time to teaching and research in the physiology of the organism as a whole. The Foundation appropriated to the University of Illinois for this project $45,000 to be used over a period of three years.

Tulane University School of Medicine
Subdepartment of Psychiatry

In 1936 the Foundation accepted an opportunity to aid in developing the teaching of psychiatry at Tulane University in New Orleans. The medical schools in the South feel the need of developing psychiatry to an extent which will provide a sufficient number of qualified men in this subject to meet the demand. The authorities at Tulane secured an able psychiatrist, a former pupil of Dr. Adolf Meyer of the Johns Hopkins University, to direct the work. The University has access to the facilities of the City Hospital for the Insane and hopes to increase its teaching

beds at the Touro Infirmary. The authorities of the University hope that the work begun with Foundation aid will arouse local interest in the great need for the teaching of psychiatry in that part of the country especially, and will make possible the development of an important contribution to this subject by Tulane University. The Foundation granted $24,000 over three years toward the total budget of a subdepartment of psychiatry.

National Committee for Mental Hygiene
Division of Mental Hospital Service

While the National Committee for Mental Hygiene does not of itself do research work or teach medical students, its efforts to promote these activities, and particularly its work in educating the public in the importance of psychiatry and mental hygiene, are well known. The Foundation appropriated $45,000 in 1936 toward the general budget of the Committee for three years, 1937, 1938, and 1939, in continuance of previous aid given by the Foundation and the General Education Board since 1915. The Foundation also cooperated with the Committee in establishing a Division of Mental Hospital Service, which will conduct surveys and intensive studies in states where opportunities are presented for the raising of standards for the treatment and care

of mental hospital patients and where there is a reasonable expectation of achieving definite results. Particular attention will be paid to geographically strategic centers which exert an influence upon surrounding areas. Although surveys have been made by the Committee in the past, the new Division will proceed from a somewhat different standpoint. An important aspect of the project will be the working out of practical standards which an institution wishing to improve its care and handling of patients may use as a guide, and which may, also, serve as a goal which institutions may strive to reach. The promotion of adequate training for hospital personnel will be an important aim. The information gained through the work of the Division of Mental Hospital Service will enable the Committee to extend a consulting service in the mental hospital field. Toward the budget of the Division, which is directed by a well known psychiatrist, the Foundation contributed $48,000 in 1936 to be used over a period of three years.

Columbia University College of Physicians and Surgeons
Division of Medical Anthropology

A somewhat different approach to the concept of man as a complete organism is embodied in research at the College of Physicians and Surgeons, Columbia University, toward which the

Foundation gave $42,000 to be used during a three-year period. A Constitution Clinic has been in existence at the Presbyterian Hospital of the Columbia Medical Center since 1916. With the Foundation's aid this Clinic takes the name of the Division of Medical Anthropology and, besides the research planned, is prepared to introduce into the curriculum of the medical students instruction which will seek to direct their attention to the study of man as a whole (psychobiology) rather than to the study of diseases apart from man's complete organism. It is apparent that some persons are more resistant to bodily and mental diseases than others. This research seeks to discover what seeming differences really exist, and what types of persons are susceptible to certain afflictions. The studies are carried out with the aid of an anthropologist and statistical analysts, and include investigations of body form, natural resistance to bacterial infection, physiologic characters, and psychic pattern, spoken of by the group of workers as the "four panels of personality." If tangible progress could be made in this difficult field valuable aids to diagnosis, treatment, and prevention of disease could be developed. In this study the mental and psychological characteristics and their relation to other factors in the total organism of man have special significance.

The Johns Hopkins University School of Medicine

Another approach to the problem of the patient as a total organism in relation to his environment, termed a study of the accessory factors of health, was undertaken at the Johns Hopkins University Hospital by Dr. G. Canby Robinson. The Foundation gave a small grant in aid for an exploratory period of five months. This study indicated that a detailed interview, the usual approach of the psychiatrist, revealed social and environmental problems not brought out in the ordinary clinical examination, which were frequently essential factors in the understanding and relief of the patient's condition, and which were in many cases susceptible of adjustment. In practically all cases this handling of the patient greatly improved his morale and satisfaction, lessened his anxiety or confusion, and changed his outlook in a beneficial manner. On the basis of the success of this preliminary study, the Johns Hopkins University asked Dr. Robinson to take part in the teaching of third-year students in the Eastern Health District, a section surrounding the Hospital and the School of Hygiene, in which public health activities are carried on and which is used in the practical instruction of public health students. In the new plan in which Dr. Robinson's cooperation was sought the students are sent to the homes of pa-

tients to make a study of the individual's economic, social, and sanitary background. Dr. Robinson has general responsibility for the plan, which will be carried out jointly by him and representatives from the School of Hygiene and the Department of Medicine. Toward this project the Foundation appropriated $8,000 for the year 1936–37.

Teaching and Research in Child Psychiatry

Institute of the Educational Sciences

The Institute of the Educational Sciences, in Geneva, formerly the Jean-Jacques Rousseau Institute, established in 1912, has had three principal aims: the study of child psychology and the elaboration of investigative methods in this domain; the training of teachers and investigators in pedagogics and the psychology of the child; and the diffusion of this knowledge throughout the world by teaching and literature. In 1918 a Department for Vocational Guidance was added. The Institute has developed steadily. It has become an international center of training and research. Its director, Professor Jean Piaget, considers that its influence has been greatest in Poland, Spain, the Latin-American countries, and Palestine. From the year 1925, first the former Laura Spelman Rockefeller Memorial and later The Rockefeller Foundation contrib-

uted toward the general budget of the Institute. The studies in child psychology and the general emphasis of all the work of the Institute on the psychology of the child place this project for the most part within the Foundation's medical sciences program of teaching and research in psychiatry. A further appropriation of $19,000 toward the general budget over a three-year period beginning September 1, 1936, was made in 1936 to enable the Institute to make financial adjustments incident to the general economic situation in Switzerland. The Institute founded in 1925 the International Bureau of Education which has had remarkable success, and in which eleven countries are now represented.

University of California
Institute of Child Welfare

In 1927 the Laura Spelman Rockefeller Memorial aided in the establishment of the Institute of Child Welfare at the University of California. A day nursery school for twenty-five children between the ages of two and four and one-half years was an important feature of the work. In 1929 a study in child guidance was begun. Thorough records have been kept on 124 children selected at random at birth, with another 124 as controls. The first group is given considerable guidance and careful study; while children in the

second group are seen only at yearly intervals for general study and comparison with the guidance group. Anthropometric, medical, psychiatric, and psychological data are collected. By 1939 all children whose records are complete from birth will have passed out of the age group under study. In 1936 the Foundation continued aid given for three years previously by the General Education Board, by appropriating $13,000 for the year 1936–37, and $28,000 for the two-year period to June 30, 1939, for completion of the study.

Chicago Area Project

A study of child and adolescent psychiatry in relation to delinquency is afforded by the Chicago Area Project, which the Foundation has aided since 1934. This project represents an attempt by sociologists and psychiatrists to carry out scientific studies in the problem of delinquency in an area or unit of population in somewhat the same way that public health work is carried out in a public health center. It is an outcome of earlier work by the Institute for Juvenile Research of Chicago. Those directing the project believe that it has been proved that the area plan works effectively and that a definite advance in the knowledge of delinquency itself, and of practical methods of dealing with it, has

been made. It is the policy of the Area Project to coordinate the activities of all neighborhood institutions concerned in any way with the prevention of delinquency. The objective is to have the neighborhood itself assume as far as possible the burden of solving its own delinquency problem. The Foundation appropriated $22,500 to the project in 1936, its third grant of this amount for the work.

Teaching and Research in Neurology

Harvard Medical School
Department of Physiology

Toward the research of Dr. Walter B. Cannon, George Higginson professor of physiology at the Harvard Medical School, the Foundation appropriated $75,000 in 1936 to be expended at the rate of not more than $15,000 a year over a period of five years. Previous aid for Dr. Cannon's work was given in 1930 for a period of seven years, when an appropriation of $175,000 was made for the use of the Department of Physiology and the Department of Physical Chemistry, of which the share of the Department of Physiology was about $15,000 a year. The seven-year grant in 1930 was made to free Dr. Cannon from much of the routine of his department so that he could devote more of his attention to the training of young investigators who were anxious to come to him because of his out-

standing leadership. As Dr. Cannon's work has borne directly upon the functions of the nervous systems, it now falls within the Foundation's program of aid to research and teaching in this subject. With the aid of the Foundation's contribution, Dr. Cannon trained in his department ten fellows of the National Research Council, five fellows appointed by The Rockefeller Foundation, two Guggenheim Foundation fellows, and fifteen fellows of various other organizations, a total of thirty-two, and a number of other persons who obtained the Ph.D. degree in the Department of Physiology. Twenty full professors of physiology, five of them in countries other than the United States, were formerly associated with this Department. The work done since 1930 has included research on the function of the autonomic nervous system as a means of assuring uniformity of the internal environment of the organism, the neural basis for emotional behavior, the natural rhythms of the brain as indicated by electrical registration, and the nervous mechanisms of hearing. The Department plans that many of these researches will be continued and extended, that the work will include studies of the relations of the nervous system to muscles and to glands of internal secretion, and a study of the performance of the neurones of the central nervous system.

Yale University School of Medicine
Department of Physiology

Studies under the direction of Professor John F. Fulton, head of the Department of Physiology of Yale University School of Medicine, received from the Foundation in 1936 a grant of $12,500 for a period of two and a half years to conclude aid provided during the two previous years by grants of $6,000 a year from the Foundation's fund for grants in aid. This is another project in which the training of graduate workers is an important factor. Dr. Fulton's laboratory has become a center of postgraduate research in neurophysiology. The use of primates for investigation of the problems of neurology and neurophysiology is one of the chief attractions to applicants for work there, especially to those who intend to enter clinical neurology. The laboratory is well equipped for work in neurosurgery, and an increasing emphasis has been placed upon the details of neurosurgical technique. The problems under investigation relate to the physiology of the central nervous system, more particularly to the functions of the cerebral cortex and the autonomic nervous system. The number of investigators and visitors working there during one year has ranged from ten to twenty. The Foundation has made it possible for these young workers, some of whom were fellows appointed by the

Foundation, to receive the special training offered in this laboratory by contributing toward the provision of apparatus, supplies, and technical assistance; the cost, housing, and maintenance of the primates; and other research expenses.

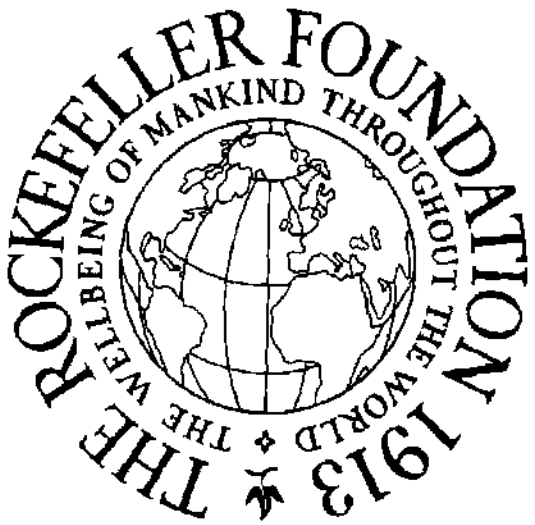
University of Alabama
Department of Physiology

To the research of Dr. A. D. Keller, professor of physiology at the University of Alabama, the Foundation in 1936 gave $7,500 to be expended over a period of three years, in continuation of a preliminary grant in aid of $3,000 in 1935. Dr. Keller is attempting to discover in the brain stem those portions which influence certain physiological mechanisms. Special attention has been focused on localization of the mechanisms for temperature control, postural reflexes, carbohydrate metabolism, digestive secretions, vasomotor and respiratory control. He is also investigating the functions and interrelationships of the hypophysis and hypothalamus, and is attempting to localize further the functions attributed to the whole cerebellum.

Cornell University
Department of Physiology

A psychobiological approach to the problem of man in his relation to his environment through a study of reflex behavior is represented by the

research of Professor H. S. Liddell at Cornell University. Professor Liddell defines his principal objective as the study of the conditions governing adequate psychobiological adjustment, as well as the determination of the capacity of the individual nervous system for effecting such adaptation to new situations arising either in the external or in the internal environment. He has approached this question through attempts to induce in animals, particularly the sheep and pig, an "experimental neurosis" by a series of conditioned reflexes. Like the freezing point or the boiling point, the onset of the "experimental neurosis" marks a change of state. This end point of neural adjustment makes possible an objective and quantitative determination of an important factor in the work of the nervous system, which Professor Liddell calls the "capacity factor." It is important to discover what conditions favor or impede the adequate adaptation of a particular individual to the society in which he must live, as well as the capacity of his nervous system for effecting adjustment to difficult social conditions. In his experiments Professor Liddell substitutes non-social laboratory conditions for the social factors with which the physician is compelled to deal. He builds up experimental environments with which to test the animal's capacity for



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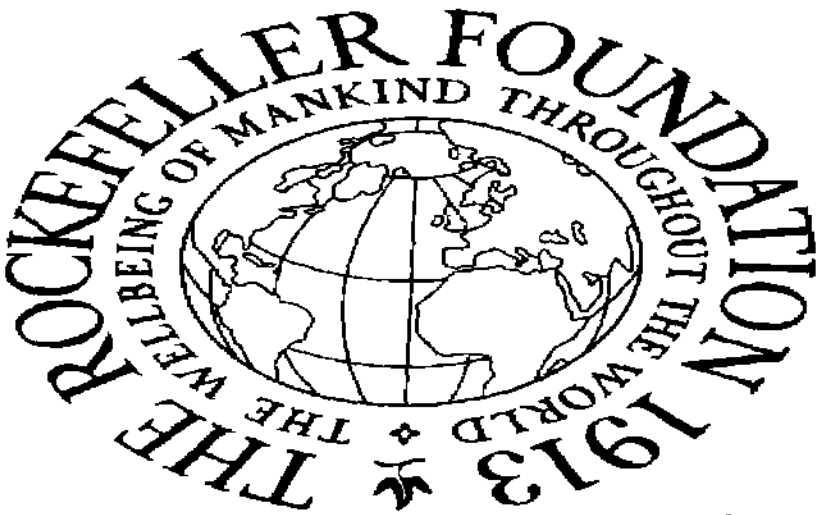
Kymograph (left) and recording unit (right) in the laboratory at Cornell University where conditioned reflexes of animals are tested in studies of experimental neurosis.



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Architect's drawing of the extension of the National Hospital, Queen Square, London, toward the building and equipping of which the Foundation has contributed.

psychobiological adjustment. The conditioned reflex method enables the physiologist to precipitate the experimental neurosis.

Sheep have given evidence of a marked neurotic state after initial experiments in conditioning their behavior. Experiments are now being carried out on the pig. The research has been concerned principally with the external environment, but the influence of changes in the internal environment, such as removal of the thyroid, treatment with thyroid extract, cortin, or other internal secretions, is being observed, as is also the effect of certain drugs in relation to the behavior disturbances. Foundation aid to this work, begun in 1935, was continued in 1936 by an appropriation of $21,800 available over a two-year period.

Cornell University Medical College
Department of Medicine

Studies of the relationship of biochemistry, physiology, and pathology on the one side and neurology and psychiatry on the other side, in certain diseases, are being conducted under the direction of Dr. Harold G. Wolff, assistant professor of medicine in the Cornell University Medical College. This approach is being used in the study, among other diseases, of asthma and digestive disorders, especially gastric ulcer, maladies in which it is recognized that the nerv-

Photograph Excised Here

New addition to the biology building of the University of Missouri, where important studies in maize genetics are being carried out. The Foundation made a grant to the University in 1936 toward the purchase of equipment and supplies for this work and toward the salaries of research assistants during the three years ending June 30, 1939.

ous system may play an important role, and also in muscular dystrophy, convulsions, and migraine. The Foundation appropriated $5,750 toward this work for one year.

University of Chicago School of Medicine
Department of Physiology

Aid in the amount of $11,250 to an investigation of the mechanism of sleep by Dr. Nathaniel Kleitman of the Department of Physiology of the University of Chicago School of Medicine was given in 1936 for a final period of two and one-half years in continuation of aid begun in 1935. Many aspects of sleep are included in these studies in an attempt to evolve and support by facts an hypothesis of the mechanism of sleep. In cooperation with the Department of Psychiatry, it was expected that investigations would be made of the sleep and diurnal variation in performance of mental defectives, sleep habits of psychopathic individuals, disturbances of sleep following encephalitis lethargica, and various types of insomnia met with clinically. Laboratory studies are being made of such aspects of the problem as the existence of a sleep curve, of the existence of a "morning" or "evening" type of human with respect to efficiency of performance, of the nature of falling asleep and of awakening, of seasonal variations in sleep, of the

effect of food intake and activity on the quality of the ensuing sleep, and the possibility or impossibility of developing and maintaining proper sleep habits.

University of Edinburgh Faculty of Medicine
Neurological Surgery

A rapidly developing subdepartment of neurological surgery in the University of Edinburgh Faculty of Medicine was aided by the Foundation in 1936. For the past ten years Mr. Norman Dott, lecturer in neurosurgery, with the encouragement of the head of the Department of Surgery, Sir David Wilkie, has been training assistants and assembling a team of workers, which includes a clinical neurologist, a pathologist, and a neurophysiologist, with the ultimate aim of developing a teaching and research unit in neurology. The plan of subjects to be investigated includes the circulation of the cerebrospinal fluid, control by the central nervous system of fluid metabolism in the body, functions of the thalamus, and the mechanism of the production and transmission of nervous activity. Enough enthusiasm and confidence in the proposed unit was aroused so that funds were contributed from local sources for new construction to provide a sufficient number of beds for neurological patients, adequate laboratory space, and other facilities. Of the Foundation's aid of $38,250,

20 per cent was for equipment and the remainder for general expenses of the work over a period of five years.

Mr. Norman Dott received training in neurosurgery under Dr. Harvey Cushing in Boston during the year 1923–24, through a fellowship provided by the Medical Research Council of Great Britain from funds supplied by the Foundation.

The Johns Hopkins University School of Medicine Subdepartment of Neurology

An opportunity for the assistance of teaching and research in neurology was presented at the Johns Hopkins University School of Medicine, to which the Foundation gave, in 1936, $32,000 to be expended over a period of four years. The authorities of the Baltimore City Hospital invited Dr. F. R. Ford, associate professor in charge of the subdepartment of neurology at the Johns Hopkins University School of Medicine, to head a neurological unit. The Foundation's aid provides additional salary for Professor Ford, the salary of a laboratory assistant, technical and stenographic service, and supplies. The purpose is to give assistance to the neurological department in providing training in the experimental approach to the problems of clinical neurology for graduate and undergraduate students.

Boston University School of Medicine
Department of Anatomy

In the Department of Anatomy of the Boston University School of Medicine, the work of Professor J. Le Roy Conel on the cerebral cortex in children received from The Rockefeller Foundation, in 1936, $7,500 available over a period of three years. Dr. Conel's plan, based on the extensive work of Dr. Oskar Vogt of Berlin on the adult cerebral cortex, includes study of the cortex in children at birth and at various subsequent ages. Sections are stained by methods which will demonstrate nerve fibers and cell bodies. When this work is completed it will be possible to correlate the morphological changes or the anatomical growth with the psychical development of the child, beginning at birth.

Research in Infections Involving the Nervous System

Columbia University College of Physicians and Surgeons
Department of Bacteriology

Research on virus diseases has been going on under Professor F. P. Gay in the Department of Bacteriology of the College of Physicians and Surgeons of Columbia University since 1925. In 1932 the Foundation, under its former program, made a grant for this research over a four-year period. As the work of Dr. C. W. Jungeblut on the virus of poliomyelitis was developing promis-

ing leads at that time, the Foundation's grant was used almost exclusively for this work. Dr. Jungeblut's work led into the investigation of the mechanism of protection which is represented by the resistance of naturally insusceptible individuals to poliomyelitis infection. Examples of this insusceptibility range all the way from the absolute insusceptibility of lower animals to the relative insusceptibility of different races of man and different individuals within the same race. Investigations along this line seemed to point to a marked constitutional factor in the development of poliomyelitis. As the endocrine glands, particularly the adrenal glands, are becoming recognized as related to the very essential vitamin C of the body, experiments were made to determine whether this vitamin had any effect upon the disease. These experiments led to a preliminary report that there seemed to be a strong probability that vitamin C when injected in the proper dose possesses distinct therapeutic power in experimental poliomyelitis. To aid in further developing and testing these ideas the Foundation appropriated, in 1936, $8,000 for a two-year period.

University of Rochester
Department of Bacteriology

Besides poliomyelitis, other important diseases involving the nervous system are caused

by filtrable viruses. Fundamental research which may throw light on viruses in general is being done at the University of Rochester by Dr. George Packer Berry, professor of bacteriology. Dr. Berry's experiments, using a new method, indicate that two viruses causing different diseases in domestic rabbits, one a localized fibrous tumor from which the animal always recovers, the other a widely disseminated and regularly fatal disease, are divergent strains of the same virus or directly connected in some manner. These observations throw light on the nature of viruses and have an application to various viruses causing disease in human beings; for example, the results may have a bearing upon the interdependence of several strains of encephalitis virus. From Dr. Berry's experiments it would appear that one such virus, or virus strain, may be transformed through some external influence into another. To further investigations of the mechanism of such transformation, the Foundation appropriated $10,000 for use over a period of four years.

Teaching and Research in Human Genetics

Medical Research Council, London
Galton Laboratory

An important approach in the investigation of mental diseases and disturbances is the explora-

tion of the possibility of the inheritance of factors which may make the individual especially susceptible to such disorders. In 1935 the Foundation made a grant to the Medical Research Council of Great Britain to aid in establishing a unit for research in such inheritance factors at the Galton Laboratory attached to University College, London. Through the use of the so-called immune sera, aimed at demonstrating substances in the blood which are hereditary and which may be associated with defects or anomalies causing disturbances in mental function, the Galton Laboratory attacks this problem. Since the early years of the century, it has been known that two agglutinating substances occur spontaneously in human sera, and that these are inherited in a certain way. Charles Todd, while at the National Institute for Medical Research, found it possible in experiments with poultry to distinguish specifically the corpuscles of one individual bird from those of all others, even though nearly related. Proceeding along these general lines, the investigations at the Galton Laboratory, under Dr. R. A. Fisher and his assistant, Dr. George Lees Taylor, made much more rapid progress than was anticipated, in that preliminary studies planned for the first two years were completed in the first year. As a result of discoveries made, a larger program is now

considered advisable, and to carry this out an experienced serologist and an assistant are needed. In 1936 the Foundation therefore appropriated $10,000 for additional workers and other increased expenses.

University of Copenhagen
Institute of Human Genetics

Teaching in human genetics began at the University of Copenhagen in 1920, and has existed since then as an obligatory course for medical students. Active research, especially in the heredity of blood groupings, has been going on for some ten years. Dr. Oluf Thomsen, professor of general pathology, has trained a number of workers, one of whom, Dr. Tage Kemp, held a fellowship from the Foundation in 1932 and 1934. For the research of Professor Thomsen the Foundation gave three small grants in aid, and in 1934 made an appropriation for a five-year period. The growth of interest in human genetics and the necessity for providing more space for workers in this subject led the University to decide recently on the establishment of a separate institute, of which Dr. Tage Kemp will be the director. Toward the establishment of the institute the Foundation appropriated $90,000 in 1936, the larger part to be used for the building and equipment, and the balance toward endowment of the up-

keep of the building, with the understanding that the University will provide annually a suitable sum toward the general budget for the institute's work. The institute will continue under better conditions the teaching and research now going on, will considerably extend the investigative work, and provide opportunities for advanced students. The role of inheritance in particular diseases, including mental diseases, will be investigated and anthropological studies on twins will be made.

Copenhagen offers certain advantages for the development of human genetics: (1) it is the capital and scientific center of a country having a uniform population of more than average intelligence and education and a stable social order; (2) the University has strong departments of the several biological and physical sciences, including anthropology and comparative genetics; (3) in the medical faculty there is a rather uncommon interest in genetics among the teachers of the clinical branches, particularly internal medicine, orthopedics, and psychiatry.

Teaching of Preventive Medicine and Public Health

Cornell University Medical College
Department of Public Health and Preventive Medicine

Although in 1936 the major part of the aid given by the Foundation in the field of medical

science was toward teaching and research in psychiatry, neurology, and related subjects, the promotion and improvement of public health teaching in medical schools is a secondary, but important, objective of the present program.

The opportunity to aid in the improvement of public health teaching at Cornell University Medical College was unusual because the development of the Department of Public Health and Preventive Medicine which was proposed would take place in conjunction with a health center to be established adjacent to the Medical College on land which the College (with the aid of the International Health Division of the Foundation) proposed to present to the City of New York for that purpose. On condition that suitable arrangements between the city and Cornell University for the establishment of the health center be completed, the Foundation appropriated $112,000, to be available over a period of four years, principally for the salaries of a full-time professor and other personnel, in addition to the amount regularly provided by Cornell Medical College for its Department of Public Health and Preventive Medicine. The necessary land was purchased by Cornell University and steps were taken by the City of New York toward the establishment of the health center (Kips Bay-Lenox Hill District).

The joint project contemplates a first-class department of preventive medicine equipped to serve the following purposes: the teaching of preventive medicine to undergraduate medical students; the training in public health of students of nursing in the New York Hospital; the providing, in conjunction with the personnel of the health district, of intensive practical training of a graduate character to employees of the New York City Health Department; and an opportunity for studies which will advance the knowledge of public health and improve the methods for applying knowledge in the public health field.

Fellowships and Grants in Aid

Fellowships

In correlation with its program of aid to research in the medical sciences the Foundation seeks to assist in training future investigators and teachers through the award of fellowships. For this purpose it appropriated $130,000 in 1936. In addition to fellowships granted directly by the Foundation, funds for the support of fellowships are also appropriated to various representative national agencies, such as the National Research Council in the United States and the Medical Research Council of Great Britain. No appropriations to these agencies for

fellowships in medicine were made in 1936, however; but grants made in previous years were effective during the year. The fellowships in medicine granted by the Foundation are almost entirely for training in research; they are given to persons who have had experience beyond their formal academic professional training and who show evidence of becoming productive leaders in their chosen fields. The term of study is determined according to circumstances in each case. Occasionally special fellowships for research are granted to mature men of established scientific reputation who are advanced beyond the regular group, both in experience and age. These fellowships may be for shorter periods and the compensation may be in the form of a flat sum rather than the usual monthly stipend, and is determined individually in each case.

For the past few years fellowships in the medical sciences have been granted increasingly for study in the two fields of concentration, mental and nervous diseases and the teaching of preventive medicine and public health.

Seventy-seven fellowships in the medical sciences were administered directly by the Foundation during 1936; twenty-six of these were granted from General Education Board funds under a joint program. The fellowships granted by the Foundation went to citizens of twenty-

two countries: Argentina, Belgium, Brazil, China, Czechoslovakia, Peru, Poland (one each); Austria, Canada, Greece, India, Republic of Lebanon, Sweden, the United States (two each); Estonia, Hungary, Portugal (three each); England, France, Germany, the Netherlands (four each); and Switzerland (five). All of the General Education Board fellowships were held by citizens of the United States. Eight fellows of The Rockefeller Foundation worked in psychiatry and experimental psychology; twenty-six in neurology, neurophysiology, neuropathology, neuroanatomy, neurosurgery, or closely related subjects; four in public health teaching; and fourteen in subjects which had been included in the former program. One worked in more than one field. Of the fellows appointed under the joint program with the General Education Board, ten worked in psychiatry; twenty-two in neurology, neurophysiology, neuropathology, neuroanatomy, and neurosurgery; one in public health teaching; and one in endocrinology. Eight worked in more than one subject. The seventy-seven fellows pursued their research in the following countries: Austria, one; Canada, one; England, twenty-five; France, three; Germany, five; the Netherlands, one; Sweden, two; Switzerland, three; the United States, forty-one. Five worked in more than one country.

During the year the National Research Council administered fourteen fellowships in the medical sciences from funds appropriated by the Foundation; seven of these were new appointments, and seven continued from the previous year. The Medical Research Council of Great Britain administered six fellowships for study in the United States from funds granted by the Foundation. The Peiping Union Medical College, with funds provided by the Foundation, granted fourteen fellowships for its staff members for study abroad, and eleven fellowships in China for study at the Peiping Union Medical College; in addition it made eighty small grants which enabled individuals to work at the College for short periods of time.

Grants in Aid

The policy of giving relatively small sums as grants in aid was continued. For this purpose $110,000 was set aside for the medical sciences in 1936. Fifty separate grants totaling $109,191.80 were made. The grants in aid are given for research in the same fields as the larger grants, and are closely related to the general program. Small sums are often of great value to a worker whose budget is severely limited and who is doing important research which cannot be completed within the funds at his disposal. Among others,

Professor E. D. Adrian of Cambridge University, England, Professors O. Bumke and H. Spatz of Munich, and Professor S. J. Thannhauser of Boston (formerly of Freiburg) were helped in this way in 1936. This type of aid is given also to improve the opportunities for research of promising young workers. Another important use of these grants is for a trial year of help during which the research and the capabilities of the worker may be studied with a view to further help under the general program. The largest grant made in 1936 was for $6,000, and the smallest for $150.

Twenty-four grants were given for the purpose of providing scientific equipment, apparatus, supplies, cost and care of animals, and technical assistance; fourteen were given so that specially qualified research workers could continue important research; and twelve were given for aid in the way of technicians, research assistants, secretaries, field and other miscellaneous expenses. Sixteen of the grants aided former fellows of the Foundation.

The grants were practically all in the field of neurology and psychiatry, or other subjects as they related to neurology or psychiatry. Twenty-nine grants in neurology covered explorations in many directions, such as electrophysiology of the nervous system, physiology of the nerves and

brain, anatomical and embryological research on the brain and nerves, the chemistry of the brain, pathology of the nerves and brain, research in neurological surgery, speech disorders, and many other aspects of the subject. Two grants were given for the study of hereditary factors in mental and neurological disorders; one for the study of hereditary and other factors in mental diseases of children. Seven grants in psychiatry covered researches in the physical and functional constitution in relation to mental diseases, psychoses of intoxicating drugs, manic-depressive psychoses, influence of psychic stimuli on skin eruptions, delinquency, and social factors of psychiatry. Three grants were made for psychological studies of behavior and personality traits, and three grants were given for studies of the relation of endocrinology to neurological and mental diseases. One grant was made to aid a former fellow of the International Health Division who has established an active department of social medicine at the Czech University of Prague. Four other grants were made to help establish four fellows trained under a former program, whose subjects are not strictly in the present fields of interest.

The grants were distributed among the following sixteen countries: the United States, twelve; Great Britain, nine; Switzerland, six; Germany,

five; France, five; Denmark, two; Belgium, two; Czechoslovakia, Estonia, Hungary, Iceland, Italy, Norway, Peru, Portugal, and Republic of Lebanon, each one.

Special Research Aid Fund for European Scholars

In 1936 the Foundation granted small sums from a general fund available to all its divisions, to the Medical College of Virginia, Tufts College Medical School, and the University of Bern, Switzerland, to enable each of these institutions to establish on its staff a European scholar who, for political reasons, was not able to continue his research and teaching in his former post.

Former Program

Certain projects which were begun under a former program have been continued, either because their importance is so great as to justify further aid, usually in order that the project may be satisfactorily completed, or because abrupt discontinuance would jeopardize the benefits of former aid.

Soviet Ministry of Public Health, Russia
Medical Literature

In 1932, in continuance of a postwar program of aid to medical libraries in Europe, it was planned that $50,000 would be given over a period of five years to the Soviet Ministry of

Public Health to enable it to purchase foreign journals, chiefly German, English, and French, principally for the Central Medical Library in Moscow, but also for a few of the leading research institutes in major scientific centers. Although additional amounts had brought the total over four years to the stipulated $50,000, a grant of $5,000 was made in 1936 for the year 1937 to complete the five-year period planned. During this period the Soviet Government has steadily increased its own appropriations which are at a level above that of any of the appropriations made in the past.

National Research Council Committee on Drug Addiction

The Foundation began its aid to the National Research Council's Committee on Drug Addiction in 1931. While the project is not strictly within the present program, it is related to it in that one of the main objectives of the study, the development of effective narcotic drugs lacking the addiction properties of those in current use, would be a contribution in the field of mental hygiene, and the psychological studies on the narcotic addict, which constitute an important part of the project, may be expected to advance our knowledge of mental disease. This study of drug addiction has added greatly to the knowl-

edge of the pharmacology and chemistry of narcotics. Although the long sought pain-killing drug having no tendency to cause addiction has not yet been discovered, nearly a hundred new chemicals of interesting and unusual properties have been prepared and tested. The Committee's work, carried on chiefly in the Universities of Virginia and Michigan, has stimulated research in other university laboratories. The United States Public Health Service, which is developing special institutions for drug addicts, where clinical investigations, particularly on methods of treatment, can be carried out, is cooperating with the Committee. It is likely that the Committee's work, when completed, will represent one of the most exhaustive studies of narcotics and drug addiction as yet undertaken. As its final contribution to the work, the Foundation made a grant of $150,000 to the Council in 1936, available over a period of four years.

University of Paris
Department of Parasitology

Aid to the work of Professor Émile Brumpt in the Department of Parasitology of the University of Paris was begun in 1925. This Department has exerted an international influence in a subject of far-reaching importance in the medical, agricultural, and public health fields. Three of Professor Brumpt's assistants have been

placed in charge of foreign laboratories in Indo-China, Morocco, and Pernambuco. The Department maintains permanent and intimate contacts with institutes of veterinary, medical, and agricultural research in countries all over the world, including England, Germany, Spain, the United States, Japan, and China. The supplementary courses in parasitology as applied to colonial pathology, parasitology with special reference to the prophylaxis of malaria, mycology, parasitology as applied to general hygiene, and in colonial veterinary medicine, were attended by students from all over the world. In addition, twenty-one investigators from thirteen countries were at work in the Department in 1935. To complete its aid to this project, and allow Professor Brumpt to build up local sources of support, the Foundation appropriated $14,700 in 1936, to be expended over a period of four years.

China Medical Board, Inc.
Peiping Union Medical College

Aid was continued to the China Medical Board, Inc., toward the budget of the Peiping Union Medical College for the year 1936–37 in the amount of $400,000.

Of the approximately 170 men and women who were graduated in medicine from the Peiping Union Medical College during the past dec-

ade, thirty-one are members of the medical faculty of the College and forty-seven are assistants, residents, and house officers; fifty-eight are in government services or on the faculties of other medical schools or the staffs of research institutes; twelve are in other hospitals, as full-time clinical workers; nine are pursuing graduate studies; five are in private practice; and the remaining graduates, about eight (mostly married women), are not active in medical work. Most of the key places in the National Health Administration of China have been filled by graduates of the College, or by former faculty members, or by those who have had graduate training in its hospital or departments of instruction. The same is true in other fields of medicine and public health in China: in schools of medicine, nursing, midwifery, public health training centers, research laboratories, and municipal health departments. The national government has asked that particular consideration be given to the preparation of instructors for service in government schools of medicine. As a center for graduate study and the training of teachers, the College continues to perform an important function.

THE MEDICAL SCIENCES STAFF DURING 1936

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THE NATURAL SCIENCES

CONTENTS

THE NATURAL SCIENCES

Germane to the charter purpose of The Rockefeller Foundation "to promote the well-being of mankind throughout the world" is the program in the natural sciences which, by supporting studies in endocrinology, genetics, and physiology and by furthering the application to biological problems of the quantitative and analytical techniques of chemistry, physics, and mathematics, hopes to aid in furnishing that factual background which is essential to an understanding of bodily processes and which should ultimately contribute to the clarification of many problems of human behavior.

Biochemistry

University of Chicago
Surface Chemistry

A characteristic which distinguishes living organisms from non-living systems is the occurrence of many surfaces or interfaces which condition the action of the organism.

In 1936 the Foundation appropriated $15,000 for support, for two years, of the work of the Department of Chemistry of the University of Chicago in the field of surface chemistry, under

the direction of Professor William D. Harkins. Professor Harkins has already made a beginning in applying the principles of surface chemistry to the study of the constitution of certain of the sterols, hormones, vitamins, and related compounds. He is working in cooperation with the Division of the Biological Sciences of the University and with scientists abroad who are supplying biological substances. In the autumn of 1936 Professor Harkins investigated surface films at the interface between two liquids, a problem having specially important application to biological systems. During the period of the Foundation's grant he hopes to investigate some aspects of the following: polymolecular films, which are doubtless important in biology, but whose characteristics are almost entirely unknown; the interfacial relations of liquids; chemical reactions at surfaces and interfaces, especially those related to biology; sizes and surface behavior of molecules important in biology; effects of hydrogen ion concentration upon the characteristics of films and surfaces.

Oxford University
Synthesis of Proteins

Chemical problems of biological interest are likewise being investigated at the Dyson Perrins Laboratory of Oxford University. The Rocke-

feller Foundation made a grant of $40,800 in 1936 for the support over five years of the researches on the synthesis of proteins being conducted there by Professor Robert Robinson. These funds will be utilized for salaries of research assistants and the purchase of equipment and materials.

Professor Robinson's plan for a five-year study of the synthesis of proteins is to some considerable extent an outgrowth of the x-ray analysis of proteins by Professor W. T. Astbury of the University of Leeds and especially of the mathematical analysis of proteins by Dr. Dorothy Wrinch of Oxford University. Both of these workers are pursuing their investigations with Foundation assistance. Dr. Wrinch's indication of a fresh mode of entry into the field of protein investigation gave special interest to Professor Robinson's formulation of a number of schemes for the synthesis of polypeptides of high molecular weight. It is his belief that there are excellent opportunities for fruitful discoveries in this purely synthetic field.

Harvard University
Studies of Synovial Fluid

A glycoprotein, mucin, is what gives synovial, or joint, fluid its characteristic viscid property, and the normal and pathological role of this fluid seems to depend intimately upon the chem-

ical and physical properties of mucin. The Foundation in 1936 appropriated $12,600 to Harvard University for research on the physical and chemical properties of normal synovial fluid under the direction of Dr. Walter Bauer at the Massachusetts General Hospital over three years. This is the third appropriation for this project, a grant of $3,000 having been made both in 1934 and in 1935. Mucin has been isolated in dry form, and work is going forward on the description of its physical and chemical properties, its role in fluid exchange, as well as its origin.

Dr. Bauer is working on arthritis under a grant from the Robert W. Lovett Memorial Foundation of the Harvard Medical School. The Massachusetts Survey of Chronic Disease Incidence made in 1931 showed that chronic rheumatic diseases afflicted 138,000 persons in that State, a number second only to those afflicted with diseases of the heart and circulatory system, and nearly ten times the number suffering from active tuberculosis, diabetes, and cancer respectively. Arthritis cripples the largest number of patients and kills the fewest. This very ability to cripple without killing would seem to put chronic arthritis ahead of all other chronic diseases in social, economic, and medical importance. In 1931 there were estimated to be ap-

proximately 5,600 persons in Massachusetts totally disabled because of arthritis.

University of Illinois
Research on Spectroscopic Analysis of Water

Another technique of the physical sciences which has in recent years been applied with increasingly profitable results to biology is spectroscopy. At several universities The Rockefeller Foundation has assisted absorption spectra studies of various biological materials. Among these grants is a recent one to the University of Illinois toward the support of investigations by Professors W. H. Rodebush and A. M. Buswell, of the Department of Chemistry, on the infra-red absorption spectra of many biological materials, with relation to the role of "free" and "bound" water in living processes.

Ever since the first analysis of biological material showed the large amount of water present in living organisms (65 per cent in the human body and over 99 per cent in such organisms as the jellyfish and the tadpole), it has been recognized that the problem of the living cell in its phases of behavior, for example, in muscular action, is to a large extent the problem of the role of water. For a long time it has been believed that much of the water present in living organisms is chemically bound in some way that greatly alters its properties without destroying

its chemical identity. Liquid water, while the most familiar of substances, is probably more complex in its constitution and behavior than any other common substance. The hypothesis is generally accepted that water in tissues is partly "free" and partly "bound," but the nature of the binding and the relative amounts of these two types are still largely to be determined. Nearly a dozen uncorrelated methods of studying this question have up to now been devised, which have been for the most part semiquantitative. Professors Rodebush and Buswell are undertaking a strictly quantitative investigation of the infra-red absorption spectra of such biological substances as gelatine, a typical water-binding substance. Both ordinary and the new "heavy" water will be used in preparing these substances, in order to check on the method. This physicochemical investigation will be made more effective and will be more quickly accomplished through the employment of three research assistants, with the help of the Foundation's grant.

University of Chicago
Application of Spectroscopic Methods to Biological Problems

Instruments and methods for the use of spectroscopy in biological research have been developed by Professors T. R. Hogness and F. C.

Koch and their associates at the University of Chicago. The Foundation has made two one-year grants for this work, and in 1936 it appropriated $42,800 to extend assistance over the four years beginning July 1, 1936. The first experimental difficulties overcome, work on important problems is now going forward, among them the oxygen-hemoglobin equilibrium, the isolation of a new pancreatic hormone, studies on vitamin A and on the differences between normal and pathological blood and body tissues. Some of the results of the laboratory work in the last few years have been the discovery of the relationship between estrogenic activity and paracresol content of urines, the development of a new method for the preparation of theelin (female hormone) from urine, spectroscopic evidence that cortin has a chemical structure similar to that of one of the male hormones, and the measurement of the absorption spectra of such sterol-like substances as the male and female hormones.

University of Wisconsin
Purchase of an Ultracentrifuge

The employment of an ultracentrifuge in the solution of biological problems has in the last decade been increasingly productive of significant results. An ultracentrifuge is an instru-

ment in which centrifugal fields of high intensity and homogeneity are obtainable and in which thermal convection does not occur. In operating the ultracentrifuge, the solution to be studied is placed in a small cell inserted in the rotor. This cell has transparent windows, and in the steel chamber which encloses the rotor and its bearings are windows in corresponding positions which make it possible to observe the distribution of the contents of the cell at any desired time. By directing a beam of light through the windows the sedimentation can be followed, since the light absorption or refractive index of solvent and solution differ. The tremendous rotation speed of 60,000 revolutions per minute is produced by oil-driven turbines integral with the rotor shaft, and centrifugal force as great as 350,000 times the force of gravity is obtained. Nearly an hour is required to attain normal speed, and the same time to come to rest. In quantitative measurements photographs are taken at regular intervals, and the rate of settling of the dissolved substance is calculated from the microphotometric records. Knowing the rate of settling and other readily determined characteristics of the solution, including the sedimentation equilibrium distribution, information about the size and shape of the solute molecules is made available.

Professor Svedberg of the University of Uppsala, Sweden, in the twenties developed the oil-driven ultracentrifuge and applied it to the weight and shape analysis of the high molecular compounds which play such an important role in the study of biochemical and physiological compounds. The success of the apparatus has been such that in a comparatively few years the physical chemistry of the proteins has been largely revolutionized. Methods for molecular weight analysis of natural and artificial polymerized organic substances have been made practical, rapid, and exact. There are only two centrifuges of this type in use outside of Professor Svedberg's own laboratories, one of which was installed through the help of the Foundation in the Lister Institute of Preventive Medicine in London, and the other of which is in commercial use in the United States. The desirability of having such equipment in some American university has been obvious; and at the University of Wisconsin, where Professor Svedberg was working at the time the centrifuge was originally planned, were two men who had had extensive training and experience in Svedberg's own laboratory. Accordingly the Foundation made a grant of $27,500 to supply such a machine to the University of Wisconsin.

In addition to its use for research on pro-

teins in the Laboratory of Colloid Science, the Wisconsin ultracentrifuge will be employed in cooperative research on medical diagnosis of disease, and on analysis of hormones, viruses, ferments and enzymes, and celluloses and other wood substances. John W. Williams, associate professor of chemistry, and his research associate, C. C. Watson, will be in charge of the work.

Biology of Sex

National Research Council. Committee for Research in Problems of Sex

The only major project in the field of the biology of sex to which the Foundation has given support in the past four years is the work of the National Research Council's Committee for Research in Problems of Sex. Nearly half of the million dollars which the Committee has received for its support since 1920 has been contributed by The Rockefeller Foundation since 1931. In December 1936 the Foundation made a further appropriation of $75,000 to the National Research Council for the work of this Committee during the year beginning July 1, 1937. The Committee allocates funds to individual research projects. The emphasis of these studies has been shifting away from the basic physiological and biochemical studies and the study of sex phenomena in lower forms, to the psycho-

biological aspects of sex behavior, especially in man. There has been increased interest in the neurological and behavioral aspects of sexual and reproductive processes, and several promising investigations have been organized. Chief among the projects conducted during 1936 with the help of funds from the Committee for Research in Problems of Sex were the studies on the cytology and physiology of mammalian reproduction, under Dr. Philip E. Smith at Columbia University; on sexual and reproductive phenomena in monkeys and apes, by Drs. Edgar Allen and Robert M. Yerkes of Yale University; on the neural basis of sexual behavior, at the Johns Hopkins University under the direction of Dr. Philip Bard; on sex development, at the State University of Iowa under Professor Emil Witschi; on psychobiological factors in sexual compatibility, by Dr. E. Lowell Kelly of Connecticut State College; on psychobiological characteristics of sex, by Dr. Lewis M. Terman at Leland Stanford, Jr., University; and psychobiological studies of sexual factors in the development of personality, by Dr. Carney Landis at the New York State Psychiatric Institute and Hospital.

Experimental Embryology

Modern chemical and experimental embryology is not satisfied with mere description of the

sequence of forms presented by the organism as the original egg divides and redivides and elaborates the organs and members of the complete animal; modern embryology is occupied with investigating the mechanisms which underlie and cause these developments. These investigations often involve delicate transplantation experiments on live embryos, with constant use of cytological, histological, and biochemical techniques. Such studies are closely connected with genetics, inasmuch as the modern physiology of the embryo is much concerned with tracing the mechanism and process whereby the inherited qualities of the germ plasm find their ultimate expression in the developed characteristics of the mature organism.

Research at Yale University

In 1936 the Foundation made a grant of $22,000 to Yale University to enable Professor R. G. Harrison to complete a program in experimental embryology, by furnishing equipment and supplies and providing for the salaries of research assistants and technicians, through the academic year 1937–38. His investigations bear upon fundamental problems of development, such as the factors determining the localization and symmetry relations of the ear and the respective parts played by ectoderm and mesoderm in

the localization, development, and growth of the limbs, including their pigmentation.

Cellular Physiology

Washington University
Research on the Chemistry and Physics of the Cell

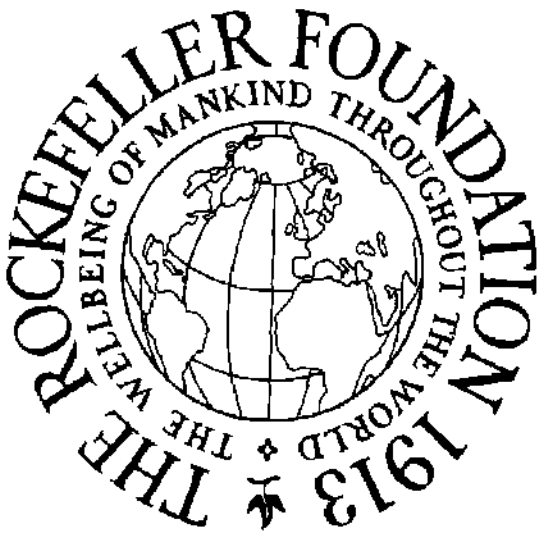
In 1936 an appropriation was made to Washington University, St. Louis, for research during the two years ending September 30, 1938, by Drs. Gordon H. Scott and E. V. Cowdry in the Department of Anatomy of the School of Medicine on the chemistry and physics of the cell. About five years ago Dr. Scott began a comprehensive study of the inorganic salts of cells and tissues, and he has evolved several new methods which permit the localization and identification of the various metals and their salts within the cells, using microincineration and also centrifugal and spectroscopic techniques. A new instrument, the electron microscope, promises to aid considerably in these researches. The electron microscope grew out of the discovery in 1926 that electrons in motion behave as if they were waves, and hence are analogous to light waves. In the electron microscope the light waves of the ordinary visual microscope have been supplanted by electron waves, and the glass or quartz lenses are replaced by magnetic or electrostatic fields which serve to focus the electron waves.

While the visual microscope can resolve objects no smaller than about one-tenth of a micron (.00001 of a centimeter) the electron microscope should be capable of magnifying objects of dimensions a thousand, or even ten thousand, times as small. It is expected that the new instrument will significantly extend the effectiveness of cytological investigations. After some months' work with the first electron microscope which they constructed, Drs. Scott and Cowdry have built another with which it is hoped to obtain a magnification of 10,000 diameters, some 1,500 to 2,000 of which will be obtained by the tube and the remainder by enlargement.

Genetics

Research at the University of Missouri

For many years the University of Missouri has fostered important research in genetics, and the United States Department of Agriculture has supported major studies at the College of Agriculture of the University, in close association with Professor L. J. Stadler's applications of various types of radiation in the production of gene mutations and chromosomal rearrangements. In 1935 The Rockefeller Foundation made a research aid grant of $1,800 in support of these investigations on the genetic effects of irradiation in plants. In 1936 an appropriation



Photograph Excised Here

Corner of a laboratory at the State University of Iowa where investigations of the fundamental behavior of normal growing cells are being made through studies of the embryonic grasshopper cells. Careful control of factors affecting development is made possible by means of the apparatus shown in this photograph.

Photograph Excised Here

Electron microscope used in studies of cellular physiology at Washington University.

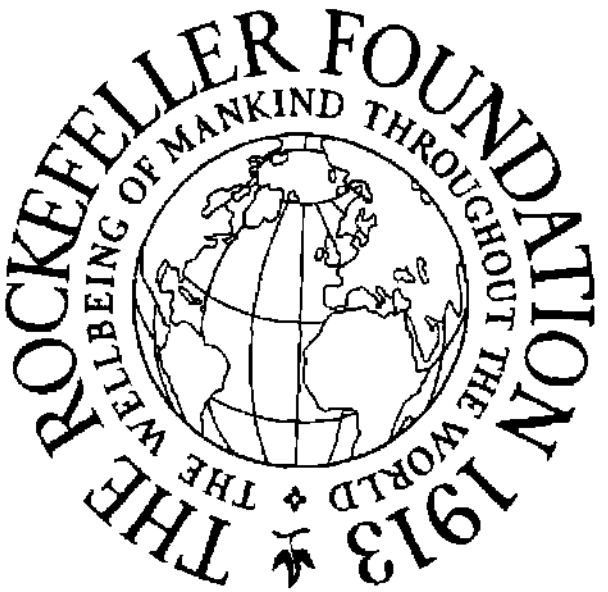
of $20,000 was made to the University to provide equipment, supplies, and assistants' salaries over the three-year period ending June 30, 1939, for the work in cytology and genetics under the direction of Professor W. C. Curtis and Professor Stadler. This grant will permit the continuation of the studies of gene mutation and induced gene rearrangement in maize, various related cytological investigations concerned with chromosomal variations in maize, and a study of the genetic effects of ultraviolet radiation.

McGill University
Studies in Cytology and Genetics

The Foundation made a research aid grant of $3,000 in 1934 to provide certain equipment for research in experimental cytology and developmental genetics at McGill University, Montreal, under Professor C. L. Huskins. In 1936 a further appropriation of $17,350 was made in support of this work. The grant will be used for the salaries of a mammalian geneticist and assistants, and for the purchase of equipment and supplies.

University of Wisconsin
Research in Immunogenetics

Several years ago Dr. Karl Landsteiner of the Rockefeller Institute for Medical Research demonstrated that there are various types of blood



Photograph Excised Here

Section of differential analyzer, built from designs made by the University of Pennsylvania and the Massachusetts Institute of Technology.

which differ in some subtle chemical way, this difference following definite laws of inheritance. Recent developments, through the work of Professors M. R. Irwin and L. J. Cole of the University of Wisconsin, have shown that the exceedingly complex biochemical composition of the red blood cells is a quantitative genetic character which can be divided successfully into many, and perhaps all, of its constituent genetic parts. Thus genes are presumably correlated with constituents of the blood, the presence or absence of any constituent being demonstrable by means of agglutination tests. Professor Irwin works with pigeons, and by extensive biochemical and genetical experimentation he is now finding it possible to obtain sera by means of which blood can be tested to determine the presence of a single one of these chemical constituents presumably associated with individual genes, and thus to make genetical analysis within a species far more detailed and definite than can be accomplished in any other way. This new tool for genetical research offers promise of furnishing clues to knowledge of the actual character and function of the individual genes. The accurately known genetical material needed for this serological work is furnished by Professor L. J. Cole, who has worked for years on the genetics of pigeons and doves. Professor Irwin crosses these

species and studies the divisibility and heritability of those agglutinable properties of the red blood cells of species A which differentiate it from species B, and aims to isolate in unit form the agglutinogens specific to species A. Tentatively it is proposed to extend the immunogenetic investigations to cattle as well as to poultry. In 1934 and 1935 the Foundation made grants in aid of researches in endocrinology and genetics under Professor Cole, and in 1936 it appropriated $11,400 for twenty-seven months' work on the project of Professors Irwin and Cole described above.

Internal Secretions

University of California
Research on Hormones and Vitamins

For the past seven years The Rockefeller Foundation has contributed to support of the researches on the chemical nature of hormones and vitamins being conducted at the University of California's Institute of Experimental Biology in Berkeley, under the leadership of Professor Herbert M. Evans. This aid was continued in 1936 by an appropriation of $52,500 for use over the three-year period beginning July 1, 1936. During the past year Dr. Evans announced the successful crystallization of a derivative of vitamin E. In their work on internal secretions Dr. Evans and his associates have contributed

to our knowledge of the growth hormone of the anterior pituitary, purified the lactogenic hormone, and clarified many questions concerning the interrelationships of various hormones. Attention is now being concentrated on the isolation and the purification of the growth, gonadotropic, mammotropic, and adrenotropic hormones.

Philadelphia Institute for Medical Research
Biochemical Studies on the Thymus and Pineal Glands

During the past several years experiments at the Philadelphia Institute for Medical Research under Dr. Leonard G. Rowntree, the director, have dealt with the effects of extracts of the thymus and pineal glands upon the growth and development of white rats. It was found that thymus extract injections into successive generations of parents caused marked acceleration in the rate of growth and development in the offspring of the third and later generations, with cumulative effect, so that the level of development of normal rats four weeks old was attained by the experimental animals in from two to five days. Equally startling results have been obtained with injections of pineal extract, which produces later-generation offspring that exhibit precocious gonadal and body development, but are dwarfed and abnormal. When the work

reached the stage where the services of an expert biochemist were needed to study the extracts in order to standardize and, if possible, discover the active principle or hormone, the Philadelphia Institute for Medical Research requested aid from the Foundation to secure the necessary personnel, equipment, and supplies for the biochemical laboratory. In 1936, therefore, an appropriation of $20,000 was made to serve this purpose during the three-year period July 1, 1936, to June 30, 1939, and Dr. N. K. Schaffer was asked to join the staff of the Institute.

Three products concerned in thymus function, namely, glutathione, ascorbic acid, and cysteine, have been identified and are being isolated, and it now appears that at least part of the biological activity of the thymus extract may be ascribed to these three substances. A synthetic extract containing these substances in the concentrations in which they occur in the thymus extract will be tested, and the characteristic blood calcium and phosphorus effects of the thymus extract will be looked for in the animals treated with glutathione, ascorbic acid, and cysteine. It seems certain that the thymus and pineal glands are vitally concerned in the growth and development of infants and children, and that the treatment of backward children may benefit from a study of the biological activity of these glands.

Oregon State Agricultural College
Research on a Growth-Promoting Organic Substance

The study of substances which play a fundamental role in growth has been the concern since 1918 of Professor Roger J. Williams of Oregon State Agricultural College. He has discovered that in many forms of living cells, whether of plant, animal, or bacterial origin, there is to be found a single organic acid substance which he calls pantothenic acid. This substance has a remarkable stimulative effect on growth. The widespread occurrence of this substance is unusual, and indicates its fundamental importance. Even the vitamins, which are, as a group, widely distributed, are by no means universally present in cells. In this respect pantothenic acid seems to be outstanding. In the higher animals it is stored in various tissues, particularly the liver. This, and other evidence, indicate that pantothenic acid is of functional importance to man and the higher animals. It has been obtained in an almost pure state in the form of its calcium salt. Since it appears to be a chemical compound of a new form in chemistry, much fundamental work will be involved before its synthesis can be accomplished. There is some evidence that it may turn out eventually to be one of the various, now poorly understood, constituents of the vitamin B complex. Pantothenic acid

has been tested for growth-accelerating properties on yeast, molds, and liverwort, and its effect on protozoa has been demonstrated. It markedly affects alfalfa and wheat seedlings; but all results on mammals so far are inconclusive.

At present Professor Williams is concentrating on two problems: improving the extraction process from sheep liver, and purifying the substance and investigating its structure. The phenomenon of growth is a most fundamental one for problems of nutrition, metabolism of normal or pathological tissues, tissue culture and cancer studies. The Rockefeller Foundation in 1936 made an appropriation of $20,000 for three years' support of Professor Williams' researches.

Nutrition

The problems of nutrition are world wide and are engaging the attention of scientists everywhere. In fact, so active is this field at the present time that on the subject of vitamins alone there are now being published more than a thousand papers annually, in spite of which a vast field yet remains to be explored.

The Johns Hopkins University
The Role of Mineral Elements in Metabolism

The investigations of Professor E. V. McCollum of the Johns Hopkins University School of

Hygiene and Public Health have given medical science control over a number of the so-called deficiency diseases. His work on the injurious effects of faulty ratios of calcium and phosphorus in the diet as a predisposing factor in rickets led to his discovery of vitamin D and the principle upon which assays for antirachitic substances can be made. He has studied magnesium, potassium, sodium, and zinc deficiency diseases. With his co-worker, Dr. Elsa R. Orent, he discovered the necessity for manganese in the diet. Although growth and fertility remain unimpaired in manganese-free female rats, lactation is impaired and maternal instinct lacking. Male rats on the same diet suffer testicular degeneration and become irreversibly sterile after about ninety days.

Magnesium deficiency disease was first produced by Dr. McCollum, and its more important aspects were studied in the rat and dog. The results explain the etiology of a deficiency disease afflicting milch cows in the Netherlands and New Zealand, and it has been found that many humans afflicted with muscular twitchings respond to magnesium therapy. Sodium, potassium, and phosphorus deficiency diseases have also been produced. Aluminum, nickel, cobalt, and fluorine have all proved physiologically inactive.

A Foundation appropriation of $32,500 to the Johns Hopkins University for Professor E. V. McCollum's work for five years will aid the researches on these substances and new studies to determine whether such elements as bromine, vanadium, and boron play physiological roles. These researches will involve not only a study of blood, tissue, and urine chemistry, but also, in cooperation with pathologists and physiologists, the study of pathological changes and disturbance of function of experimental animals in specific deficiency diseases.

University of Pennsylvania
The Role of Diet in Resistance to Infection

Another group working on the presence of minerals and other elements in the diet, but with particular reference to their influence upon resistance to infection, is that headed by Dr. Charles F. Church of the Department of Pediatrics of the University of Pennsylvania School of Medicine. During the past two years Dr. Church has been feeding synthetic diets to three strains of mice developed by Dr. Leslie T. Webster of the Rockefeller Institute for Medical Research. These mouse strains exhibit, within satisfactorily narrow limits of variation, uniform susceptibility or resistance to various infectious agents. The resistant line, when inoculated with mouse typhoid, exhibits only a 10 per cent mortality in

ten days; 60 per cent of the intermediate line die in ten days; and all of the susceptible line die in ten days. By varying the amounts of fat, calcium, magnesium, potassium, and other substances in the synthetic diet, it has been possible to chart the effects of diet change upon resistance to disease. Reducing the potassium in the diet had no effect on the resistant line, but resulted in high mortality in the intermediate line. Lowered calcium caused high mortality in the resistant line.

In 1936 The Rockefeller Foundation made an appropriation of $10,000 to pay the salaries of research assistants and technicians and to purchase supplies and food for the mouse colony until June 30, 1937. With this aid Dr. Church and his assistants have added to their knowledge of the factors involved in these experiments by chemical analyses and control of the diets used, and by histological studies. Although it is too early to draw conclusions, the results do indicate certain significant differences in the resistance of groups of mice maintained upon synthetic diets of different mineral composition.

Cornell University
The Relation of Nutrition to the Physiology of Adult Life

At Cornell University an experiment of four years' duration has been terminated which led

to conclusions somewhat at odds with the generally accepted physiology of nutrition today, which often assumes that rapid growth is the ideal for maximum health during both the growing period and adult life, and that the facts found during the period of growth may serve as a guide for optimum nutrition throughout life. Professors L. A. Maynard and C. M. McCay of the Laboratory of Animal Nutrition of Cornell University compared the performance of a group of rats growing at a normal rate with a group made to grow slowly by restricting their calorie intake. Animals which were kept undersized to an age corresponding to ninety years of a man's life were still able to grow when given sufficient calories, and preserved their youthful characteristics much longer. This limited-calorie feeding also resulted in a much longer life span than had been reported by other investigators. The general conclusion drawn from these studies is that optimum growth is not necessarily the most rapid increase in weight and size. Various internal factors, such as organ development and function, must also be considered. The postponement of senility and the lengthening of life as a whole may be favored by a diet which does not produce the most rapid growth in weight.

Recognizing the need for a long-time study of the relationship of nutrition to the physiology

and pathology of middle life and old age, in order to establish the optimum nutritional needs of the adult so that a normal life span may be attained, the Foundation appropriated $42,500 to Cornell University for researches in nutrition from April 1, 1936, to December 31, 1941, under Professor Maynard's direction. As usual, these funds will be employed for the salaries of research assistants and the purchase of equipment and supplies. The Foundation's grant will extend these studies over a considerable period and will enable the Cornell investigators to add to their work several features which have hitherto been lacking, such as extensive x-ray studies. In most of the nutrition studies that have been made, the effects of the rate of growth in early years on the subsequent health, susceptibility to disease, and life span have received little attention, although a negative correlation between rate of growth and longevity has long been suspected, and was noted in particular by Francis Bacon. Prolongation of life associated with a retarded rate of growth has been observed in such divergent forms as insects, brook trout, and even cantaloup seedlings, as well as rats. It would seem that some of the current tenets in the field of nutrition need to be reconsidered in this effort to determine the optimal rate of growth for each period of life.

University of Illinois
Biochemical Studies of the Amino Acids

Professor W. C. Rose of the University of Illinois isolated in 1935 a new amino acid, or protein constituent, necessary to life. Professor Rose was endeavoring to learn which of the amino acids are necessary to life, and was feeding rats a mixture of foods containing no protein but to which had been added all the twenty-one amino acids then known. Because these animals sickened rapidly and died, the presence of a hitherto unknown but essential food component was indicated. Further work on this discovery was assisted by a research aid grant from the Foundation in 1935, and in 1936 an appropriation of $10,000 provided for the continuation of the research for two more years. Professor Rose has identified this twenty-second amino acid, calling it threonine, and has prepared it synthetically.

Nine amino acids have now been shown to be essential for life; nine others are certainly dispensable for growth but may be required for other functions. Prolonged experiments on their relation to reproduction will soon be undertaken. Only four amino acids are of uncertain significance now. Professor Rose has been the first to grow normal animals on amino acids in place of proteins in a normal diet. During his

first year with Foundation assistance he carried on a number of investigations involving the two sulphur-containing amino acids, methionine and cystine, showing for the first time that the former is an essential component of food and that it can completely replace cystine in the diet, although for twenty years cystine has been regarded as indispensable. One of the simple amino acids, valine, was shown to be essential for life, valine deficiency inducing the most profound nutritive failure, with loss of coordination in movement and extreme sensitiveness to touch. Alanine, aspartic acid, and glucosamine were established as non-essential to proper diet.

During the two current years of Foundation assistance (which provides for the salaries of research workers and the purchase of amino acids) Professor Rose will work on the determination of the amount of each essential amino acid needed by the animal body. This necessitates a large number of feeding trials, involving the use of many animals receiving different levels of each of the ten or more indispensable dietary components. After the minimum amount of each amino acid which will promote maximum growth has been estimated, it should be possible to formulate a mixture of amino acids of a composition determined by the physiological requirements of the organism for

each component. It is anticipated that such a mixture will be unusually effective in maintaining protein equilibrium. Experiments will then be carried out through several generations to determine whether certain acids which are not necessary for growth on a purified diet are needed for other functions, such as reproduction. Finally it is hoped to synthesize each of the necessary amino acids.

Radiation Effects

The Johns Hopkins University
Studies on Photosynthesis and Photo-oxidation Processes

The basic importance of radiation effects in a program of experimental biology is indicated by the fact that we receive from the sun in the form of radiant energy not only the heat and light which currently provide a suitable environment for life, but also the original energy which makes possible the growth of all plants and animals. With the developments of chemistry and physics of the past fifty years has come a great development in qualitative and quantitative determination of the responses of living organisms of various types to all sorts of radiations. In 1935 the Foundation made a grant of $75,000 for three years' support of the National Research Council's Committee on Effects of Radiation on Living Organisms, which in turn, like the Committee for Research in Problems of Sex, makes grants

to individual workers. Only one other grant has since been made in this field by the Foundation: that of $10,000 in 1936 to enable Professor James Franck of the Department of Physics of the Johns Hopkins University to purchase equipment and supplies and employ a research assistant for his work on photosynthesis and photo-oxidation processes during the period from May 1, 1936, to August 31, 1938.

Many years ago Professor Franck made basic contributions to the physical aspects of photochemical problems, to which he is again turning his attention. Photosynthesis, which is the process by which carbohydrates are formed from water vapor and carbon dioxide in the green tissues of plants exposed to the action of light, is one of the most basic and important of all biological phenomena, and yet it is far from being clearly understood. Professor Franck's approach to the problem is from the point of view that any theory of photosynthesis must square with the established principles of molecular physics. By using these principles together with chemical knowledge, he has described a set of photochemical processes which are plausible and in agreement with the results of atomic physics, without constituting a complete theory. Of particular interest are his studies of fluorescence phenomena in connection with photosynthesis.

He has found it possible to explain as a photo-oxidation process the relations between the intensity of fluorescent light emitted from living leaves and the time of irradiation. Other problems to be investigated with the help of Foundation funds will concern different light intensities, different wave lengths, constant irradiation, and light flashes of different duration with measurement of the afterglow.

Aid to Groups

Rothschild Foundation
Institute of Physicochemical Biology

In several instances the work of a whole biological group, department, or division has been found to fall so closely within the range of the interests of The Rockefeller Foundation that aid has been extended to the group as a whole. Such an appropriation was made in 1936 to the Institute of Physicochemical Biology of the Rothschild Foundation in Paris, to pay the salaries of research assistants and to purchase equipment and materials during the five-year period beginning October 1, 1936, for researches in chemical embryology and tissue culture under the direction of Professor E. Fauré-Frémiet, researches in the biochemistry of oxidation reduction potentials and cell metabolism under Professor René Wurmser, and researches in genetics under

the direction of Dr. B. Ephrussi. The sum of $50,400 was appropriated for this purpose.

The program of the Institute parallels rather closely The Rockefeller Foundation's present program in the natural sciences, particularly those aspects in which the techniques of the physical sciences are brought to bear upon the problems of biology and medicine, with special emphasis on three of the subfields of the Foundation program, namely cellular physiology, chemical embryology, and genetics. The three groups will be working in close cooperation in the same institute, and with a clear recognition of the interrelationships and mutual interdependence of their respective fields. Professor Fauré-Frémiet is the foremost experimental cytologist in France; he has a recognized international reputation in cytology as well as in embryology and histochemistry. His present researches deal with the nature and method of formation of certain intercellular substances called scleroproteins, important in metabolism and embryology. Professor Wurmser is working on the biochemistry and electrical properties of cells and tissues, and on the relation between respiration, fermentation, and synthesis during cell division. Dr. Ephrussi, who has worked with Professor Fauré-Frémiet for ten years, developed within the last two years, in cooperation with Dr. Beadle of the

California Institute of Technology, a technique for the transplantation of various organs of fruit flies in the larval stage from one race to another. In the transplantation of eye rudiments and of ovaries, many embryological problems arise; in this aspect of his work Dr. Ephrussi will have Professor Fauré-Frémiet's cooperation. Professor Wurmser will be available for biochemical assistance in problems involving pigmentation. It is expected that cooperative work in these borderline fields will furnish much information of importance.

National Research Council

Over a period of many years The Rockefeller Foundation has made appropriations in support of the activities of the National Research Council—for fellowships, grants in aid, special committees, conferences, studies, and support of the general administrative budget. During 1936 two more such appropriations were made: one of $35,000 for use from January 1, 1936, to June 30, 1937, and the other of $75,000 for the subsequent three years. Of the latter sum, about $10,000 a year will provide 10 per cent of the administrative budget of the Council; conferences called by the Council and special studies and committees organized by it will receive support; and certain international scientific projects will be aided.

Massachusetts Institute of Technology
Construction of a Differential Analyzer

In the Annual Report of The Rockefeller Foundation for 1935, on pages 174–176, will be found pictures and a description of the differential analyzer being constructed at the Massachusetts Institute of Technology with the help of Foundation funds. The analyzer, which is a machine that solves differential equations, enables analysis to be more freely and effectively employed in all those widely diverse scientific investigations where differential equations describe the phenomena in question. In 1935 a grant of $10,000 was made by the Foundation to defray expenses occasioned in the design and development of this new and greatly improved model. It was necessary to develop some seven complicated and precise electrical and mechanical devices in order to carry out the plans. In 1936 a Foundation appropriation of $85,000 was made to cover general costs, materials, expert machining, and assembling the various units forming the completed machine.

This analyzer will have a scientific significance far beyond the mere fact that it will rapidly and accurately solve a wide variety of problems now beyond reach, for its existence should induce scientists to attack problems which they would be foolish to attempt at the present time. Its

impact on the whole field of quantitative science promises to be of high significance. At the Massachusetts Institute of Technology the improved differential analyzer will be available to scientific workers from all over the world.

Former Program

Harvard University
Blue Hill Meteorological Observatory

In previous years financial assistance was given by the Foundation for aerological and meteorological research at several American institutions. Although these fields of science are no longer included in the program of the Foundation, the sum of $4,000 was given to Harvard University in 1936 for use during that year in developing and testing balloon radio-meteorographs at the Blue Hill Meteorological Observatory. Because there have been various disadvantages in the usual method of collecting upper air data in the United States by aeroplane, a small light instrument was developed, at the Observatory directed by Professor Charles F. Brooks, which measures temperature, pressure, and relative humidity, automatically transmitting its recordings by short-wave radio. So successful have balloon radio-meteorographs proved that the United States Weather Bureau, the Canadian Government, the University of Minne-

sota, the Massachusetts Institute of Technology, and the United States Navy have used them for experimental and practical purposes. The grant from The Rockefeller Foundation covered only part of the period of development of these instruments, but it proved to be timely aid; and in a few years it is expected that this balloon method will largely have replaced the aeroplane method of gathering data. A five-year program has been outlined by the Observatory, aiming at the study of the internal characteristics of storms, the heights of fog and cloud layers, the occurrence of freezing rain at different levels, and the winds and other weather conditions at high levels.

Yale University
Research in Oceanography

Another former interest of The Rockefeller Foundation was oceanography. In 1936 the Foundation made an emergency appropriation of $10,000 to Yale University to support research in oceanography under Dr. A. E. Parr during the two years from July 1, 1936, to June 30, 1938. The Bingham Oceanographic Laboratory of Yale University is, in a sense, an offspring of the Woods Hole Oceanographic Institution, with which it has been working in close cooperation. It has carried on an extensive hydrographic survey of the Central American seas, hitherto almost entirely uninvestigated. This emergency

grant from the Foundation will enable Yale University to complete this survey and utilize the great mass of data accumulated on expeditions of the past five years.

China Medical Board, Inc.
Paleontological Research in China

A third former field of Foundation interest is anthropology. The paleontological finds in the caves of Choukoutien near Peiping, China, of skulls of "Peking Man" constitute one of the most dramatic and significant advances ever made in knowledge of ancient man, and one of unquestionable scientific import. When Dr. Davidson Black, the first leader of these investigations, died in 1934 he was succeeded by Dr. Franz Weidenreich, under whose direction the recent find of two practically complete skulls was made. Because of the outstanding interest and importance of this work, because the Foundation had previously supported the project, and because of the relations between this project and the Foundation's other interests in China, in 1936 an emergency grant of $10,000 was made to the China Medical Board, Inc., to enable the Peiping Union Medical College to continue the human paleontological research until March 31, 1937. This grant was followed by an appropriation of $75,000 for the support of the work during the subsequent three years. These funds will

provide salaries, travel expenses, cost of reconnaissance and excavation, equipment for work, as well as publication of the results.

Fellowships

Since 1919 The Rockefeller Foundation has supplied funds to the National Research Council for fellowships in the physical sciences, and since 1923 for fellowships in the biological sciences. This aid was continued in 1936, when an appropriation of $167,500 was made, to be used during the three years beginning July 1, 1937, $67,500 during the first year, and $50,000 each succeeding year. During 1936 there were thirty-seven fellows working in the physical sciences, and forty in the biological sciences, on National Research Council fellowships. There were two Canadians in each group, and there was one fellow from each of the following countries among those working in the physical sciences: England, Germany, Poland, and Switzerland. All the rest were United States citizens. Thirty-two holders of fellowships in the biological sciences studied in the United States, three in England, two in Germany, and one each in Ireland, Switzerland, and Sweden. Of the fellows in the physical sciences, all but one studied in the United States; that one worked in Germany.

Eighty-nine fellowships in the natural sciences, including thirty-four financed by the General Education Board for students of United States citizenship, were administered directly by the Foundation during 1936. Their distribution according to fields of work was as follows:

Biochemistry	18	Bacteriology	4
Chemistry	6	Mathematics and biostatistics	4
Physiology	13	Zoology	3
Genetics	12	Morphology	2
Endocrinology	9	Physics and geophysics	2
Experimental embryology (developmental mechanics)	7	Botany	2
Biophysics	6	Experimental anatomy	1
Cytology	5	Astronomy	1
Biology and microbiology	5	Neurohistology	1

The following table shows the distribution of these fellows by country of origin:

FELLOWSHIPS IN THE NATURAL SCIENCES ADMINISTERED BY THE ROCKEFELLER FOUNDATION DURING 1936

Country of Origin	Number of Fellows
United States	34
Poland	8
France	8
England	7
Denmark	4
Germany	4
Hungary	3
Sweden	3
Bulgaria	2
Czechoslovakia	2
Greece	2
Spain	2
Switzerland	2
Yugoslavia	2
China	1
Irish Free State	1
Italy	1
Netherlands	1
Norway	1
Scotland	1
Total	89

The next table shows the distribution of fellowships directly administered by The Rockefeller Foundation in the natural sciences, ac-

cording to the country of origin of the fellows and their chief places of study.

Grants in Aid

Some of the larger grants in aid made in 1936 are the following:

$5,000 to Columbia University to provide assistants' salaries and supplies for the researches on the biochemistry and genetics of cystinuria in dogs, by Professor Erwin Brand of the Department of Biochemistry.

$5,000 to the Massachusetts Institute of Technology to provide assistants' salaries, animals, and supplies for researches on radiation and vitamins under Professor John W. M. Bunker of the Department of Biology and Public Health, dealing with rickets, vitamin D, ultraviolet radiation, and x-ray testing for rickets.

$6,000 to Harvard University to provide assistants' salaries and supplies for Professor F. L. Hisaw of the Biological Laboratories of the University in connection with research in endocrinology.

$6,000 to the University of Maryland to provide assistants' salaries and equipment and materials for the researches on water balance from the standpoint of plasma volume changes, being carried on by Professor Magnus I. Gregersen.

$5,550 to be divided between the Harvard Medical School and the Massachusetts Institute of Technology for joint researches on the spectroscopic analysis of the blood serum of anemic children, under Dr. Kenneth D. Blackfan of Harvard and Professor George R. Harrison of the Institute.

$5,000 to the Rensselaer Polytechnic Institute, Troy, New York, for the researches of Professor Orlan M. Arnold of the Department of Chemistry in connection with quantitative investigations of the structure, molecular

FELLOWSHIPS IN THE NATURAL SCIENCES ADMINISTERED BY THE ROCKEFELLER FOUNDATION DURING 1936, ARRANGED ACCORDING TO COUNTRY OF ORIGIN AND CHIEF PLACE OF STUDY

Country of Origin	Total	Chief Country of Study							
		Denmark	England	France	Germany	Netherlands	Sweden	Switzerland	United States
Bulgaria	2	1	1	..	..	..	..	..	..
China	1	..	..	..	..	..	..	..	1
Czechoslovakia	2	..	..	..	..	..	1	..	1
Denmark	4	..	1	..	..	..	1	..	2
England	7*	..	..	..	..	..	1	1	4
France	8	..	1	..	1	..	..	1	5
Germany	4	..	..	..	..	..	..	..	4
Greece	2	..	..	..	1	..	..	..	1
Hungary	3	..	1	..	..	..	1	..	1
Irish Free State	1	..	..	..	..	..	..	..	1
Italy	1	..	1	..	..	..	..	..	..
Netherlands	1	..	1	..	..	..	..	..	..
Norway	1	..	1	..	..	..	..	..	..
Poland	8	..	4	1	..	..	..	..	3
Scotland	1	..	..	..	1	..	..	..	..
Spain	2	..	..	..	..	..	1	..	1
Sweden	3	..	1	..	..	..	..	..	2
Switzerland	2	..	1	..	..	..	..	..	1
United States	34*	1	8	..	1	3	2	1	17
Yugoslavia	2	..	1	..	..	..	..	..	1
Totals	89	2	22	1	4	3	7	3	45

* 1 visited different European centers

weight, particle size, and electrical behavior of important proteins and similar systems, by means of dielectric dispersion and related physical measurements. Assistants' salaries and equipment and supplies will be provided.

$4,000 to Brown University to provide assistants' salaries, equipment, and supplies for Professor P. B. Sawin of the Department of Zoology in connection with researches on genetic and serological studies on the rabbit.

$4,000 to Columbia University for the salaries of research assistants and the purchase of equipment and supplies in connection with the research in chemical embryology being conducted by Professor L. G. Barth of the Department of Zoology, particularly in regard to the development of the nervous system.

$4,000 to the University of Southern California for technicians' salaries, equipment, animals, and supplies for Professor H. J. Deuel of the Department of Biochemistry for his researches on the source of the ketone bodies and on the factors which influence their rate of production.

$4,000 to the University of Texas to provide the salaries of research assistants, equipment, and supplies for the researches in cytogenetics under Professor J. T. Patterson of the Department of Zoology.

Altogether there were thirty-one such grants made in the New York office during 1936 to assist individual scientists engaged in research fields in which the Foundation is especially interested. Ninety thousand dollars was available for this purpose. The Paris office of The Rockefeller Foundation made many similar

grants to European workers from its available fund of $80,000 during 1936. Of these may be mentioned:

$6,000 to the Department of Anatomy, Histology, and Embryology of the Royal Hungarian University of Budapest, directed by Professor Theodor Huzella, for equipment, supplies, and the construction of apparatus for his researches in experimental cytology.

$4,275 to the Physiological Laboratory of the University of Bern, directed by Professor Alexander von Muralt, to provide a technical assistant, apparatus, and equipment for his researches in the application of optical techniques to the study of biological tissues.

$3,000 to the Carlsberg Chemical Laboratory of Copenhagen, directed by Professor S. P. L. Sörensen and Professor K. U. Linderstrøm-Lang, to provide a histological assistant and equipment for researches in enzyme chemistry.

$3,000 to the Department of Organic Chemistry of the University of Manchester, directed by Professor I. M. Heilbron, to provide assistants for researches on the chemical phases of vitamins, hormones, and general sterol problems of biological interest.

$3,000 to the Zoological Institute of the University of Göttingen, directed by Professor Alfred Kühn, to provide assistants, animals, equipment, and supplies for researches in genetics and endocrinology.

$3,000 to the Pharmacotherapeutical Laboratory of the University of Leiden, directed by Professor S. E. de Jongh, to provide apparatus, equipment, and supplies for research in endocrinology.

Fifty-nine such grants in aid were made by the Paris office during 1936.

THE NATURAL SCIENCES STAFF DURING 1936

DIRECTOR
Warren Weaver

ASSOCIATE DIRECTOR
Frank Blair Hanson

ASSISTANT DIRECTORS
Harry M. Miller, Jr.
W. E. Tisdale

THE SOCIAL SCIENCES

CONTENTS

THE SOCIAL SCIENCES

Since 1935 new undertakings within the program of the social sciences of The Rockefeller Foundation have been largely confined to three areas of special interest—social security, public administration, and international relations. The choice of these areas of concentration followed the conviction that each was of basic importance in contemporary American life, and further that each presented problems suited for study and research by organizations to which the Foundation might wisely offer financial aid. For a number of years the Foundation had sought opportunities to link the objective research of academic institutions with the planning and activities of public organizations making a practical attack upon a variety of social problems. More recently the emphasis has been upon giving aid for constructive work directly related to current problems. The three fields included in the new program had been recognized as interests of the program in the social sciences prior to 1935, and considerable funds had been given for research in economic stabilization, in international relations, and for university research and training in public administration. This previous work

made a basis on which to build an expanded and somewhat more intensive program.

The program in social security has two central interests: (1) the improvement of the statistical record of structural and cyclical change and sharper identification of the causal factors involved; and (2) the analysis and adaptation of social measures designed to mitigate individual suffering due to unemployment which may be a result of economic change, or due to illness, accident, and old age, which are ordinary hazards of human life. The underlying assumption of this twofold program is that economic and social changes are to an appreciable extent man-made and hence controllable, and that, pending adequate understanding of the causes of disruptive change, the individual must be protected in the interest of political and social stability. The preventive aspect of the program finds expression in a number of Foundation grants to universities and research organizations in the United States and Europe where work is specifically directed toward problems of the business cycle and the resulting economic instability. The ameliorative aspect of the program is at present concerned with questions centering upon the social insurances and relief in the United States.

The program in public administration is designed to bridge the gap that exists between

practical administrators in the government service and scholars in the universities in the field of the social sciences. Aid has been given to the Social Science Research Council's Committee on Public Administration, which itself sponsors research upon key problems of public administration, while it encourages similar studies in universities and institutes of research. The Foundation supports a number of such research enterprises together with a variety of projects designed to recruit and train a higher type of personnel for career service in the government.

The objectives of the program in international relations are the promotion of understanding of, and greater intelligence in regard to, world problems among larger sections of the public, and the creation of more competent technical staffs attached to official or non-official organizations dealing with international affairs. The greater part of Foundation interest is in enterprises concerned with the study of international problems for the purpose of informing and guiding public opinion. Three types of organizations are receiving Foundation support: (1) those like Chatham House in England and the Foreign Policy Association in the United States, which carry on the two functions of study and dissemination simultaneously with almost equal emphasis; (2) those concerned primarily with

research and the creation of personnel for technical and advisory service in connection with international problems, such as the Graduate Institute of International Studies, Geneva, and the Department of Research in International Relations at Yale University; and (3) those which focus upon coordinated research undertakings and periodic conferences with international representation, as the Institute of Pacific Relations and the International Studies Conference.

During 1936 provision was made for gradual withdrawal from that part of former program in the social sciences which had been concerned with support of university centers of research in the United States and Europe. By the end of 1940 the Foundation program of financing general research in the social sciences at certain institutional centers will probably be brought to a close. A brief account of work in connection with new projects inaugurated in 1936, and with projects still active under earlier grants, either under general or former program, is given on succeeding pages.

Social Security

Dutch Economic Institute

The work of the Dutch Economic Institute attached to the University of Commerce in

Rotterdam centers around problems of cyclical and structural changes, particularly with reference to the Netherlands and its colonies. In 1931 The Rockefeller Foundation appropriated $25,000 for support of the Institute's research program over five years; in 1936 a second grant, of $16,800, was made. The three-year program of research now under way with this assistance includes the investigation of public and private investment, flexible public works, detailed industrial studies, analysis of foreign experiments, and a statistical and descriptive record of current events, as well as miscellaneous studies of national interest. The Dutch Economic Institute cooperates with the Central Statistical Bureau at The Hague and with the University, and has the support of leading Dutch business men. Pursuit of research along the lines indicated is especially facilitated by the compactness of the economic life of the Netherlands and the important place held by that country in world international trade. The Foundation's recent appropriation provides for staff salaries, publication, and general expenses.

University of Louvain
Institute of Economics

Research of fundamental nature into the causes of structural and cyclical economic change is being conducted in another small European

nation—Belgium. The Institute of Economics of the University of Louvain in 1933 received a grant of $5,000 from the Foundation which enabled it to add an economic statistician to its staff and so expand its work. In 1936 a further appropriation of $3,000 was made to the Institute to provide for short comparative studies of developments in neighboring countries and for additional research assistants over the three years 1936–39. In the past ten years the Institute has prepared an unusually thorough historical record of the economic development of Belgium, building up indices of production and consumption, of wholesale and retail prices, of wages, of interest rates, and of international trade movements. These figures are constantly used in current studies, and the Institute cooperates closely with government, industry, and finance. The full statistical study now being compiled of the economic development of Belgium over the past century will be of value to all students of long-run structural change and of recurring cyclical fluctuations.

Industrial Relations Counselors

For some years the Foundation has supported special investigations in the field of social security by the Industrial Relations Counselors, a non-profit-making organization in New York

City, and has made grants enabling the Counselors to render advisory services to government agencies on an unpaid basis. In 1936 a further appropriation of $6,000 was made by the Foundation for this latter purpose, in connection with recent Federal and state social security legislation and administration. This grant permitted the Counselors to respond generously to the frequent appeals of Federal and state agencies. The principal demands came from the Social Security Board in Washington and from the New York State Unemployment Insurance Administration. A grant of $5,000 was also made to the Industrial Relations Counselors toward a study of American railroad retirement systems. This investigation, under the direction of Dr. Murray Latimer, will appraise the pension systems proposed by the various railroads and labor organizations, critically analyze the Railroad Retirement Act, and give positive recommendations on the question. The Foundation's grant will provide Dr. Latimer with technical assistance and cover traveling expenses and the costs of printing the report.

Social Science Research Council
Committee on Social Security

The Foundation made two appropriations to the Committee on Social Security of the Social Science Research Council during 1936. One of

these, amounting to $15,500, was for the promotion of regional studies of the labor market in relation to unemployment compensation. This grant was made for the dual purpose of developing research personnel interested in this new field and of providing data useful to the intelligent planning and administration of unemployment insurance. Studies were undertaken in nine of the less industrialized states by university professors during their summer vacations. A certain unity was attained through the supervision of a competent specialist in social security. In general the studies stressed the following points: the industrial and occupational character of the individual state; significant industrial, occupational, and population trends; the nature and extent of seasonal employment and unemployment; relative wage levels in seasonal and steady occupations; the relative importance of casual and migratory labor and the extent of interstate migration of labor; the extent of part-time labor in trade and industry, and the relation between part-time work, migratory and casual labor, and the problem of seasonality; and the placement and turnover problems of employers.

The second appropriation to the Committee was for the purpose of making a quick study of relief practices in New Jersey before and after

the withdrawal of Federal support following the refusal of the state legislature to appropriate funds for relief. The Committee felt that a prompt study of the consequences of this shift over to local responsibility promised to provide information important to the determination of the country's future relief policy. The Foundation appropriated $15,000 for the study.

Public Administration

Social Science Research Council
Committee on Public Administration

There is general agreement that the most pressing initial problems confronting those responsible for setting up the machinery of social insurance are the problems of administration, for an elaborate organization must be built from the ground up to administer the government provisions for unemployment compensation, old-age insurance, and non-contributory old-age pensions. The difficulties of developing adequate management of schemes affecting from twenty to thirty million persons under divided Federal-state control are formidable. The willingness of the Social Security Board to make use of the findings of objective research conducted by outside agencies has provided an unusually favorable opportunity to link research to a developing nation-wide program of major impor-

tance. Accordingly, The Rockefeller Foundation, which had financed the Social Science Research Council's Committee on Social Security for general studies relating to the Federal social insurances, provided an additional appropriation of $80,000 to the Council's Committee on Public Administration, to be used for intensive study of the administrative phases of the social security program. In furtherance of this end, three projects have been carried to completion, or will be brought to conclusion shortly: (1) detailed studies of the administration of unemployment compensation in Wisconsin and New Hampshire have been published; (2) an intensive study, at the specific request of the Social Security Board, of those phases of unemployment compensation and employment service in Great Britain and Germany of most interest to state administrators in this country has been made; and (3) based upon field work in all states which have operated systems for one year or more, a study has been made of the organization, records, procedures, and other aspects of the administration of unemployment compensation.

Throughout, the group responsible for these studies has been in close contact with the Federal and state administrators of the act, and the usefulness of the work accomplished has been generously acknowledged.

A further grant of $15,000 was made by the Foundation to the Social Science Research Council's Committee on Public Administration to be used as a fluid fund during 1937 in organizing studies of an exploratory nature, conferences, or small projects in public administration. In this way the Committee can perform the necessary and useful office of an intermediary between practitioners and academic scholars, and between the different research centers of the country, as well as initiate research. Three of the projects supported by a former grant of this sort to the Committee broke new ground in the study of public administration in the United States and have already influenced current procedure in important respects. One of these dealt with the administration of the label codes under the N.R.A.; another with the administration of the four billion dollar fund provided under the Emergency Relief Act of 1935; and the third with the administration of the Social Security Act, a study now merged with the more extensive investigation reported above.

Typical of the activities of the Committee on Public Administration is a prospective study of the administrative aspects of the Tennessee Valley Authority and of the administrative devices employed by the Authority, in order to appraise their effectiveness as instruments of public ad-

ministration. It will not deal with the social and economic implications of the Authority's activities, but with the administrative organization developed to put the program into effect. Because this investigation promises to be immediately useful to those in charge of the Tennessee Valley Authority's future operations, as well as to contribute to the general art of administration by its analysis of certain new devices and procedures employed, The Rockefeller Foundation appropriated $20,000 to the Committee on Public Administration for this study. Up to now there has been little technical exploration of the public or quasi-public corporation as an administrative device, although it is being increasingly employed upon Federal, state, interstate, and local levels. The Tennessee Valley Authority is an ambitious use of the device at the Federal level, and as such merits close study.

University of Virginia
Bureau of Public Administration

During 1936 The Rockefeller Foundation made appropriations to two universities in the United States and one in Canada for work in public administration. The University of Virginia received a grant of $40,000 for the use of its Bureau of Public Administration in developing a program of service and research. The Bureau was established in 1931 within the Uni-

versity of Virginia, and working in close collaboration with the League of Virginia Municipalities it engaged in projects which proved of definite usefulness in forwarding the cause of better local government in the State.

The Foundation's grant has enabled the Bureau to broaden the scope of its work. In reorganizing, it placed responsibility for policy formation in an Advisory Council, including in its membership the Governor of the State, the President of the University of Virginia, a State Senator, and directing officers of the Virginia State Planning Board, the Governor's Advisory Legislative Council, the Virginia Commission on County Government, and the League of Virginia Municipalities. Under this Council the Bureau has set itself the task of effecting a working liaison between governmental agencies and academic and research institutions within the State. Thus it attempts to define important problems which affect public welfare and with which official agencies are not equipped to deal in long-time perspective; to find research groups in Virginia which can be interested in giving such problems the treatment they need; and to see that the results of this research are translated back to the official agencies concerned.

Under this formula the Bureau has sponsored a number of programs including an intensive

study of metropolitan government in Virginia; another of county areas, with a view to determining the possibilities of efficiency and economy through integration of services of rural government; and a survey of the needs for in-service training of Virginia public employees, and the resources of educational institutions within the State for furnishing useful training.

University of Minnesota
Training of Personnel for Public Service

The University of Minnesota received an appropriation of $85,000 in 1936 for the support of a program of training personnel for public service over a period of five years beginning July 1, 1936. This program coordinates all the services of the University and makes the facilities of every related department available to workers in public administration. A permanent "laboratory" in government has been set up with its own office, library, and staff facilities, where conferences, study, and advisory work are carried on. Two classes of fellowships are offered by the University of Minnesota in connection with this five-year program: those termed "pre-entry," and open to graduate students, providing a year of study at the University and a year of apprenticeship in government service, culminating in a written report or thesis; and the "post-entry," or those open to men and women

of experience in public service who can obtain leave of absence for a year's advanced study at the University.

Dalhousie University
Training and Research in Public Administration

Dalhousie University in Halifax, Nova Scotia, was the recipient of a grant of $61,200 from the Foundation for use over the five-year period beginning September 1, 1936, for training and research in public administration. Dalhousie University will be the first Canadian university to offer training courses for prospective civil servants. The program which has been carefully worked out includes a special honors course for undergraduates, together with a one-year graduate program leading to the master's degree; in-service training programs for those already in public positions; an extensive program of research and publication upon administrative problems important to the Dominion and the Maritime Provinces; and a limited number of service projects in direct collaboration with public officials and organizations, such as the Union of Nova Scotia Municipalities.

International Relations

Foreign Policy Association

The program of the Foundation in international relations aims, as was indicated above,

not only at the advancement of research and the improvement of techniques of international cooperation but also at the improvement of the understanding of international problems on the part of the public generally. With this latter end in view, funds are given to organizations which undertake the education of the public in international affairs. Prominent among such groups in the United States is the Foreign Policy Association. Since January 1933 the Research Department of the Association has been aided by The Rockefeller Foundation; and in 1935 a first grant was also made in support of the experimental educational program of the Department of Popular Education of the Association. This experimental program, described in some detail in the 1935 report of the Foundation, received a second grant of $25,000 in 1936. In an effort to advance the general level of intelligence in the United States upon world affairs, the Foreign Policy Association is preparing materials suited to the needs of a wide audience, utilizing the basic data furnished by its own Research Department and by other organizations, and presenting them pictorially and in clear, simple style in its "Headline Books." During 1936 eight of these books were issued, discussing, repectively, the possibility of war and American neutrality, domestic manufactures, dictatorships,

party platforms and peace, Pacific unrest, peace plans, American traditions and present policies. These inexpensive books are being widely used for secondary and adult education, by political and religious organizations, libraries, and newspapers, and by study groups of all sorts. Packets of supplementary study materials containing discussion outlines and additional references have been prepared to accompany each "Headline Book," and are the basis of the work of discussion groups in all part of the country. The use of moving pictures and radio as additional techniques in education in international affairs is also being studied by the Association.

Canadian Institute of International Affairs

The Canadian Institute of International Affairs with headquarters in Toronto is a national center of increasing prestige and influence upon research into international problems throughout Canada. It is an unofficial, non-partisan organization affiliated with the Royal Institute of International Affairs in London, the International Studies Conference, and the Institute of Pacific Relations. In some respects, by work carried on through a number of branches and affiliates, it resembles the Foreign Policy Association. The chief purpose of the Canadian Institute is to stimulate and guide discussion of world

affairs. A Foundation grant of $15,300 for use over the three-year period beginning July 1, 1936, will aid the research and educational activities of the Institute.

Royal Institute of International Affairs, London

The Royal Institute of International Affairs, London, is preeminent among national centers for study and research upon international affairs, and it directs public opinion not only in Great Britain but throughout the British Empire and, to some extent, in the United States. It is an unofficial organization independent of party politics, and specifically precluded by its charter from expressing its opinion on international affairs. Its purpose is to encourage and facilitate the study of international questions and to promote the exchange of information and thought on current world problems. The Royal Institute has developed the study group method of research, through which persons in political life, in business, and in government service are brought into contact with specialists and research students. The program is varied and there are many channels for disseminating the results of investigations and conferences. In 1936 an appropriation of $8,500 was made to the Royal Institute to provide additional funds for its research program from May 1, 1936, to April 30,

1937, supplementing losses due to currency exchange on the five-year grant made by the Foundation in 1932, which undertook to provide $30,000 annually to the Institute.

Geneva Research Centre

At the end of 1936 the Geneva Research Centre, first formally established in 1930, was reorganized and its activities reoriented. Originally directed by a committee of Americans, its main task had been the publication of studies concerning the work of international organizations at Geneva and allied problems of world politics. The new governing committee, which is composed of representatives of seven nationalities, has added to the function of publication the initiation of a limited number of fellowships for men wishing to carry on research in Geneva, the creation of a center where scholars can live and work, and the development of liaisons among other research organizations devoted to the study of vital problems of world peace, notably in the field of politics, economics, and law. Toward the general budget of the Geneva Research Centre the Foundation made in 1936 an appropriation of $12,000.

Library of International Relations, Chicago

The importance of developing national and international centers for the education of public

opinion on international relations has been recognized in several grants previously discussed. An organization which is doing much to advance interest in world affairs in the region of the Middle West is the Library of International Relations in Chicago. This is a free public reference library with a specialized open-shelf collection of source material on international affairs, and serves as a clearing house for information on publications of importance in this field. Its services are of unique value in Chicago, where only two universities of the forty-odd institutions of college rank have facilities for the study of international relations; and these two libraries, moreover, are not open to the public. Although the provision of library facilities is not a primary aim of the international relations program of the Foundation, an appropriation of $37,500 was made toward the budget of the Library of International Relations over the six years from 1936 to 1942 to supplement the funds contributed by eleven organizations cooperating with the Library.

Institute of Economics and History, Copenhagen
International Relations Section

Since its organization, the Institute of Economics and History in Copenhagen has given special attention to international problems and has been the Danish member of the International

Studies Conference. During 1936 plans were made with colleagues in Norway and Sweden to develop a cooperative Scandinavian program for the study of international problems and for the interchange of materials. The presence on the board of the Institute of some of the most prominent Danish scholars, statesmen, and business men also contributes to making it the chief Scandinavian center for scientific interest in international relations. A grant of $8,500 which the Foundation made in 1936 to the Institute toward the budget of the International Relations Section for a two-year period will provide for the salary of a permanent secretary and for clerical assistance, for the enlargement of the quarterly published by the Institute, for studies and conferences on currently important subjects, and for the purchase of library materials not now available in Denmark. The twofold objective is to stimulate interest in international problems among students and to disseminate information on world affairs throughout Denmark.

International Studies Conference
Special Grants in Aid

The International Studies Conference, like the Institute of Pacific Relations, is a nonofficial organization with an international membership of scientific institutions concerned with

the study of world problems. Assistance was first given by The Rockefeller Foundation in 1935 through the International Institute of Intellectual Cooperation, which was responsible for organizing the Conference. An appropriation of $15,000 a year for two years was made to cover salaries of personnel and the expenses involved in preparing for meetings. In 1936, $40,000 was appropriated for use until September 30, 1937, to provide special grants in aid to institutions and individuals collaborating with the International Studies Conference. The 1937 meeting, which deals with the general subject of peaceful change, will emphasize certain demographic and economic aspects of that problem.

The purpose of the Conference, which was created in 1927 with a membership of fifteen national and five international institutions, is to promote coordination in the preparation of studies for the biennial meetings and to strengthen cooperative relationships among groups carrying on research in international affairs. From the recent Foundation appropriation aid has been given to coordinating committees in Norway, Sweden, Hungary, Czechoslovakia, Great Britain, Poland, Rumania, Austria, Belgium, the Netherlands, Bulgaria, and Denmark.

The American Coordinating Committee, however, was given a specific grant of $30,000

through the Council on Foreign Relations for use in 1936 and 1937. The Committee is made up of representatives of the Council on Foreign Relations, the Foreign Policy Association, the American Council of the Institute of Pacific Relations, the American National Committee on Intellectual Cooperation, and six members appointed by the Social Science Research Council from universities or research institutes with developed valuable programs in international relations. A committee of experts has been appointed to prepare the American report and select the delegation to the 1937 meeting of the International Studies Conference, to arrange for the annual preparation of a report to the Conference on the activities of American institutions engaged in the study of world affairs, and to make provision for the dissemination of information about the Conference to appropriate institutions in the United States. The Foundation's grant to the American Coordinating Committee is intended to assist effective participation in the meeting of the Conference and to build for future cooperation on international problems.

General Program

The Brookings Institution

Since 1928 support for the general program of the Brookings Institution has been provided by

Rockefeller boards at the level of $75,000 a year. There have been, in addition, special contributions for certain projects of the Institution. In continuation of its support for the general program The Rockefeller Foundation in 1936 appropriated $225,000, available over the three years beginning July 1, 1936, at the rate of $75,000 yearly. The Brookings Institution has defined its program of work as including the systematic study of the basic problems of democratic government and the lessons to be learned from the experience of other countries, extension of investigations concerned with domestic economic issues in the fields of money and finance, agriculture, industry, labor, marketing, and the methods of progressively improving the distribution of income; and the expansion of work in the fields of public finance, international economic relations, and social welfare administration. In addition to this research program, the Institution is continuing a fellowship program in cooperation with the leading universities of the United States and offers to visiting social science scholars facilities as a center of intellectual life in the capital.

National Bureau of Economic Research

A second national center of economic research to which The Rockefeller Foundation has given

support for many years is the National Bureau of Economic Research. The Bureau has contributed in an important way to the increasing exactness and reliability of measurements of national income and its component parts, and has done pioneer work upon the more technical aspects of the business cycle. During 1936 the Bureau undertook to encourage, in collaboration with leading universities, systematic research in the fields of prices and of income and wealth distribution. Work in these fields is being developed through periodic conferences attended by the most qualified specialists in the universities and in governmental and private agencies. The Foundation made two grants to the National Bureau of Economic Research in 1936: $7,500 as a supplementary general budget item for the last six months of 1936, and $255,000 toward the general research program and the expenses of an executive director's office during 1937, 1938, and 1939.

Fellowships

Eighty-four fellowships in the social sciences were administered directly by the Foundation during 1936. Of these, twenty-two were new appointments in 1936, eight were reappointments, and the remainder were fellowships to which appointments had been made in previous

years. Data concerning the thirty fellows of the first two groups follow:

Subject of Study	No. of Fellows	Country of Origin	No. of Fellows	Country of Study	No. of Fellows
Economics	10	England	3	United States	11
International relations	8	France	3	England	8
		League of Nations	3		
		Poland	3		
Sociology	3	Australia	2	Various centers	3
Social security	2	Hungary	2	Switzerland	2
		New Zealand	2		
History	2	Rumania	2	Poland	2*
Political science	1	Austria	1		
Cultural anthropology	1	Belgium	1	Austria	1
		Czechoslovakia	1		
		Denmark	1	France	1
Human geography	1	Germany	1		
Agricultural economics	1	Italy	1	Germany	1
		Netherlands	1		
		Norway	1	Hungary	1
Public administration	1	Turkey	1		
		Yugoslavia	1	Tanganyika	1

* Also studied in Hungary.

In 1936 the Foundation appropriated $125,000 for fellowships in the social sciences for use during 1937 in both the New York and Paris offices. In addition, $50,000 was appropriated to the Social Science Research Council for research fellowships in the social sciences during the year 1937–38.

The Social Science Research Council in 1936 administered twenty-six research fellowships in the social sciences from funds supplied by The Rockefeller Foundation. Nineteen of these fellowships were awarded during 1936; the other

seven were fellowships continuing into 1936 but awarded in previous years. All the fellows, with the exception of one Canadian, are citizens of the United States. Their fields and countries of study are shown below:

Subject of Study	No. of Fellows	Country of Study	No. of Fellows
History	8	England	7
Economics	6	United States	7
Political science	3	Switzerland	3
Psychology	3	Germany	2
Sociology	3	Austria	1
Anthropology	2	The Balkans	1
Geography	1	Italy	1
		Rumania	1
		Russia	1
		Sierra Leone	1
		Spain	1

The following tabulation summarizes new fellowship appointments in the social sciences made by The Rockefeller Foundation and the Social Science Research Council from 1924 to 1936:

	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
Rockefeller Foundation	16	24	44	48	45	43	44	73	60	44	53	35	22
Social Science Research Council	..	15	12	17	17	25	28	25	30	15	13	13	19
Totals	16	39	56	65	62	68	72	98	90	59	66	48	41

Grants in Aid

As in the case of fellowships in the social sciences, grants in aid in this field to persons in the United States are made directly by the

Foundation and also through the Social Science Research Council. The New York office of the Foundation made eight grants in aid in 1936 to individuals and to institutions working on projects related to the program in the social sciences. These grants ranged in amount from $500 to $7,500 and included:

$2,500 to the Federal Radio Education Committee to provide the salary and incidental expenses of a script writer for a series of educational broadcasts upon local government administration to be distributed to local stations through the Office of Education during the year beginning November 1, 1936.

$3,000 to the Social Science Research Council toward the support of a study of the administration of grants in aid made by the central government to local governments in England, being carried out by Daniel N. Chester of the Economics Research Section of the University of Manchester.

$3,000 to enable Bryant Putney of the staff of "Editorial Research Reports" to spend a year with the Public Administration Clearing House and allied official groups in Chicago in order that he may acquire background for his work of supplying objective reports on matters concerning state and local governments to newspapers, libraries, and educational institutions.

$7,500 to the International Institute of Intellectual Cooperation to cover expenses involved in organizing international study groups to work on problems of colonies, population, raw materials, and a special regional study of Danubian problems during the last nine months of 1936.

The sum of $20,150 was allocated for these eight grants.

Sixty thousand dollars was appropriated in 1936 for grants in aid in the social sciences for use during 1937 in both the New York and Paris offices of the Foundation.

The Committee on Grants-In-Aid of the Social Science Research Council made forty-two awards totaling $23,260 in 1936 from funds provided by The Rockefeller Foundation. These research aid grants are awarded to individuals whose capacity for productive research is clearly demonstrated and who desire assistance in completing some significant piece of work. An appropriation of $25,000 was made by the Foundation in 1936 to provide further grants in aid of this sort in 1937–38.

The Paris office of The Rockefeller Foundation awarded forty-one grants in aid in 1936, totaling $58,935. Eight of these, amounting to $12,580, went to various national coordinating committees for studies relating to questions on the agenda of the 1937 International Studies Conference, namely, the Belgian, Austrian, British, Czechoslovak, Hungarian, Swedish, Norwegian, and Polish committees. An appropriation of $40,000 for such grants was discussed in the section of this report devoted to the program in international relations.

Former Program

Harvard University
Research in Anthropology

An appropriation of $30,000 to Harvard University toward its program of graduate research in anthropology during the three-year period July 1, 1936, to June 30, 1939, was made in 1936 in termination of financial aid to this program, which had been assisted for five years.

The Division of Anthropology at Harvard is one of the leading centers in the country for graduate training and research. The work of the Division is supplemented and enriched by close connections with the Peabody Museum. During the past five years the staff of the museum has grown, and the research activities of the two interlocking anthropological organizations have been amplified and strengthened. The museum is maintained by Harvard University and it in turn houses the Division of Anthropology and contributes in a number of ways to the Division's program.

The field researches of the Division are diversified. A few of the continuing projects are: race and nationality in relation to crime in the United States; interpretation of anthropometric data on the American population collected at the Century of Progress Exposition; sociological study of Cape Ann, Massachusetts; a racial sur-

vey of Ireland; anthropometry of Siam; sociological study of Newburyport, Massachusetts; Hawaiian studies; anthropometric study of Pitcairn Islanders (descendants of the mutineers of the *Bounty*).

McGill University
Research Program in the Social Sciences

McGill University has received a final grant of $51,000 toward a program of research in the social sciences over a four-year period beginning June 1, 1936. The present grant will make possible completion of the task begun as a result of a Foundation grant made in 1930. The research work at McGill has centered upon the study of employment and unemployment. There has been wide participation in this study, not only by recognized social scientists but also by men from the fields of public health, mental hygiene, psychology, and education. Within the next three years the material which has been assembled will be prepared for publication.

Institute of Economics and History, Copenhagen

The Institute of Economics and History of Copenhagen was established in 1927 to promote cooperative and inductive research into contemporary social and economic problems. It occupies an important position in Danish scientific life. The Institute is a laboratory of study of con-

temporary problems with facilities for training younger scholars. A terminal grant of $13,750 was made in 1936 toward the Institute's general program for use over the four-year period beginning January 1, 1937. An appropriation of $8,500 was also made for the work of the International Relations Section of the Institute during the two-year period beginning October 1, 1936. This latter grant is designed to aid Denmark in becoming a permanent center for the study of international affairs.

University of Oslo
Institute of Economics

A terminal grant of $30,000 was made to the University of Oslo for its Institute of Economics. The funds are available over a four-year period beginning January 1, 1937. This grant represents the termination of Foundation cooperation in the general development of economic research at the University of Oslo, which has had Foundation support since the establishment of the Institute in 1932. The work of the Institute has centered in advanced mathematical economics.

University of Stockholm
Social Science Institute

To terminate financial aid toward the program of research of the Social Science Institute a grant of $20,000 was made to the University of Stockholm for use over a four-year period

beginning September 1, 1936. This grant will permit the satisfactory completion of a program of research to which the Foundation had previously contributed. During the period of support the Social Science Institute has become an important regional center of research in the social sciences. Studies on the cost of living, wages, migrations, industrialization, and population have been published. Others in progress are a study of the national income, an empirical investigation of election statistics from all countries having reliable data, and a comprehensive survey of population movements within Sweden.

Welfare Council of New York City Research Bureau

The general objective of the Welfare Council of New York City is the more rational planning and operation of social welfare services in the city. The Research Bureau of the Welfare Council, by inquiry, study, and research, furthers the work of the Council. Since the establishment of the Council in 1926, it has received considerable support from the Laura Spelman Rockefeller Memorial and from The Rockefeller Foundation. It received a grant of $150,000 in 1936 toward the budget of its Research Bureau during the four-year period beginning January 1, 1937. These funds represent aid on a decreasing scale over this period.

THE SOCIAL SCIENCES STAFF DURING 1936

DIRECTOR
Edmund E. Day

ASSOCIATE DIRECTOR
Sydnor Walker

ASSISTANT DIRECTORS
Tracy B. Kittredge
Stacy May
John V. Van Sickle

THE HUMANITIES

CONTENTS

THE HUMANITIES

Emphasis in the program of the humanities is increasingly on use of the means affecting contemporary culture and the general level of public appreciation. One phase of the program deals with those techniques by which cultural levels of contemporary society are being changed. Print is no longer the only significant medium of general communication. Film and radio have become its rivals. No grant was made during the year in support of non-commercial activities in film production, and in radio there was only a renewal of a previous grant. Actually, however, considerable progress was made in both lines of development through the training of personnel and exploratory studies of activities in this country and abroad.

Clearly, much fruitful work can be done through such active techniques as the stage play, broadcasting, and film production to serve demands not met through commercial channels. In its grants for work in drama, radio, and film, the Foundation endeavors to assist such agencies as universities, museums, and local organizations in using these forces of cultural diffusion.

If non-professional drama in American schools, colleges, and communities is to realize its possi-

bilities as a medium of cultural diffusion, it must have larger resources of personnel, trained in the techniques by which stage productions gain their full effect. Thus, grants made for work in drama during 1936, with one exception, aim directly at the extension and betterment of training at major university centers. The one exception is a grant providing support for a significant experiment in bringing plays to a wider public in schools and communities without established theaters. In the case of film and radio, cultural uses and possibilities have still to be explored.

By comparison library techniques have had a long and fruitful development in the Foundation's program for the humanities. Major grants still in effect are supporting the improvement of international exchange of materials in print. The one grant made in this field during the year is intended to aid librarians in realizing the possibilities of microphotography, a tool which general technical advance has recently put at their disposal. The Foundation also is assisting with the establishment of higher technical standards of library work through training of personnel who will be familiar with such modern methods of preserving and transmitting useful knowledge. The fellowship program for the United States and Europe has been continued on a smaller scale as extension was made to

benefit countries of South America and the Far East. This primary emphasis on the techniques of cultural diffusion is coupled with a limited concern with special areas of interest. This concern begins at home in an interest to be briefly summarized as the collection and interpretation of American cultural materials directly useful to the operation of other phases of current program. Two grants made in 1936 come under this heading: one, to make available for non-professional work in drama hitherto unpublished American plays; the second, to make available a better knowledge of the history and life of the Territory of Alaska.

Grants in the other two areas indicate a similar interest in Latin America and the Far East. In each of these great areas the aim is to promote better understanding through cultural interchange. As in the case of activities in the United States, the primary emphasis is on the techniques of cultural diffusion, but there is constant concern with transmittal of materials from one country to another. Thus, four grants aim to increase the effectiveness of interchange through libraries. Three aim to establish in college and university teaching men whose training in the languages of the Far East gives them access to sources of authoritative information on the history and life of the Orient. Two grants

support efforts to develop methods by which advanced students with requisite qualifications can gain a similar command of those languages. Another grant furthers a program to give China access to a knowledge of the Western world through a simplified method of learning English.

Fellowships and grants in aid were used for the same general purposes as the major grants reported in more detail. In the award of fellowships, the primary consideration was training related to the aims of the Foundation program. Grants in aid, averaging about $2,270, were the means of providing support for research by individuals doing advanced work or exploratory studies that had a bearing on one of the major phases of program.

During 1936 general support of humanistic studies was limited to continued aid to the American Council of Learned Societies, comprising nineteen national associations of scholars in the various humanistic disciplines. Grants also were made toward the completion of projects in earlier programs.

Drama

Leland Stanford, Jr., University
Theater and School of Drama

Aid in the development of non-professional drama, principally through provision for the

training of personnel at major university centers, in some instances supplemented by appropriations for housing and equipment, is part of the Foundation's present program in the humanities. The selection of institutions to be aided has been consistently on the basis of present and future service in developing leaders for school, college, and community work.

Leland Stanford, Jr., University is a major center for training in speech and in drama. Courses in stagecraft and in play direction have brought an increased enrolment of teachers and workers in community drama. A strong relationship exists between the Department of English, the Division of Public Speaking, and the School of Education. In the School of Education an extensive reorganization of courses is now under way which is taking advantage of the resources of the departments in the School of Letters. The University thus has an unusually favorable opportunity for training in drama that will have immediate effect in the high schools and colleges of the region. Toward the building and equipment of a theater and school of drama the University has received from the Foundation the sum of $42,000. The design of the theater is in accord with modern practice and in many respects represents an advance on the theater workshops here and abroad. The auditorium of

the main theater is so designed that it can accommodate 1,700 persons or can be reduced to hold half that number. The rehearsal theater will have adequate equipment for all requirements of teaching and experimental production.

Northwestern University
Survey of Requirements of School and Community Drama

An appropriation of $15,000 was made to Northwestern University toward the expenses of a survey of the requirements of school and community drama in the State of Illinois, to be conducted during the three-year period beginning July 1, 1936, by the Division of Dramatic Studies of the University in cooperation with the State Department of Education. This survey is preliminary to the initiation of a program for the development of the school theater in the public schools of Illinois for greater cultural service to students and to the community.

Direction of the plan by the Division of Dramatic Studies of Northwestern University arises from the Division's part in the training of teachers of drama for the schools of the State and its continuous contact with their work. For several years it has maintained a service bureau to provide assistance to teachers of drama. This service includes advice on all questions of pro-

duction and assistance in securing use of plays under royalty restriction.

The survey will cover the work of schools in the 102 counties of the State and will bring the facts before a committee made up of representatives of the faculty of Northwestern University and of the five state normal schools, and the director of dramatic work at the University of Illinois. It is expected that decision will be reached on such matters as requirements for training teachers, kinds of stage equipment, cost of manufacture or purchase of equipment, selection of plays for various types of communities, and the usefulness of work in drama to the total program of a school.

Yale University
Department of Drama

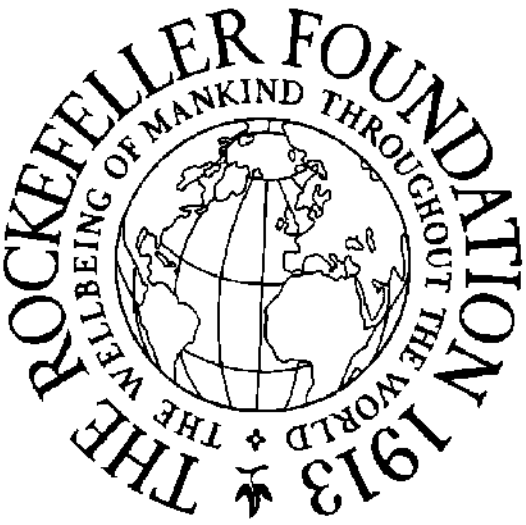
A grant of $8,000 was made to Yale University toward the expenses of purchasing and operating over a period of three years a motion picture camera for use in the Department of Drama in connection with teaching and with permanent record of productions. The Department plans to make sound-film records of individual interpretations of roles and also to record parts of the historical and experimental productions which it stages. The Foundation's grant thus provides for a practical exploration of the value of motion pictures in the training of per-

sonnel for work in drama. The usefulness of a library of film records of plays staged at Yale University is considerable, as these productions are expensive and cannot be saved for classes of later years unless by such a medium as the motion picture. Within ten years the Department has staged over a hundred historical plays, all of which would be of interest to students of drama in other universities and communities. Their needs may be met in part through the development of a film library at Yale.

Cornell University
Summer and Extension Courses in Drama

Cornell University was given a grant of $15,000 by the Foundation toward its budget for work in drama over a three-year period. This will enable the University to improve both its summer courses in drama and its rural extension work in this field. Previous interest found expression in a grant of $2,500 in 1934 in support of certain phases of the drama work at Cornell and of a fellowship for a graduate student in residence during 1935–36.

The work in drama at Cornell University under Alexander M. Drummond, professor of public speaking, has extended its influence throughout the western half of New York State and has given many high schools and colleges competent dramatic directors and teachers. The



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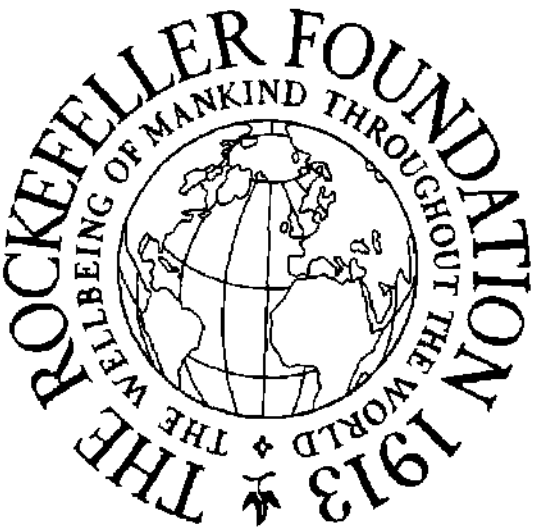
Scene from *Singing Valley*, a new comedy of Mexican village life produced by the Carolina Playmakers, University of North Carolina. The Foundation is contributing toward the University's work in drama.

courses offered during the summer are attended by teachers from all parts of the country. During the ten years since the erection of Willard Straight Hall housing the University's theater, the training facilities for advanced work have attracted increasing numbers of graduate students. Fifty original one-act plays have been produced, and several of the authors of these plays have gone into the professional theater. Nearly one hundred persons trained in drama at Cornell now hold positions in universities and colleges and in community theaters. These direct effects in the development of non-professional drama, and the professional success of persons trained at Cornell, are due to proper leadership combined with adequate facilities for work in drama provided by the University.

In recent years the extension work of the University has decreased. The first purpose of the Foundation's grant would be to restore the work in the rural areas of New York through the appointment of a supervisor for a survey that would determine the contents of new manuals of instruction for rural leaders in drama.

The Washington State Theatre
Touring of Dramatic Productions

The Washington State Theatre was organized under the auspices of the State Department of Education as a non-profit corporation to take



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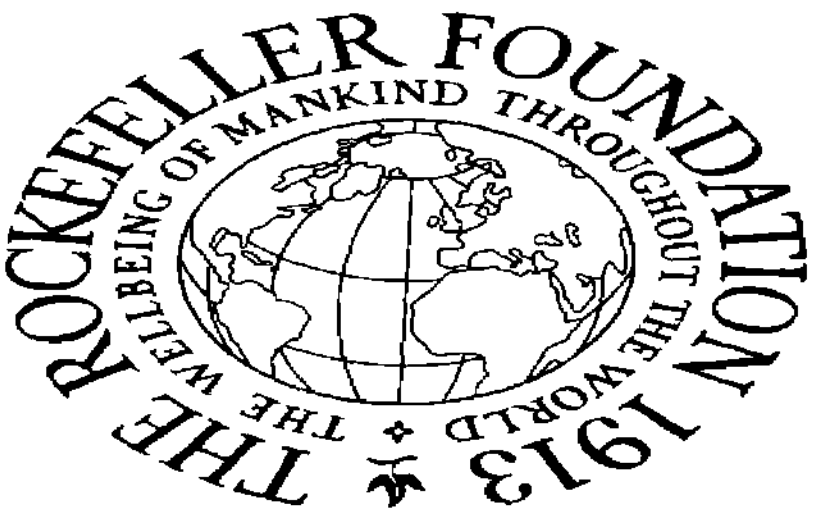
The Washington State Theatre, which received a grant from the Foundation in 1936, was organized under the auspices of the State Department of Education as a non-stock, non-profit corporation to take dramatic productions on tour throughout the State for the purpose of demonstrating what could be accomplished through school and community drama in an area where there was virtually no other opportunity for the population to see productions of the legitimate theater.



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Architect's drawing of the new Bodleian Library building which is being erected with the aid of the Foundation.

dramatic productions on tour throughout the State of Washington to demonstrate the value of school and community drama in areas where there was virtually no other opportunity for the population to see productions of the legitimate theater. The response to an experimental tour of the Seattle Repertory Playhouse company in 1935 showed a need which the State Theatre is designed to meet. The Foundation made a grant of $35,000 toward the expenses of the State Theatre during the three-year period beginning July 1, 1936.

The Washington State Theatre is directed by a committee appointed under the State Board of Education and consisting of the high school supervisor of the State Department of Education as chairman, a representative of the Washington Education Association (which includes approximately 90 per cent of all teachers of the State), representatives of the state Parent-Teacher Association, of the board of trustees of the Seattle Repertory Playhouse, and of the first- and second-class school districts of the State. This committee passes on matters of policy, including the character of presentations, deals with means of coordinating the work of the Theatre with classroom activities, and constantly uses its influence for the development and extension of the project. Each production taken on tour is given approxi-

mately forty performances in twenty cities in the State. Matinées for school children are arranged in cooperation with the schools. Productions include classics and other plays chosen with a view to their relation to school work and to the interests of the communities.

Radio

World Wide Broadcasting Foundation
Station W1XAL, Boston

The sum of $40,000 was appropriated to the World Wide Broadcasting Foundation to enable it to continue its experiment in the development of radio programs of cultural and educational value through Station W1XAL in Boston. This grant, available for the two-year period beginning July 1, 1936, supplements a previous one-year grant made toward this experiment.

W1XAL, a short-wave station, is heard regularly in Europe, South Africa, South America, and in all sections of the United States. During the year the Broadcasting Foundation used the facilities of the station for broadcasting regularly five days each week. Sunday programs, planned with special attention to the interests of listeners abroad, included a weekly news review in dramatic form, a series entitled "The American Scene" dealing with current aspects of American life, and talks on art in everyday life

with the cooperation of representatives of a number of agencies concerned with art education. Monday evening programs were for listeners with a technical interest in radio. On Tuesdays and Thursdays programs for American listeners, and on Saturdays for listeners abroad, included musical and dramatic features, talks on psychology, astronomy, geology, the history of science, law, poetry, and language (with a series in Basic English). Most of these broadcasts were given by members of the faculties of Harvard University, Boston University, Tufts College, and other nearby institutions.

Libraries

University of Chicago

Laboratory for Library Microphotography

Toward the expense of establishing a laboratory for library microphotography the Foundation granted the University of Chicago the sum of $23,000. The broad purpose is to facilitate the collection and distribution of materials in print or in manuscript. Microphotography provides a promising method of preserving copies of rare or inaccessible books, documents, manuscripts, and newspaper files. It also enables librarians to make such materials readily available for use. The photographer reproduces each page of copy in proper sequence on a small strip

of film that can be read with the aid of an enlarging machine. Compared with other methods, the cost of film copying is low. Transportation of large stocks of material for duplication or loan is easy, and materials printed on perishable wood pulp used for newspapers are permanently preserved by this method.

Especially interested in this project are the American Library Association and the Joint Committee on Materials for Research, representing American societies of scholars working in the social sciences and the humanities. The Graduate Library School of the University of Chicago constitutes an agency for developing the use of this method advantageously. Headquarters of the American Library Association in Chicago serve as a clearing house for all inquiries. The service will be particularly useful in the Middle Western area, but will be available to all libraries in this country and abroad.

Studies of American Culture

Authors' League of America

Production of Texts for Non-Professional Drama Groups

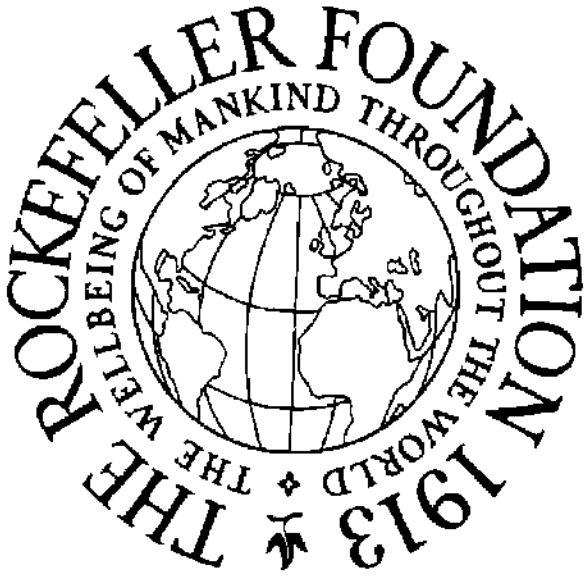
The sum of $8,800 was appropriated to the Authors' League of America for use during the period from November 1, 1936, to October 31, 1938, toward the expenses of preparing for

publication a series of hitherto unpublished American plays. The purpose is to assist in the production of texts that will be used by non-professional groups for stage revivals and for historical study. The project will make available to students and non-professional producers a collection of about one hundred American plays staged in the commercial theater of the United States during the nineteenth and early twentieth centuries.

Under a grant in aid of $1,700 for the six months ending August 31, 1936, Mr. Barrett H. Clark, director of the Dramatists' Guild, secured the authors' rights to the manuscripts of the plays to be included. The hundred texts obtained are to be critically edited, with appropriate introductory material, for publication in a uniform series of volumes. The Authors' League assumes administrative responsibility for the work, and its subsidiary organization, the Dramatists' Guild, gives professional guidance. The National Theater Conference, representing all university and community organizations for non-professional work in drama, is looked to for assistance in the sale of the series.

University of Alaska
History of the Territory of Alaska

The University of Alaska, near Fairbanks, was established fifteen years ago under Federal and



Photograph Excised Here

One of the groups which has participated in the series of broadcasts over W1XAL entitled "World Youth Speaks." Young college men and women of various nationalities take part in these programs under the direction of Professor Carleton A. Wheeler. They speak in their native tongues, and in many cases the broadcast is repeated after translation into Basic English. Listening groups of young people are being formed in many centers. The nationalities of the speakers shown here with Professor Wheeler are (left to right) German, Swedish, Spanish, and Swiss

territorial appropriation as the Alaska Agricultural College and School of Mines. In addition to special courses in geology, engineering, and agriculture, general college work has been developed. A grant of $17,000 was made by the Foundation to the University of Alaska for expenses during the two-year period beginning July 1, 1936, of classifying and translating materials essential to the preparation of a history of the Territory of Alaska. This work is the first step necessary to make available for a wide variety of uses the history of exploration and pioneer life in Alaska. The work is under the direction of Cecil F. Robe, professor of history. Professor Robe plans the translation of Russian documents at the Library of Congress collected in Russia under grants of the Foundation in 1933 and 1934 for accumulation of source materials for American history. He also will have the use of extensive collections of documents in Alaska.

Cultural Interchange

1. Latin America

Tulane University
Department of Middle American Research

To enable the Department of Middle American Research of Tulane University to make a survey of archives and libraries in Central

"OLE MAN RIVER" CAN'T DAMAGE ANY MORE FILES OF THIS PAPER

The Democrat's priceless back files of all editions since this paper was founded will not go through any "next flood."

Thanks to modern science, this paper is prepared on short notice to carry to safety the files of back papers including those that were soaked with water and mud last March 17.

Are we going to keep our files on the top floor of Johnstown's highest building in order to be out of the flood zone?

Easier than that. Through an ingenious device perfected in the Eastman laboratories at Rochester The Democrat isn't going to keep any back papers at all!

This paper, following the trend of the large metropolitan publications, no longer will bother with cumbersome volumes of all editions. A much easier way has been devised—all-time records of every page of every paper on film similar to the film used by motion picture producers.

Here's how it works. Instead of having papers covering a period of 60 or 90 days bound in a volume, the same number of Democrats are forwarded to Eastman laboratories where every page becomes a "movie actor" for the fraction of a second that it occupies the limelight in front of a camera.

Back to Johnstown comes the film—small and compact. The original or negative film will be stored by the laboratories in a huge vault strong enough to resist fire, flood, lightning and changes in atmospheric conditions.

Today's issue—28 pages—will appear on a strip of film approximately three and one-half feet long. Issues for two months can be filmed on one reel.

Instead of handling bulky bound volumes of brittle, musty and discolored print paper, the small film is placed in a Recordak Library Projector, a button is pressed and the paper, with type enlarged 60 per cent, is thrown on a small screen. "Turning pages" calls for nothing more than winding a crank.

All former editions of The Democrat were damaged by the St. Patrick's Day Flood and the condition of the print paper is such that without the Recordak device it would have been impossible to preserve these valuable records much longer.

Tests made with trial samples of back Democrats substantiated the manufacturers' claim that file searching can be completed by the film recording method in half the time required to peruse bound volumes.

While there is no record of a "film file" having been offered as testimony in a Pennsylvania court, it was pointed out that in other States courts have admitted into the record newspaper files offered on the film record.

However, The Democrat is not primarily interested in using its back issues in court cases. This paper adopted the Recordak system for its proven worth.

And think what an easy time we'll have when the "next flood" comes. The office boy will grab a couple shoe boxes full of film and carry them to safety.

Microphotography, by means of which newspapers, documents, rare books, and manuscripts can be reduced to film form, is an important modern contribution to research. Its use as a means of preserving newspapers for posterity is described in this excerpt from *The Johnstown Democrat*. The Foundation is assisting in the development of micro-film service through a grant to the University of Chicago toward the establishment of a laboratory for library microphotography.

America and the West Indies, the Foundation appropriated $17,000 for its use during the two-year period beginning January 1, 1937. The Department is sending its librarian, Mr. Arthur E. Gropp, who is also chairman of a committee of the American Library Association on cooperation with Latin-American libraries, to visit during the next two years a total of thirty-two countries and islands in Central America and the West Indies for a detailed survey of archives and libraries. The results are to be made available in a printed handbook. The basis will thus be laid for helpful cooperation from American libraries, leading to an exchange of information and materials. The project should be useful to all scholars having an interest in the interchange of materials among the nations of the American continents.

2. *The Far East*

National Library of Peiping
Development of Library Services

The National Library of Peiping is the center for official direction of library development throughout China, and it is the purpose of Mr. T. L. Yuan, the director, to develop a general library program for the entire country. Funds provided by the British Boxer Indemnity Commission are being accumulated for the erection of

a new central library at Nanking, and there are plans for future libraries to be built at Wuchang, Canton, and elsewhere.

The Foundation made a grant of $25,000 to the National Library of Peiping toward the development of library services in China. The program includes the preparation of a card catalogue of all Chinese publications from 1931 to 1938, a visit by representatives of the American Library Association to aid in planning the future development of national and provincial libraries, and the reproduction of material from Chinese texts for American scholars.

The actions planned by the National Library under this grant will lay the basis for library development throughout China, and will give to libraries of the world systematic reports on all Chinese publications.

China has adopted the Library of Congress system of printing and distributing catalogue cards, and the National Library of Peiping has assumed responsibility for the conduct of the work. The distribution of cards to libraries in China and abroad will save them the heavy expense of cataloguing. The cards will also help all institutions in book selection and acquisition, making possible the immediate purchase of new works from Chinese publishers. Duplication of cost will be avoided by American libraries

through agreements on special fields of interest and on interlibrary loans. For every field of knowledge there will be created a new medium of intellectual cooperation between China and foreign countries.

Important advantages will be given the American Library Association in accepting the invitation of the Chinese authorities to advise them on plans for extension of their library service to schools, rural communities, and to the public generally. This American cooperation began with the establishment of the Boone Library School at Wuchang in 1920 under American leadership. It has continued as more Chinese workers have been trained in American methods of library work either at home or in the United States. The American Council of Learned Societies is prepared to extend assistance in the work of reproducing Chinese materials for American institutions. No original texts would be purchased, but copies of important items would be made by photostat or on strip films. These copies would be stored in the Library of Congress for loan, or for reproduction and sale at cost, to American institutions.

Harvard-Yenching Institute
Catalogue of Holdings

The Harvard-Yenching Institute is a Massachusetts corporation formed in 1928 to adminis-

ter, in collaboration with Harvard University and Yenching University, Peiping, a fund from which contributions are made toward the support of a number of Chinese institutions, and for research and educational work at the graduate level by properly prepared Chinese and Occidental scholars. Its work at Harvard is primarily concerned with the development of teaching and research in the languages, literature, history, and art of China and Japan.

The Foundation has contributed $8,600 to the Harvard-Yenching Institute for use during the year 1937 toward the expenses of printing and distributing a card catalogue of its present holdings. The Institute has in Cambridge a collection of Chinese books that takes rank as one of the largest outside of the Far East. Because of systematic development, it is thoroughly representative of the best in each major field of Chinese literature. A catalogue of this collection is well adapted to be the first unit of union catalogues in the leading institutions for Far Eastern studies. The Harvard-Yenching Institute has appropriated funds to print a bound catalogue of the library. It is now proposed to have printed from the same type fifty sets of library cards for the approximately 35,000 titles to be included in the printed catalogue. These sets of cards will be available to all libraries as

foundation material for their own catalogues. Existence of such a catalogue in each major center will facilitate not only bibliographic research but also the ultimate preparation of a comprehensive catalogue of all American holdings.

Institute for Advanced Study
Gest Library

The Institute for Advanced Study, Princeton, New Jersey, has recently initiated activities in the humanities. Students in the Institute pursue research under the guidance of a staff that carries on its programs with a minimum of administration and formal organization. The sum of $62,500 has been appropriated by the Foundation to the Institute toward the cost of the purchase of the Gest Chinese Research Library.

The Gest Library is strong in the collected writings of individual authors, rare Buddhist manuscripts, old encyclopedias, and works on Chinese medicine. Besides rare editions, it possesses the essential works in most of the major fields of study. In modern works on geography and agriculture, as well as in government publications, the collection of the Library of Congress supplements it admirably. Resources of the Gest Library, added to those of the other institutions on the Atlantic seaboard, go far toward equipping the eastern part of the United States with facilities for advanced Chinese studies.

Princeton University
Far Eastern Studies

Contribution to Far Eastern studies at Princeton University relates to the Foundation's program for establishing such studies at a few universities and colleges where conditions seem to favor their further development. A grant of $10,000, available for a period of three years beginning September 1, 1936, provides for the salary of an instructor in Far Eastern subjects at the Princeton School of Public and International Affairs and for the purchase of materials needed for his work. The post of instructor is now held by Mr. Robert K. Reischauer, who during the academic year 1935–36 held a teaching and research fellowship at the School provided by the General Education Board.

Claremont Colleges, California
Far Eastern Studies

The Claremont Colleges are situated near Los Angeles, in a community which has always attracted missionaries and educators on leave or retired from active work in the Far East. Members of the faculties of the Colleges have for some time been offering courses in Far Eastern philosophy, economics, political problems, geography, and history with the aim of developing in Southern California a center of interest in Far Eastern affairs.

In the faculties of the Claremont Colleges, Chinese interests are well represented. To aid in remedying the lack of provision for Japanese studies, the Foundation made an appropriation of $6,000 to Pomona College, toward the salary, over a three-year period beginning September 1, 1936, of a young scholar qualified to give courses on Japanese life and institutions.

The College invited Mr. Charles Burton Fahs to fill this post. As a fellow of the General Education Board during the past three years, Mr. Fahs studied first at the National School for Modern Oriental Languages in Paris, and subsequently for two years in Japan and China.

The Foundation also appropriated to the Claremont Colleges the sum of $5,000 for the purchase over the three-year period beginning February 1, 1936, of materials for use in courses in Far Eastern subjects. The libraries of the Colleges already include many titles on Far Eastern subjects and a special collection of Japanese prints, Chinese costumes, lantern slides, and photographs. The Japanese Society for International Cultural Relations makes these libraries a depository for its publications.

University of Colorado
Far Eastern Studies

An appropriation of $10,000 was made to the University of Colorado for the development of

Far Eastern studies over the three-year period beginning September 1, 1936. This grant provides for the salary of an instructor, for purchase of materials needed in teaching, and for necessary travel during a period of work in China.

The work in Far Eastern studies at the University of Colorado is under the direction of Professor Earl Swisher, who gives courses on the history of Eastern Asia, on Chinese history and civilization, and on American diplomatic relations with the Far East. Professor Swisher was a fellow of the General Education Board during the academic year 1935–36, with assignment to the University of Colorado while working on his thesis and initiating the teaching of his subject.

University of California
Russian Language Seminars

A command of the Russian language has become increasingly necessary to students of Far Eastern affairs. The Foundation's grant of $10,750 to the University of California for the support of seminars in this language during the summers of 1936 and 1937 and for the preparation of material for teaching Russian to adults, follows two contributions to the Institute of Pacific Relations for the development of instruction in Russian. The first of these contributions was made for the expenses of a ten-week seminar at Harvard University during the summer of

1934, and the second for a seminar of similar duration at Columbia University during the summer of 1935, both conducted by Professor George Z. Patrick. The recent grant to the University of California will enable Professor Patrick to work out fully the teaching methods which he and others used at Harvard and Columbia Universities and to establish at his own University a plan of teaching Russian that will serve as a continuing demonstration of practical instruction.

In 1934 and 1935 Professor Patrick developed new reading manuals, presenting subjects of current importance. The vocabularies were made sufficiently varied to cover a wide range of ideas; grammar was reduced to working principles; and the materials were graded so as to extend methodically the students' use of necessary words. These texts and others still to be prepared will provide a means of teaching Russian to adults more systematically and rapidly than has been possible with the textbooks previously offered to English-speaking students. The routine of instruction calls for the full time of students on Russian language, written and spoken, during a period of ten weeks. Four and a half hours daily are devoted to class work on grammar, idioms, and current usage; another hour is spent in tutorial work, with groups of five or six

persons developing vocabularies in their special fields through reading and conversation.

University of Chicago
Teaching of Chinese

In connection with the preparation of new materials for teaching the Chinese language and literature, to aid in developing personnel to teach Far Eastern languages to Western students, the University of Chicago has received $25,000 from the Foundation for use during the five-year period beginning January 1, 1937.

The work is under the direction of Mr. H. G. Creel of the Department of Oriental Languages and Literatures. Mr. Creel has formulated a method to combine introduction to historical studies and learning of necessary ideographs for reading both ancient and contemporary documents. This method is of advantage to students who need to read older documents. It is designed to use the Chinese classics in building an understanding of the history of individual characters. The words in an English glossary give an interpretation of the successive characters appearing in the first text, thereby introducing the student to the historical origin and to the traditional uses of each term in a natural manner. Progress through successive texts is by means of glossaries that deal only with new words and with their central ideas in the language. This method

enables the beginner to secure an advanced course in the history of the language and a genuine familiarity with Chinese tradition.

Orthological Institute of China
Teaching of English in China

A grant of $15,000 was made to the Orthological Institute of China in Peiping to facilitate the teaching of English in Chinese schools. In 1933 and 1935 the Foundation made appropriations totaling $69,425 to the Orthological Institute in London, for the support of experiments to test the value of Basic English for this general purpose. A portion of this sum is being used for the preparation of textbooks in Basic English for Chinese readers. The recent grant to the Orthological Institute in China will be used partly for the publication of these books in Peiping and partly to enable the staff of the Institute to assist in the reorganization of the teaching of English now going forward in the schools, colleges, and universities of China.

As a result of the requirement to develop in the Far East a knowledge of modern science and of Western modes of living, there has arisen the need for English texts prepared within a limited vocabulary for the middle schools of China. This work in English for students in the middle schools provides the first contact with the type of modern educational materials used

later in colleges, universities, and normal schools. In addition to the preparation of middle school texts, plans have been made for various activities involving cooperation with the Western Languages Association of China with regard to the training of teachers and the reformation of examinations in English.

The Institute is interested in experimenting with English teaching by radio. It also has prepared a series of phonograph records for the use of students individually or in groups.

Fellowships and Grants in Aid

The sum of $115,000 was appropriated in 1936 by The Rockefeller Foundation and the General Education Board for fellowships in the humanities. The total number of fellowships in this field administered jointly was fifty-two. The thirty-four Board fellows came from the United States. The eighteen Foundation fellows were distributed according to country of origin as follows: Argentina, one; Canada, one; China, five; England, one ; France, one; Germany, one; Hawaii, one; Italy, two; Mexico, three; United States, two. Of the Foundation fellows, eleven studied the administrative practice of American libraries; two were engaged in the study of the Chinese and Japanese languages at the Harvard-Yenching Institute, elsewhere in the United

States, and in Tokyo; two studied drama at Yale University; one, drama, art, music, and literature in religious education at the Chicago Theological Seminary; and one, playwriting and production at the University of North Carolina. One fellow studied broadcasting in the South and Central American countries. Eight of the thirty-four fellows working through General Education Board funds studied methods of planning and producing radio programs in New York City. Ten worked on various phases of play production, playwriting, scene design, and theater construction in this country and abroad. Six studied Chinese and Japanese languages and history in China, Japan, and the United States; three developed college courses in Far Eastern affairs at American universities, namely Chicago, Colorado, and Princeton. Two studied methods of planning and producing motion pictures at Hollywood and elsewhere in the United States. Five fellowships provided for individual work on musical education in the United States outside of the schools, on American fiction dealing with social questions from 1870 to 1917, on German culture in America, on museum methods in European centers, and on methods of library administration at the International Institute of Agriculture in Rome, Italy.

With funds made available by the Founda-

tion, the American Council of Learned Societies supported fifteen research fellowships during 1936. The fellows were distributed according to country of study as follows: France, two; Great Britain, three; Greece, two; Iran, one; Italy, three; Japan, two; Yugoslavia, one; United States, one. Of the fifteen fellows, fourteen were American-born citizens of the United States and one a German citizen resident in the United States. In addition, the American School of Classical Studies at Athens, from funds supplied by the Foundation in 1936, administered thirteen fellowships in archeology.

A number of grants in aid were made for individual or exploratory projects or in connection with the closing out of former work. A total of $58,700 was allotted to twenty-six projects, the sums ranging from $500 to $6,000. Representative of these grants are the following:

$4,000 to Claremont Colleges, Claremont, California, to aid Ataloa, a descendant of the Chickasaws, in the preparation of a study of the art of the Indian throughout the North American continent, under the direction of Professor H. B. Alexander.

$1,000 to Mr. Dean McClusky for a review of projects for the use of motion pictures in education.

$2,500 to the Film Library, Museum of Modern Art, for a report on the organization of film materials in the United States and Europe for rental and loan to colleges, museums, and community groups.

$500 to Columbia University, New York, to enable Professor Cabell Greet to undertake preliminary study of radio speech.

$3,000 for an investigation by Mr. Arthur S. Garbett of music appreciation at various levels in relation to types of radio programs.

$2,750 to Mr. Mortimer Graves, of the American Council of Learned Societies, to provide for a special study in Europe and Asia of work in Far Eastern subjects.

$1,300 to the International Institute of Agriculture for a library assistant to organize and make available for use Library of Congress catalogue cards on agricultural materials.

$4,000 to the University of California for studies in Far Eastern art, philosophy, and literature during the summer of 1937.

$3,000 to enable Mr. Francis C. Jones to continue language study during work in China on a popular history of China for the "Modern States" series.

$1,250 to Dr. I. A. Richards for certain studies in comparative grammar that will promote the teaching of English in the Far East.

$3,500 to Professor Alexander Dean of Yale University for the completion of a book on play directing and to make a study of the theater in the Far East.

$1,000 to Brown University to enable Professor S. Foster Damon to select and make available for current use little known American songs of the eighteenth and nineteenth centuries.

General Support for Humanistic Studies

American Council of Learned Societies

The Foundation appropriated to the American Council of Learned Societies the sum of $60,000 for fellowships and the expenses of planning com-

mittees during the two-year period from July 1, 1937, to June 30, 1939. A grant of $90,000 made by the Foundation in 1935 for the general activities of the Council maintains the administrative offices in Washington. A fund, amounting to $25,000, for fellowships and grants in aid of research for the period ending June 30, 1937, was made available by the Foundation in 1935.

The American Council of Learned Societies is the central agency for all societies in the field of the humanities. It coordinates the plans of nineteen national societies working in this field. The Council at present is concentrating its attention on plans for eight fields in which it will endeavor to raise the standard of American scholarship, namely, Chinese and Japanese studies, Latin-American studies, Indic and Iranian studies, Mediterranean, Near Eastern, and Islamic studies, Slavic studies, musicology, history of ideas, and history of law. Stress is being laid on American requirements for work in Latin-American and Far Eastern studies.

Former Program

American Library Association

Printed Catalogue of the Bibliothèque Nationale

The American Library Association received $30,000 from the Foundation to be used over a period of five years beginning July 1, 1936, to maintain the price of the General Catalogue of the

Bibliothèque Nationale, Paris, at $10 a volume to one hundred subscribing members of the Association.

Although the Bibliothèque Nationale is one of the most important libraries of the world, its usefulness has been seriously restricted by the inability of workers to find descriptive data on its holdings. This lack is being remedied steadily by publication of the printed catalogue.

Earlier grants have been made in connection with this work. The present and final grant will presumably make possible the completion of the catalogue of ninety-six volumes in about five years.

American School of Classical Studies at Athens Fellowships

To the American School of Classical Studies at Athens there has been appropriated, for use during the period July 1, 1936, to December 31, 1938, the sum of $25,000 for fellowships in archeology in connection with the excavation of the Athenian Agora and for expenses of former fellows of the school engaged in preparing the final report on the excavations.

In 1929 the Foundation began contributions to provide field training for young scholars on the Agora project. During 1936 thirteen fellows supported with Foundation funds were active

either full time or part time on work connected with the Agora excavations. The entire project is scheduled for completion in 1940.

University of London. School of Oriental Studies
Research in African Linguistics

An appropriation of $30,000 was made to the School of Oriental Studies, University of London, in 1936, for research in African linguistics. This is a final grant to the institution to provide on a tapering basis over a three-year period for the maintenance of work aided under the former program in the humanities. The Foundation's support of this work dates from 1932. The new grant will be used, as were the former contributions, for salaries of laboratory and field workers on temporary appointment and for the expenses of the newly created Department of African Linguistics.

The School of Oriental Studies serves as a training center for field workers of the International Institute of African Languages and Cultures, to the general budget of which the former Laura Spelman Rockefeller Memorial and later The Rockefeller Foundation have contributed.

The American Schools of Oriental Research
Endowment and Maintenance

A conditional grant of $185,000 was made to the American Schools of Oriental Research in

Baghdad and Jerusalem, of which not more than $150,000 will be for endowment and the remainder for current expenses during the period ending December 31, 1939. During the years 1930–36 the Foundation contributed $250,000 toward the current expenses of the schools. These included the cost of completing a new building for the school at Jerusalem, the maintenance of the library at Baghdad, salaries and travel allowances of the directors and visiting professors, the salary of a librarian for the school in Jerusalem, the maintenance of fellowships, research, and publication.

The University of Chicago Oriental Institute

The Foundation has made two grants to the University of Chicago in termination of assistance to the Oriental Institute. The first of these, totaling $1,169,766.01, is for current support of the Institute or for its endowment. The second appropriation, amounting to $1,000,000, has been made with the understanding that this fund shall be held for ten years as endowment for the Institute. These grants are intended to conclude the Foundation's participation in the work of the Oriental Institute, which has become one of the foremost institutes of its kind in the world, adding immeasurably to the sum total

of knowledge on the early history of man and seeking through exhibits and publications to make this knowledge available to all.

The help of the Rockefeller boards to these extensive programs of research and teaching had its origin in the decision of President Harper to establish such an institute in the reorganized University of Chicago. His choice of the late Professor James H. Breasted as leader in the enterprise was more than justified by the brilliant success achieved at home and in the field. The Oriental Institute is recognized today as a unique institution in world scholarship, having its origin in the vision of these two men.

THE HUMANITIES STAFF DURING 1936

DIRECTOR
David H. Stevens

ASSISTANT DIRECTOR
John Marshall

CHINA PROGRAM

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CHINA PROGRAM

A new program for The Rockefeller Foundation's activities in China was approved by the trustees on December 21, 1934, for an experimental period of three years. In 1936, therefore, the program begun in 1935 was carried forward, and the objectives were more clearly defined. The basic purpose of the program is cooperation with responsible agencies in promoting rural reconstruction. It includes aid toward the creation of practical techniques in administration, education, agriculture, economics, health, and medicine; in short, all such necessary public and private services as may be considered part of a general program for the welfare of communities predominantly rural in character. It further undertakes aid toward the development of the organizations necessary to put into effect the methods evolved, as well as assistance in supplying competent personnel to direct and staff the various agencies designated and organized to carry out required techniques. The effort of the Foundation has been so to cooperate as to increase the element of quality in the necessarily quantitative efforts of the government and other agencies.

In dealing with problems of rural reconstruction and the steps necessary for their solution, the aim of the Chinese leadership with which the Foundation is cooperating has been to define fundamental objectives by bringing scattered and diverse efforts into a general plan, or plans, looking toward the achievement of solid objectives. It is chiefly by cooperation among different activities already under way that an attempt is made to raise the various facets of life, economic, medical, and social, to higher, self-sustaining levels.

The Foundation's program operates through three types of activities: major projects, small grants, and fellowships. The major projects include nine separate items which together absorbed 62 per cent of Foundation appropriations to the Chinese program in 1936.

The emphasis of the Foundation's aid on the aspects of the work most closely related to rural reconstruction tends to unify the major projects and to stimulate the separate agencies to seek, of their own accord, to coordinate their efforts.

While the Foundation's cooperation in China in connection with such a difficult and complicated subject as rural reconstruction is only of two years' duration, the results obtained up to the present time are considered to be very encouraging. The work in China which the Foun-

dation is assisting is, with very few exceptions, entirely in the hands of the Chinese, and the programs which are being developed are essentially of Chinese conception. The Foundation's contribution has been primarily in assisting Chinese institutions and workers who are spending their lives in search of adequate answers to the many complex problems which exist. Credit for the resulting accomplishment belongs to the Chinese.

North China Program

North China Council for Rural Reconstruction

The efforts of the Mass Education Movement, Nankai University, and Yenching University to apply their facilities to the practical problems of rural reconstruction led to the formation of a special Yenching Committee, including representation from Nankai University and the Mass Education Movement, to determine how Yenching could best cooperate with the other institutions in North China and aid in the training of personnel for rural service. Other North China institutions also felt the need of a field laboratory which would bring their teaching and their students into direct contact with the vital problems of rural reconstruction. The North China Council for Rural Reconstruction was organized April 2, 1936, as a result of these needs

and efforts. During its first year, the Council established its field work at Tinghsien, Hopei, where it could utilize some of the activities already in operation under the Mass Education Movement, and also at Tsining in Shantung.

The participating members of the Council, together with the fields of activity which they supervise, are as follows:

National Tsing Hua University (engineering)
Nankai University (economics and local government)
Yenching University (education and social administration)
Peiping Union Medical College (social medicine)
University of Nanking (agriculture)
Chinese National Association of the Mass Education Movement

The field units of the Council are largely staffed by members of the interested departments of the cooperating schools or agencies. The power of the council to nominate its personnel to official government posts adds to the usefulness of Tsining as an actual laboratory. The Council has been accorded recognition by the Division of Higher Education of the Ministry of Education, and a liaison officer from the Ministry attends the meetings of the Council. Work is being conducted in education and social medicine at Tinghsien, and in economics, agriculture, engineering, and civil and social administration at Tsining. Students, both graduate and under-

graduate, are entered for these laboratory courses under special regulations. The North China Council for Rural Reconstruction is thus an agency to provide laboratory and field instruction and experimentation in subjects in which this form of activity has previously been possible only to a limited extent, but it is also an agency for applying these disciplines in a practical way directly to one of China's greatest needs, rural reconstruction. This form of organization, in making it possible for personnel of high technical quality and strong moral responsibility to develop well conceived and practical programs for social reconstruction and public administration, is of potential significance not only for China but possibly for other countries as well.

No major aid was given directly to the Council by the Foundation in 1936, but nine grants, totaling $15,697.43, were made toward separate activities of the Council from the Research and Developmental Aid Fund.

Chinese Mass Education Movement

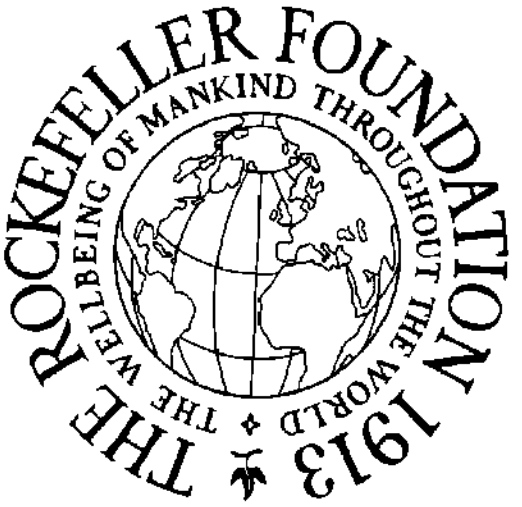
The Chinese Mass Education Movement has been entering a "phase of expansion" as contrasted with its previous "phase of concentration." The pressure on the Movement for trained leaders to extend its work was probably the most

directly effective influence in the formation of the North China Council. In turn, the entrance of the Council itself into rural reconstruction as an operating agency has facilitated extension of the mass education work. The Council has taken over some of the more important of the training facilities at Tinghsien, and the headquarters of the Movement have been transferred to Changsha, Hunan, where the county of Henghsan has been placed under its direction to be developed as a province-wide training center in rural reconstruction. The province of Szechuen has sought the active cooperation of the Movement in work to be undertaken in the province, including not only the establishment of an experimental county, but province-wide activities in education, agriculture, and health. The Foundation's grant to the Mass Education Movement in 1936 was LC$150,000.[1]

Nankai University

The Institute of Economics of Nankai University has extended its outstanding work in research on practical problems and postgraduate training to the Tsining field station of the North China Council. Two-year postgraduate courses in cooperation, land administration, local government, and local finances have successfully completed their initial first year, and the stu-

[1] LC=local currency.



Photograph Excised Here

Pupil of an incorporated village school teaching members of his family what he has learned in his classes. The Chinese Mass Education Movement is making students responsible for passing on their daily lessons to relatives and neighbors who cannot attend school. Pupils who do this work are called Taosheng.

Photograph Excised Here

Taosheng, or pupil teachers, at one of the weekly science demonstrations which are held for them.

dents are now acquiring practical knowledge and experience at Tsining. In 1936 the Foundation made a grant of LC$45,000 toward the budget of the Institute for one year.

Yenching University

Yenching University through its College of Public Affairs (social sciences) and College of Natural Sciences, which has shifted its research interests as much as is justifiable to problems in the rural field, has given increasing emphasis to social reconstruction, especially through its membership in the North China Council. The Foundation made a grant of LC$73,725 to the University, of which approximately four-fifths went to the College of Public Affairs and one-fifth to the College of Natural Sciences for their budgets during the year beginning July 1, 1936.

Nanking Agricultural Program

University of Nanking

The University of Nanking is the agency in charge of agriculture under the North China Council for Rural Reconstruction. Its Department of Agricultural Economics is principally the creation of Professor J. Lossing Buck, who, with a group of Chinese whom he has developed, has won acknowledged leadership in China in this field. The government has given the De-

Photograph Excised Here

Training pupils in hygiene in an incorporated village school organized under the Mass Education Movement. The cleaning up of the young children is training for them and for the "big sisters" as well.

Photograph Excised Here

Weighing millet raised on a demonstration farm in connection with the rural reconstruction movement in China.

partment considerable aid, and is anxious that its excellent work shall be continued. Some of its activities are being absorbed into the National Agricultural Research Bureau. The Department is largely supported at present by special grants, some of which came from the Institute of Pacific Relations from funds appropriated to it by the Foundation. The Department of Agricultural Economics has stressed mainly studies of agricultural prices and farm business organization, including cooperatives. The first issue of a journal, *Economic Facts*, with text both in Chinese and in English, was published in September 1936. The Foundation appropriated to the work of the Department in 1936 LC$60,000 and US$9,000.

National Central University

In a cooperative program in agriculture among agencies in Nanking, the College of Agriculture of National Central University, a government institution, has undertaken to develop the subject of animal husbandry and certain branches of veterinary preventive medicine. The work in these subjects is of necessity going slowly, because there has been little formal research or training in animal husbandry or veterinary medicine previously in China. As reconstruction efforts have increasingly brought out the need

for the training of personnel in animal husbandry and preventive veterinary medicine, the Foundation is aiding this project under its reconstruction program. A grant of LC$35,000 was made for the year beginning July 1, 1936.

Ministry of Industries and Agriculture
National Agricultural Research Bureau

The third agricultural agency in Nanking which is being aided by the Foundation (LC $40,000 appropriated in 1936) is the National Agricultural Research Bureau of the Chinese Ministry of Industries and Agriculture. The excellent work and rapid progress of the Bureau, established in 1933, has been due chiefly to its very able Director and a competent staff. The Bureau provides the governmental administrative machinery for scientific investigation of agricultural problems and is one of the best technical organizations of the Chinese Government. The support given by the Foundation was for its work in the problem of insect control. Besides the industry displayed in its research in this field, the Bureau has carried out much extension work to interest farmers, given demonstrations, and conducted the First Insect Control Training School for representatives from agricultural institutes in the different provinces. An entirely new insecticide has been developed.

Nanking Public Health and Medical Program

In the early days of Foundation interest in China it was impracticable to give much aid for public health activities because of the lack of suitable agencies to apply public health methods and the small number of well trained medical men. The government has now a very active National Health Administration, and a Commission on Medical Education appointed under the Ministry of Education. The National Health Administration is instituting public health measures and methods as rapidly as possible, the larger municipalities are cooperating and vigorously introducing health measures on their own account, and the rural training and demonstration centers are spreading the desire for modern medicine and public health among the mass of rural population, with the result that personnel cannot be trained fast enough to meet the demand.

Because of the special conditions in China, a country with a large mass of rural population with little scientific medical care available, and particularly because the average Chinese community can afford only a few cents a year per capita for medical and health service, the authorities have decided that a system of state medicine will be the quickest and most efficient method of bringing modern medicine and public

health into general practice in China. A necessary feature of the system is the organization of medical and health services in terms of the needs of a rural community. Such a system, practicable in rural areas, has been demonstrated in Tinghsien, the former headquarters of the Mass Education Movement, and elsewhere. It includes the training of the lay public to share the responsibility of protecting their own health and that of their neighbors so that the professional personnel is left free to render services which actually require higher professional knowledge and experience.

National Health Administration

The nature of the problems demands a specially trained personnel. There are no schools of public health and hygiene in China such as are to be found in Western countries, and the few medical schools with departments of public health and preventive medicine, if they were developed to the point of giving adequately the special preparation required, could not hope to take care of the large number of applicants. Training, therefore, has been conducted by the National Health Administration since 1933.

The number of candidates for admission increased so rapidly that the Training Division entirely outgrew classroom, laboratory, and dor-

mitory space in the spring of 1936, and a tent colony of more than twenty tents was put up on the ground immediately behind the National Health Administration building, until new buildings could be erected. A new building for offices, classrooms, and laboratories, and a dormitory building were completed and occupied in November 1936, paid for entirely by the Chinese; and the Training Division was reorganized and given the status of an institute. It trains medical officers of health, nurses, midwives, sanitary engineers and inspectors. The work is to a considerable extent under the direction of persons trained through fellowships from the International Health Division of the Foundation. A total of 476 students of all categories have been trained during the past two years. Toward the general budget for this work the Foundation appropriated LC$115,000 in 1936.

Ministry of Education
Commission on Medical Education

The sudden demand for medical men, nurses, midwives, and other technical workers, trained in modern medical and nursing methods, prompted the establishment of medical, nursing, midwifery, and other technical schools to meet this demand. The adoption of state medicine in China will require that the teaching in these

Photograph Excised Here

New building erected in Nanking by the Chinese Government for the Public Health Training Division of the National Health Administration.

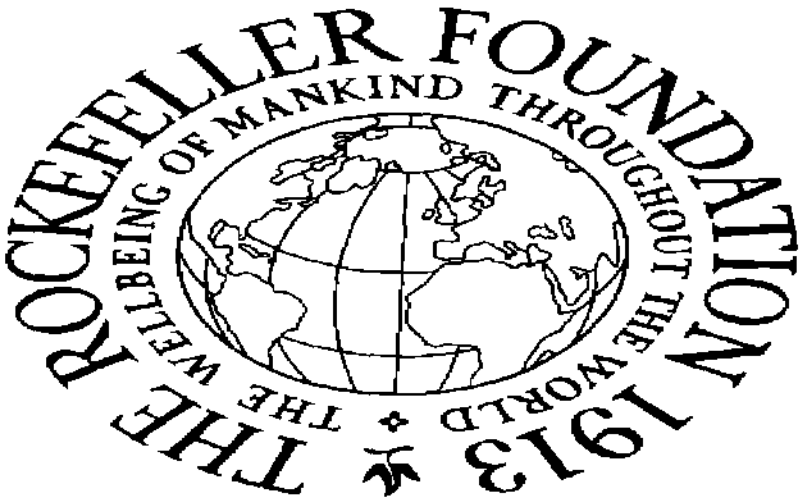
Photograph Excised Here

Bacteriological laboratory in the National Health Administration building.

schools be properly correlated and directed toward this objective. As it was found, in experiments at Tinghsien and elsewhere, that the ordinary and established training methods were not suited to the peculiar economic and rural conditions of China, the need of planning a new type of training was manifest. The Commission on Medical Education of the Ministry of Education was organized to meet this need. The National Health Administration is, naturally, represented on the Commission. The Commission itself has eleven members and eight technical advisers, including one each on nursing, midwifery, and health education. There are technical committees on nursing, midwifery, health education, and dentistry and pharmacy. The Commission has both an advisory planning function and an executive function. Medical, nursing, and midwifery schools have been inspected, and a program for the training of personnel for state medicine has been prepared by the Commission and endorsed by the Minister of Education and the Director of the National Health Administration. The most important activity of the Commission is its teacher training program, both as to policy and the steps taken to improve the teaching standards in medical schools. One feature of the program is the awarding of fellowships for study in the Peiping Union Medical College, estab-

Photograph Excised Here

Corner of a laboratory of the National Agricultural Research Bureau, Nanking, where insect feeding habits are studied in the interests of the government insect control program.



Photograph Excised Here

Combating the smut which attacks wheat is one of the problems of the Agricultural Research Bureau. The workers here shown are gathering data on infected wheat heads for the purposes of the Bureau's scientific investigations.

lished by the Foundation in 1919. The editorial staff of the Commission is doing excellent service in cooperating with the National Institute of Compilation and Translation in its work toward establishing a medical terminology in Chinese. Through the publication of a journal, *Medical Culture*, which has already reached a circulation of 2,000 among different institutions throughout the country, the Commission has undertaken to disseminate its aims. Foundation aid to the Commission in 1936 was LC$36,720.

Fellowships

The program of fellowships in China is closely related to and coordinated with the general program of rural reconstruction. The fellowships awarded for study in countries other than China were granted for graduate study to candidates who had already had considerable experience, and corresponded to the Foundation's general fellowship program. Nine new fellowships were granted, and three were renewed. With one exception, a renewal of a fellowship in electrophysics, granted under the previous China program, the subjects studied were related to the program of development in rural reconstruction and state medicine. They were as follows: medical education; public health education, including sanitary engineering and child welfare; agri-

cultural economics and farm management, and wood technology; social sciences, including statistics, rural sociology, and public administration.

Two hundred eighty-nine persons held local fellowships in 1936. The program for local fellowships for study in China seeks to aid in the training of personnel for immediate and very important needs. Because of this immediacy, it is different from the regular fellowship program of the Foundation, both in method of administration and in the type of training for which fellowships are provided. While the fellows trained did not in most cases have the postgraduate experience in teaching or administration required of candidates for foreign fellowships, some of them did have such experience. The local China program trains them not only for academic teaching positions, but also for administrative posts in government bureaus and in the demonstration and experiment areas under the National Health Administration, the Mass Education Movement, and the North China Council. It trains them not only along academic lines, but also by actual practice in the field.

The grants for fellowships were given directly to institutions or agencies which administered the individual grants. The cost of living and of training in China is so much smaller than in the

United States or other foreign countries that a large number of fellowships can be given for a comparatively small sum. The fellowships were almost exclusively for training in subjects in, or closely related to, the central program of rural reconstruction. As may be seen from the following table, except in one instance the grants were made to institutions and agencies which were receiving major aid or grants in aid, and represent one aspect of a well rounded program.

LOCAL FELLOWSHIPS IN CHINA, 1936

NORTH CHINA PROGRAM	
North China Council for Rural Reconstruction	42
The Chinese Mass Education Movement	36
Yenching University	1
NANKING AGRICULTURAL PROGRAM	
University of Nanking	7
Ministry of Industries and Agriculture	
National Agricultural Research Bureau	25
Central Bureau of Cooperation	6
NANKING PUBLIC HEALTH AND MEDICAL PROGRAM	
National Health Administration	125
Commission on Medical Education	46
FUKIEN SCIENCE INSTITUTE	1
TOTAL	289

The individual fellowships were for study primarily under the institutions or agencies which received the grants, except in the case of the Commission on Medical Education, which provided fellowships for medical training, principally at the Peiping Union Medical College, but also at the Shanghai Medical Center. The Com-

mission also granted fellowships in midwifery and nursing. As 1936 was only the second year of the program in rural reconstruction, it is too early to state actual results of the local fellowship program. However, a recent statement by the National Health Administration on fellowships which had been completed showed that in each instance the fellow had gone to a technical position in line with the subject in which he had specialized during his fellowship. The subjects studied in 1936 were as follows:

Subject	Number of fellows
Rural economics and sociology	21
Rural education	23
Social medicine	5
Agriculture	54
Cooperatives	6
Public health, including training as medical officers	106
Sanitary engineering	5
Public health nursing, nursing teaching, and nursing	32
Midwifery	14
Maternal and child health	12
Surgery and parasitology	2
Science	2
Technician	7
TOTAL	289

Research and Developmental Aid

The Foundation often makes grants in aid to projects in an early or experimental stage, as in the case of the nine grants to different activities of the North China Council. In 1936, grants in aid in China were given as far as possible to proj-

ects which had a direct relation to some phase of the central program in rural reconstruction. Some of these small grants were for significant work, and many met an urgent need which could not be included under the major items of the program. Of the twenty grants in 1936 from a fund of $30,000, five were less than $1,000; eight were less than $2,000, but over $1,000; and seven were less than $3,000, but over $2,000. The aid given was largely for medical, educational, social, and other initial activities of the North China Council for Rural Reconstruction. Other grants were for departments of natural sciences, especially for activities relating to rural problems, and one each for medical work to tide over a financial emergency, for an epidemiological study of the liver fluke, *Clonorchis sinensis*, for an investigation of other human parasites, for the purchase of thermometers and apparatus for measuring evaporation, to strengthen research facilities at Tinghsien, and for the development of public health, in particular in the rural districts of Shanghai.

CHINA PROGRAM
STAFF DURING 1936

Selskar M. Gunn, *Vice-President of The Rockefeller Foundation*
Brian R. Dyer
John B. Grant, M.D.

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REPORT OF THE TREASURER

TREASURER'S REPORT

In the following pages is submitted a report of the financial transactions of The Rockefeller Foundation for the year ended December 31, 1936.

A condensed summary of appropriations and funds available for appropriation follows:

Balance of appropriations, pledges, and authorizations, December 31, 1935		
Appropriations	$27,169,893.33	
Pledges and authorizations	3,192,805.97	$30,362,699.30
Funds provided for appropriations, pledges, and authorizations made during the year as shown hereunder		12,317,500.41
		$42,680,199.71
Less		
Payments made during 1936	$13,377,514.17	
Authorization allowed to lapse returned to Principal Fund	500,000.00	
Sum of unused appropriations allowed to lapse, becoming available for appropriation	1,104,648.60	14,982,162.77
Balance of appropriations, pledges, and authorizations, December 31, 1936		$27,698,036.94
Balance available for appropriation, December 31, 1935		$3,435,472.22
Income and refunds received during 1936	$9,508,864.80	
Unused balance of appropriations allowed to lapse, returned as above	1,104,648.60	

Amount transferred from Principal Fund in accordance with trustees' action at the meeting of December 16, 1936	$2,200,000.00	$12,813,513.40
		$16,248,985.62
Less funds provided, as above, for		
Appropriations made during 1936 not previously pledged or authorized	$10,002,357.26	
Pledges and authorizations made during 1936	2,315,143.15	12,317,500.41
Balance available for appropriation, December 31, 1936		$3,931,485.21

The balance in Principal Fund, December 31, 1935, amounted to $153,659,942.09. Transactions during the year resulted in a decrease of $2,200,000, or a balance December 31, 1936, of $151,459,942.09. The Reserve for Contingent Projects Account, amounting to $1,500,000 at December 31, 1935, was increased, by the sum of $500,000, to $2,000,000 at December 31, 1936. The detailed transactions affecting both of these accounts are shown in Exhibit B, page 342.

Attention is directed to the fact that Prior Obligations, which heretofore appeared as a separate classification, has been consolidated with appropriations made subsequent to January 2, 1929.

Since the close of the year the accounts of the Comptroller, the accounts of the Treasurer, and the securities owned by the corporation have been examined by Messrs. Squires and Company,

Accountants and Auditors, who have rendered a report to the President.

The financial condition and operations are set forth in the appended exhibits as follows:

Balance Sheet	Exhibit A
Statement of Principal Fund	Exhibit B
Statement of Reserve for Contingent Projects	Exhibit B
Statement of Funds Available for Appropriation and Disbursement	Exhibit C
Summary of Appropriations Account	Exhibit D
Statement of Building and Equipment Fund	Exhibit E
Statement of Foreign Currencies Held December 31, 1936	Exhibit F
Statement of Appropriations Made during the Year 1936	Exhibit G
Statement of Payments During 1936 on Appropriations Made in 1936 and Prior Years	Exhibit H
Statement of International Health Division Designations and Payments	Exhibit I
Schedule of Securities	Exhibit J

EXHIBIT A

BALANCE SHEET—DECEMBER 31, 1936

ASSETS

Investments		
Securities (ledger valuation)		$172,546,008.71
Current Assets		
Cash on deposit	$8,868,087.07	
Foreign currencies purchased to meet specific appropriations payable in foreign exchange of at least the same dollar amount (Exhibit F)	2,083,635.16	
Advances and deferred charges under appropriations and sundry accounts receivable	1,601,629.22	12,553,351.45
Building and Equipment		
In New York	$55,378.71	
In Paris	63,889.29	119,268.00
		$185,218,628.16

EXHIBIT A

BALANCE SHEET—DECEMBER 31, 1936

FUNDS

PRINCIPAL FUND		$151,459,942.09
RESERVE FOR CONTINGENT PROJECTS		2,000,000.00
APPROPRIATIONS FUNDS		
Unpaid appropriations	$24,019,853.83	
Unappropriated pledges and authorizations	3,678,183.11	27,698,036.94
FUNDS AVAILABLE FOR APPROPRIATION		3,931,485.21
CURRENT LIABILITIES		
Accounts payable		9,895.92
BUILDING AND EQUIPMENT FUND		119,268.00
		$185,218,628.16

EXHIBIT B
STATEMENT OF PRINCIPAL FUND

Unappropriated principal, December 31, 1935		$153,659,942.09
Authorization allowed to lapse during 1936 (Prior Obligations Account)		500,000.00
		$154,159,942.09
Amount transferred to Contingent Projects Account in accordance with a trustees' authorization at the meeting of April 15, 1936	$500,000.00	
Amount transferred to Appropriations Account in accordance with trustees' action at the meeting of December 16, 1936	2,200,000.00	2,700,000.00
Unappropriated principal, December 31, 1936		$151,459,942.09

This fund is accounted for in securities.

STATEMENT OF RESERVE FOR CONTINGENT PROJECTS

Balance, December 31, 1935	$1,500,000.00
Amount transferred from Principal Fund during 1936, in accordance with a trustees' authorization at the meeting of April 15, 1936	500,000.00
Balance, December 31, 1936	$2,000,000.00

This fund is accounted for in securities.

EXHIBIT C
STATEMENT OF FUNDS AVAILABLE FOR APPROPRIATION AND DISBURSEMENT

Receipts		
Balance, December 31, 1935		$33,798,171.52
Less		
Authorization allowed to lapse, returned to Principal Fund		500,000.00
		$33,298,171.52
Income during the year 1936 (including a gift of $2 received for general purposes)		9,497,684.96
Refunds during the year		11,179.84
Amount transferred from Principal Fund in accordance with trustees' action at the meeting of December 16, 1936		2,200,000.00
		$45,007,036.32
Disbursements		
Public health	$2,368,127.52	
Medical sciences	1,617,891.18	
Natural sciences	1,105,101.52	
Social sciences	3,077,041.34	
Humanities	3,748,860.80	
China program	281,637.79	
Miscellaneous	383,208.81	
Administration	795,645.21	13,377,514.17
Balance, December 31, 1936		$31,629,522.15

EXHIBIT C—*Continued*

This balance is available as follows:		
For outstanding appropriations, pledges, and authorizations		$27,698,036.94
Probable schedule of payments:		
1937	$15,630,468.94	
1938	5,251,834.00	
1939	3,287,942.00	
1940	1,969,957.00	
1941	1,020,771.00	
1942	370,397.00	
1943	166,667.00	
	$27,698,036.94	
For appropriation		3,931,485.21
		$31,629,522.15

This sum is accounted for in securities and cash.

EXHIBIT D
SUMMARY OF APPROPRIATIONS ACCOUNT

Unpaid appropriations and unpaid pledges and authorizations, December 31, 1935		
Appropriations	$27,169,893.33	
Pledges and authorizations	3,192,805.97	$30,362,699.30
Appropriations, pledges, and authorizations made during the year 1936		
Appropriations	$11,332,123.27	
Less appropriations previously included as pledges and authorizations	1,329,766.01	
	$10,002,357.26	
Pledges and authorizations	2,315,143.15	12,317,500.41
		$42,680,199.71
Less		
Payments made during the year 1936	$13,377,514.17	
Unused balances of appropriations and authorizations allowed to lapse	1,604,648.60	14,982,162.77
Balance, December 31, 1936		$27,698,036.94
This balance consists of		
Appropriations payable	$24,019,853.83	
Unappropriated pledges and authorizations	3,678,183.11	
	$27,698,036.94	

EXHIBIT E
STATEMENT OF BUILDING AND EQUIPMENT FUND

		TOTAL DEC. 31, 1935	EXPENDITURES 1936	TOTAL DEC. 31, 1936
New York Office				
Library		$15,684.75	$1,350.45	$17,035.20
Equipment	$35,858.77			
Less depreciation 1936	2,782.47	33,076.30	5,267.21	38,343.51
Paris Office				
Part interest in building occupied by Paris office		64,514.29	Cr. 625.00	63,889.29
		$113,275.34	$5,992.66	$119,268.00

EXHIBIT F
STATEMENT OF FOREIGN CURRENCIES HELD DECEMBER 31, 1936

		AMOUNT IN LOCAL CURRENCY	RATE	COST IN U.S. DOLLARS
Bulgaria	Leva (blocked)	1,264,526.00	.009017995	$11,403.49
Canada	Dollars	28,887.10	.919862499	26,572.16
Colombia	Pesos	375.00	.57029333	213.86
England	Pounds sterling	334,112/13/6	3.5804579	1,196,276.37
Japan	Yen	2,294,976.64	.309351545	709,954.57
Netherlands	Guilders	125,000.00	.6883	86,037.50
Rumania	Lei (blocked)	7,162,310.00	.007424589	53,177.21
				$2,083,635.16

EXHIBIT G
APPROPRIATIONS MADE DURING THE YEAR 1936

Public Health	
International Health Division of The Rockefeller Foundation	$2,100,000.00
Cornell University, Ithaca, New York	
Purchase of land in New York City for a city health center	160,000.00
Vanderbilt University School of Nursing	200,000.00
	$2,460,000.00
Medical Sciences	
Psychiatry, Neurology, and Allied Subjects	
Boston University, Massachusetts	$7,500.00
Chicago Area Project, Chicago, Illinois	22,500.00
Columbia University, New York City	50,000.00
Cornell University, Ithaca, New York	21,800.00
Cornell University Medical College, New York City	5,750.00
Harvard University, Cambridge, Massachusetts	123,000.00
Johns Hopkins University, Baltimore, Maryland	40,000.00
Massachusetts General Hospital, Boston	30,000.00
Medical Research Council, London, England	10,000.00
National Committee for Mental Hygiene, New York City	93,000.00
Tulane University, New Orleans, Louisiana	24,000.00
University of Alabama, University, Alabama	7,500.00
University of California, Berkeley	41,000.00
University of Chicago, Illinois	11,250.00
University of Edinburgh, Scotland	38,250.00
University of Illinois, Urbana	45,000.00
University of Rochester, New York	10,000.00
Yale University, New Haven, Connecticut	12,500.00

EXHIBIT G—*Continued*

MEDICAL SCIENCES—*Continued*	
Teaching of Public Health in Medical Schools	
Cornell University Medical College, New York City	$112,000.00
Fellowships	130,000.00
General	
Grants in aid	110,000.00
University of Copenhagen, Denmark	90,000.00
Former Program	
China Medical Board, Inc., New York City	400,000.00
Institute of the Educational Sciences, Geneva, Switzerland	19,000.00
National Research Council, Washington, D.C.	150,000.00
Soviet Ministry of Public Health, Russia. Medical literature	5,000.00
University of Paris, France	14,700.00
	$1,623,750.00
NATURAL SCIENCES	
Experimental Biology	
Cornell University, Ithaca, New York	$42,500.00
Harvard University, Cambridge, Massachusetts	12,600.00
Johns Hopkins University, Baltimore, Maryland	42,500.00
McGill University, Montreal, Quebec	17,350.00
National Research Council, Washington, D.C.	75,000.00
Oregon State Agricultural College, Corvallis	20,000.00
Philadelphia Institute for Medical Research, Pennsylvania	20,000.00
Rothschild Foundation, Paris, France. Institute of Physicochemical Biology	50,400.00
University of California, Berkeley	52,500.00
University of Chicago, Illinois	57,800.00
University of Illinois, Urbana	20,500.00
University of Missouri, Columbia	20,000.00

University of Oxford, England	$40,800.00
University of Pennsylvania, Philadelphia	10,000.00
University of Wisconsin, Madison	38,900.00
Washington University, St. Louis, Missouri	6,000.00
Yale University, New Haven, Connecticut	22,000.00
Fellowships	337,500.00
General	
China Medical Board, Inc., New York City	85,000.00
Grants in aid	190,000.00
Former Program	
Harvard University, Cambridge, Massachusetts	4,000.00
Massachusetts Institute of Technology, Cambridge	85,000.00
National Research Council, Washington, D.C.	110,000.00
Yale University, New Haven, Connecticut	10,000.00
	$1,370,350.00
Social Sciences	
Social Security	
Dutch Economic Institute, Rotterdam, Netherlands	$16,800.00
Industrial Relations Counselors, Inc., New York City	11,000.00
Social Science Research Council, New York City	30,500.00
University of Louvain, Belgium	3,000.00
Public Administration	
Dalhousie University, Halifax, Nova Scotia	61,200.00
Social Science Research Council, New York City	115,000.00
University of Minnesota, Minneapolis	85,000.00
University of Virginia, Charlottesville	40,000.00
International Relations	
Canadian Institute of International Affairs, Toronto, Ontario	15,300.00
Council on Foreign Relations, New York City	30,000.00

EXHIBIT G—*Continued*

SOCIAL SCIENCES—*Continued*	
International Relations—*Continued*	
Foreign Policy Association, New York City	$25,000.00
Geneva Research Centre, Switzerland	12,000.00
International Studies Conference, Paris, France	40,000.00
Institute of Economics and History, Copenhagen, Denmark	8,500.00
Library of International Relations, Chicago, Illinois	37,500.00
Royal Institute of International Affairs, London, England	8,500.00
General	
Brookings Institution, Washington, D.C.	225,000.00
Grants in aid	60,000.00
National Bureau of Economic Research, New York City	262,500.00
Social Science Research Council, New York City	25,000.00
Fellowships	175,000.00
Former Program	
Harvard University, Cambridge, Massachusetts	30,000.00
Institute of Economics and History, Copenhagen, Denmark	13,750.00
McGill University, Montreal, Quebec	51,000.00
University of Oslo, Norway	30,000.00
University of Stockholm, Sweden	20,000.00
Welfare Council of New York City	150,000.00
	$1,581,550.00
HUMANITIES	
Drama	
Cornell University, Ithaca, New York	$15,000.00
Leland Stanford, Jr., University, Palo Alto, California	42,000.00
Northwestern University, Evanston, Illinois	15,000.00
Washington State Theatre, Seattle	35,000.00
Yale University, New Haven, Connecticut	8,000.00

Libraries	
University of Chicago, Illinois	$23,000.00
Radio and Film	
World Wide Broadcasting Foundation, Boston, Massachusetts	40,000.00
Studies of American Culture	
Authors' League of America, New York City	8,800.00
University of Alaska, College, Alaska	17,000.00
Latin-American and Far Eastern Interests	
Claremont Colleges, Claremont, California	5,000.00
Harvard-Yenching Institute, Cambridge, Massachusetts	8,600.00
Institute for Advanced Study, Princeton, New Jersey	62,500.00
National Library of Peiping, China	25,000.00
Orthological Institute, Peiping, China	15,000.00
Pomona College, Claremont, California	6,000.00
Princeton University, New Jersey	10,000.00
Tulane University, New Orleans, Louisiana	17,000.00
University of California, Berkeley	10,750.00
University of Chicago, Illinois	25,000.00
University of Colorado, Boulder	10,000.00
Fellowships	115,000.00
General	
American Council of Learned Societies, Washington, D.C.	30,000.00
Grants in aid	90,000.00
Former Program	
American Library Association, Chicago, Illinois	30,000.00
American School of Classical Studies, Athens, Greece	25,000.00
American Schools of Oriental Research, Baghdad, Iraq, and Jerusalem, Palestine	185,000.00
University of London, England. School of Oriental Studies	30,000.00
University of Chicago, Illinois	2,169,766.01
	$3,073,416.01

EXHIBIT G—*Continued*

China Program	
Chinese Mass Education Movement	$50,000.00
Chinese Ministry of Education, Nanking	12,240.00
Fellowships	95,000.00
Lingnan University, Canton	10,000.00
Nankai University, Tientsin	15,000.00
National Agricultural Research Bureau, Nanking	13,350.00
National Central University, Nanking	11,675.00
National Economic Council, Nanking	13,350.00
National Health Administration, Nanking	38,350.00
Research and Developmental Aid	30,000.00
University of Nanking	29,000.00
Yenching University, Peiping	24,575.00
	$342,540.00
Miscellaneous	
New Education Fellowship, London, England	$5,000.00
Special Research Aid Fund for European Scholars	50,000.00
Travel Funds in Aid of Selection of Personnel for Teaching and Research	10,000.00
	$65,000.00
Administration	
Maintenance of New York, Paris, and Shanghai offices	$815,517.26
	$11,332,123.27

EXHIBIT H

PAYMENTS DURING 1936 ON APPROPRIATIONS MADE IN 1936 AND PRIOR YEARS

	APPROPRIATIONS	1936 PAYMENTS
PUBLIC HEALTH		
International Health Division of The Rockefeller Foundation		
Prior years (RF 34176)	$1,454,008.95*	$1,908,767.07
1936 (RF 35204)	2,100,000.00	
1937 (RF 36130)	2,100,000.00	.....
Revolving fund. To provide working capital (RF 29093)	200,000.00	.....
Cornell University, Ithaca, New York		
Purchase of property adjacent to Cornell University Medical College, New York City, to provide site for a city health center (RF 36058)	160,000.00	160,000.00
East Harlem Nursing and Health Service, New York City		
Nursing and health demonstration (RF 32062)	9,166.67	9,166.67
Fellowships in Nursing (RF 33018)	29,217.11	10,738.77
League of Nations. Health Organization, Geneva, Switzerland		
Epidemiological intelligence, public health documentation, international interchange of public health personnel (RF 29092, 33100, 34178)	243,765.16	96,692.29
Schools and Institutes of Hygiene and Public Health		
Bulgaria. Sofia. Land, building, and equipment (RF 30059)	12,084.11	.....
Hungary. Budapest. Construction and equipment of a new floor for Institute of Hygiene (RF 34118)	7,245.94	.....
Japan. Tokyo. Construction and equipment (RF 32116)	863,967.37	154,302.14
Rumania. Bucharest		
Construction and equipment (RF 33078)	72,878.60	.....
Health center (RF 33079)	15,000.00	.....
Schools of Nursing		
Emergency aid to schools of nursing in Europe to the development of which the Foundation has previously contributed (RF 31099)	23,077.29	Cr. 331.97
School of Nursing, Bucharest, Rumania. Building (RF 35099)	85,000.00	.....

* A complete financial statement of the work of the International Health Division for 1936 will be found in Exhibit I, pp. 385–407.

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
PUBLIC HEALTH—*Continued*		
Schools of Nursing—*Continued*		
State Institute of Public Health, Prague, Czechoslovakia		
School for Nurses in Public Health and Social Welfare		
Building and equipment (RF 30082)	$3,994.99	$3,994.99
Improvement of teaching services (RF 30082)	24,700.00	.....
University of Toronto, Ontario. Maintenance (RF 32080)	30,880.79	24,797.56
Vanderbilt University, Nashville, Tennessee. Endowment (RF 36131)	200,000.00	.....
MEDICAL SCIENCES		
Psychiatry, Neurology, and Allied Subjects		
Boston University, Massachusetts		
Researches on cerebral cortex (RF 36104)	7,500.00	1,250.00
Chicago Area Project, Chicago, Illinois		
General budget (RF 35128, 36024)	43,125.00	27,404.39
Columbia University, New York City		
Research in poliomyelitis (RF 36026)	8,000.00	3,000.00
Research in psychiatry (RF 35126)	12,500.00	5,000.00
Research on virus diseases with special reference to poliomyelitis (RF 32055)	4,066.21	3,678.03
Study of constitutional aspects of disease (RF 36103)	42,000.00	7,000.00
Cornell University, Ithaca, New York		
Study of reflex behavior in relation to neuroses (RF 35129, 36102)	27,000.00	10,898.44
Cornell University Medical College, New York City		
Research in physiological aspects of neurology and psychiatry (RF 36039)	5,750.00	2,875.00
Harvard Medical School, Boston, Massachusetts		
Teaching and research in psychiatry (RF 35002, 36010)	72,000.00	42,451.52
Harvard University, Cambridge, Massachusetts		
Research in neurophysiology (RF 36125)	75,000.00	.....
Institute for Psychiatric Research, Munich, Germany		
Research in neurohistology, serology, and biochemistry (RF 31045, 33082)	52,258.80	4,394.63

Institute for Psychoanalysis, Chicago, Illinois		
Research and teaching (RF 35041)	$92,500.00	$35,000.00
Institute of the Pennsylvania Hospital, Philadelphia		
Development of research and teaching in psychiatry (RF 35001)	27,000.00	17,594.46
Johns Hopkins University, Baltimore, Maryland		
Development of neurology (RF 36022)	32,000.00	4,000.00
Research in psychiatry (RF 33043)	30,631.16	19,484.19
Study of accessory factors of health (RF 36120)	8,000.00	4,000.00
Study and teaching in child psychiatry (RF 34047, 35010)	47,920.74	13,005.97
London County Council, England		
Research in psychiatry at Maudsley Hospital (RF 35108)	45,000.00	22,348.13
London Hospital, England		
Development of neurosurgery (RF 31073)	34,141.67	.....
Massachusetts Department of Mental Diseases, Boston		
Publication of statistical data on mental disease in Massachusetts (RF 35003)	26,000.00	5,846.56
Research in psychiatry at Boston State Hospital (RF 34142)	27,400.00	13,700.00
Massachusetts General Hospital, Boston		
Development of teaching and research in psychiatry (RF 35002, 36010)	45,000.00	30,000.00
Medical Research Council, London, England		
Studies in human genetics in relation to mental disease, Galton Laboratory, University of London (RF 35057, 36132)	43,015.00	6,441.25
National Committee for Mental Hygiene, New York City		
Support of activities (RF 35170, 36025)	65,000.00	20,000.00
Support of Division of Mental Hospital Service (RF 36055)	48,000.00	8,000.00
National Hospital, Queen Square, for the Relief and Cure of Diseases of the Nervous System, including Paralysis and Epilepsy, London, England		
Endowment of research (RF 35040)	300,000.00	.....
Building (RF 35040)	300,000.00	.....
Neurophysiology in European countries		
Survey (RF 34026)	325.97	.....
New York University, New York City		
Research in experimental neurology (RF 35111)	1,250.00	1,250.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
MEDICAL SCIENCES—*Continued*		
Psychiatry, Neurology, and Allied Subjects—*Continued*		
Northwestern University Medical School, Chicago, Illinois		
Research in neuroanatomy (RF 35011)	$6,000.00	$4,000.00
North Carolina. Commission for the Study of the Care of the Insane and the Mentally Defective (RF 35110)	16,300.00	14,000.00
Tulane University, New Orleans, Louisiana		
Development of subdepartment of psychiatry (RF 36086)	24,000.00	4,000.00
University of Alabama, University, Alabama		
Research in neurophysiology (RF 36105)	7,500.00	1,500.00
University of Amsterdam, Netherlands		
Research in dementia praecox (RF 35109)	6,139.45	2,146.27
University of California, Berkeley		
Support of child guidance program (RF 36012, 36133)	41,000.00	6,500.00
University of Chicago, Illinois		
Development of subdepartment of psychiatry (RF 35055)	141,750.00	52,500.00
Investigation of physiology of sleep (RF 36023)	11,250.00	4,500.00
University of Colorado. School of Medicine, Denver		
Teaching of psychiatry (RF 35127)	15,000.00	9,673.31
University of Edinburgh, Scotland		
Research in neurology (RF 36054)	38,250.00	3,791.25
University of Illinois, Urbana		
Development of teaching and research in psychiatry (RF 36085)	45,000.00	7,500.00
University of Leiden, Netherlands		
Research in child psychiatry (RF 34145)	16,608.27	2,753.49
University of Michigan, Ann Arbor		
Development of teaching and research in psychiatry (RF 35009)	27,000.00	18,000.00
University of Pennsylvania, Philadelphia		
Study of living tissues, with special reference to growth of nerve fibers (RF 35058)	9,375.00	6,250.00
University of Rochester, New York		
Virus research (RF 36027)	10,000.00	.....

Washington University, St. Louis, Missouri		
Research in neurophysiology (RF 33061)	$29,764.92	$11,596.27
Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Australia		
Research on virus diseases, with special reference to neurotropic viruses (RF 34083)	6,540.00	5,958.75
Worcester State Hospital, Massachusetts		
Research on dementia praecox (RF 35012)	24,750.00	16,291.62
Yale University, New Haven, Connecticut		
Institute of Human Relations		
Development of psychiatry (RF 29002)	367,302.01	84,560.98
Experimental studies in neurophysiology (RF 36013)	12,500.00	5,000.00
Teaching of Public Health in Medical Schools		
Cornell University Medical College, New York City		
Maintenance of Department of Public Health and Preventive Medicine (RF 36057)	112,000.00	.....
Dalhousie University, Halifax, Nova Scotia		
Development of teaching in public health and preventive medicine (RF 33044)	27,254.45	11,958.21
Study of the teaching of preventive medicine, public health, and hygiene in North American and Western European medical schools (RF 35171)	25,000.00	5,883.52
Visits by teachers of public health and deans of medical schools in the United States and Canada (RF 34124, 35154)	5,478.13	3,031.64
Fellowships		
Fellowships administered by The Rockefeller Foundation		
Medical sciences (RF 32110, 34162, 35172, 36144)	421,456.38	61,801.21
Psychiatry (RF 32113)	2,628.53	350.00
Hungarian Scholarship Council, Budapest		
Foreign scholarships in medicine (RF 32069)	897.80	.....
Medical Research Council, London, England (RF 33076, 34165, 35027)	13,373.50	11,137.39
National Research Council, Washington, D.C. (RF 34164, 35036, 35169)	60,465.44	16,157.49
Peiping Union Medical College, China		
Fellowships and grants in aid in Peiping Union Medical College (RF 34105, 34163)	10,000.00	10,000.00
Foreign fellowships (RF 34105, 34163)	15,049.79	15,049.79

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
MEDICAL SCIENCES—*Continued*		
General		
Cornell University Medical College, New York City		
Studies of the role of the glands of internal secretion in relation to growth and inheritance (RF 30006)	$113,141.12	$24,301.69
Dartmouth College, Hanover, New Hampshire.		
Research in physiological optics (RF 35125)	72,000.00	33,000.00
Grants in aid (RF 34166, 34167, 35173, 36148)	282,716.93	81,429.44
Harvard University, Cambridge, Massachusetts		
Biochemical studies of synovial fluid (RF 34065)	2.46	.....
Research in physiology and physical chemistry (RF 30028)	43,750.05	27,083.33
Johns Hopkins University, Baltimore, Maryland		
Institute of the History of Medicine (RF 35056)	31,250.00	12,500.00
Lister Institute of Preventive Medicine, London, England		
Purchase of ultracentrifuge for use in medical research, particularly on the biophysical aspects of body fluids (RF 34126)	15,603.12	8,857.75
Medical Research Council, London, England		
Research on puerperal fever (RF 31044)	54,968.01	15,000.00
National Conference on the Nomenclature of Disease, New York City		
General budget (RF 34068)	204.07	.....
National Research Council. Research aid fund (RF 34172)	17,625.00	11,625.00
Research aid fund. Europe. (RF 29127, 30097, 31139, 32106, 34027, 34038)	61,794.91	15,507.41
Royal Caroline Institute, Stockholm, Sweden		
Research in biochemistry (RF 34144)	17,343.50	5,157.01
University of Copenhagen, Denmark. Institute of Human Genetics		
Building and equipment (RF 36053)	62,500.00	.....
Endowment (RF 36053)	27,500.00	.....
University of Padua, Italy		
Institute of Histology and Embryology. Research (RF 31074)	2,874.65	.....

University of Paris, France. Radium Institute		
Division of Biophysics (RF 32076, 33082)	$87,955.50	$19,807.94
University of Turin, Italy. Institute of Anatomy		
Research in problems of growth (RF 31068)	3,409.54	1,373.45
Western Reserve University, Cleveland, Ohio		
Research on whooping cough (RF 32025)	7,000.00	7,000.00
Former Program		
American University of Beirut, Republic of Lebanon		
Improvement of teaching facilities in the medical sciences, nursing, and the pre-medical subjects (RF 31124)	254,166.74	50,000.00
China Medical Board, Inc., New York City		
Peiping Union Medical College. Maintenance		
1935–36 (RF 35124, 35198)	200,000.00	200,000.00
1936–37 (RF 36087, 36134)	400,000.00	252,000.00
Chinese Medical Association, Shanghai		
General budget (RF 33045)	538.97	538.97
Chulalongkorn University, Bangkok, Siam		
Visiting professors and nurse leaders (ME 28039, RF 29110, 30063, 31113)	35,553.92	323.34
Addition to pathology building and construction of a building for School of Nursing (RF 30023)	25,356.62	514.69
Institute of the Educational Sciences, Geneva, Switzerland		
General budget (RF 32002, 34121, 35152, 36106)	30,404.08	9,731.63
Johns Hopkins University, Baltimore, Maryland		
Study of deafness (RF 32024)	68,357.95	8,937.02
Study of obstetrical records (RF 29041)	3,652.38	Cr. 1,312.20
Leland Stanford, Jr., University, Palo Alto, California		
Fluid research fund (RF 30070)	5,000.00	5,000.00
National Research Council, Washington, D.C.		
Work of the Committee on Drug Addiction (RF 31130, 34127, 36011)	219,341.03	48,415.62
Peiping Union Medical College, China		
Allowance for a widow of staff member (RF 29034)	10,218.35	1,815.98

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
MEDICAL SCIENCES—*Continued*		
Former Program—*Continued*		
Shanghai, China		
Purchase of land for a medical school and expenses in connection therewith (RF 34056, 34137)	$857.76	$250.00
Soviet Ministry of Public Health, Russia		
Medical literature (RF 33085, 34125, 35166, 36121)	15,080.81	7,395.72
University of Copenhagen, Denmark		
Research on inheritance in relation to blood groupings (RF 34112)	6,688.25	1,838.89
University of Leipzig, Germany. Institute of Physiological Chemistry		
Research assistants, fellows, and aid (RF 31016, 33082)	27,613.37	11,128.95
University of Paris, France		
Department of Parasitology. Support (RF 34119, 36056)	19,700.00	.....
University of Rochester, New York		
Special research in dental pathology (RF 34146)	9,607.88	9,607.88
University of Szeged, Hungary. Department of Medicine		
Maintenance (RF 31026)	2,108.98	.....
Scientific equipment (RF 31025)	2,695.67	797.91
Vanderbilt University, Nashville, Tennessee. School of Medicine		
Fluid research fund (RF 31136)	65,000.00	30,000.00
Yale University, New Haven, Connecticut. School of Medicine		
Fluid research fund (RF 29147)	20,000.00	13,750.00
NATURAL SCIENCES		
Experimental Biology		
Amherst College, Massachusetts		
Research in genetics and experimental embryology (RF 34130)	14,339.88	6,402.17

California Institute of Technology, Pasadena		
Research in biology (RF 33106)	$10,000.00	$.....
Research in chemistry (RF 34151)	25,000.00	10,000.00
Research in general physiology (RF 35047)	30,000.00	20,000.00
Clark University, Worcester, Massachusetts		
Research in neurophysiology (RF 35005)	4,200.00	2,400.00
Columbia University, New York City		
Research on the biological effects of heavy hydrogen (RF 34101, 35045)	7,690.84	6,047.90
Research in physiology (RF 35160)	7,500.00	3,000.00
Cornell University, Ithaca, New York		
Research in nutrition (RF 36029)	42,500.00	5,000.00
Emma Pendleton Bradley Home, East Providence, Rhode Island		
Research in electroencephalography (RF 35096)	39,000.00	15,041.18
George Washington University, Washington, D.C.		
Research in biochemistry (RF 35022)	21,000.00	8,750.00
Harvard University, Cambridge, Massachusetts		
Chemical research to determine the heats of organic reactions (RF 32098)	19,000.00	8,000.00
Research on physical and chemical properties of synovial fluid (RF 36082)	12,600.00	2,100.00
Johns Hopkins University, Baltimore, Maryland		
Research in Department of Biochemistry (RF 36099)	32,500.00	3,250.00
Research in photosynthesis and photo-oxidation (RF 36068)	10,000.00	8,200.00
Leland Stanford, Jr., University, Palo Alto, California		
Research in chemophysical biology (RF 35054, 35174)	43,750.00	13,750.00
Long Island Biological Association, Cold Spring Harbor, New York		
Support of a symposium on quantitative biology (RF 35177)	14,000.00	7,000.00
Massachusetts General Hospital, Boston		
Research on the parathyroid hormone and calcium and phosphorus metabolism (RF 35024)	8,000.00	3,500.00
McGill University, Montreal, Quebec		
Research in the applications of spectroscopic methods to biological and medical problems (RF 35097)	20,000.00	10,000.00
Research in the Department of Genetics (RF 36097)	17,350.00	5,246.72

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
NATURAL SCIENCES—*Continued*		
Experimental Biology—*Continued*		
National Research Council, Washington, D.C.		
Committee for Research in Problems of Sex (RF 34147, 35180, 36135)	$213,724.65	$70,040.89
Committee on Effects of Radiation on Living Organisms (RF 35095)	73,202.28	27,037.26
New York University, New York City. College of Medicine		
Research in cellular physiology (RF 35176)	10,500.00	3,500.00
Ohio State University, Columbus		
Research in endocrinology (RF 35175)	18,000.00	12,000.00
Oregon State Agricultural College, Corvallis		
Research in Department of Chemistry (RF 36069)	20,000.00	3,500.00
Philadelphia Institute for Medical Research, Pennsylvania		
Research in endocrinology (RF 36100)	20,000.00	4,500.00
Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine		
Research in mammalian genetics (RF 35159)	35,000.00	12,500.00
Rothschild Foundation, Paris, France. Institute of Physicochemical Biology		
Researches in cellular physiology, chemical embryology, and genetics (RF 36067)	50,400.00	1,175.94
State University of Iowa, Iowa City		
Investigations on the physiology of the normal cell (RF 35050)	35,000.00	10,250.00
Technical Institute, Graz, Austria		
Research in biophysical chemistry (RF 35141)	5,800.00	2,715.41
University of California, Berkeley		
Research in plant genetics (RF 35025)	10,000.00	4,000.00
Study of chemical aspects of vitamins and hormones (RF 35051, 36008)	62,500.00	20,000.00
University of Cambridge, England		
Research in cellular physiology (RF 35146)	30,600.00	2,979.00

University of Chicago, Illinois		
Research in application of spectroscopic methods to biological problems (RF 35023, 36081)	$49,800.00	$12,330.25
Research in the biological sciences (RF 35053)	125,000.00	50,000.00
Research in surface chemistry (RF 36080)	15,000.00	1,875.00
University of Copenhagen, Denmark		
Special research in application of methods of physics, chemistry, and mathematics to biological problems (RF 35043)	48,281.05	12,601.98
University of Illinois, Urbana		
Research in spectroscopic analysis of water (RF 36016)	10,500.00	3,500.00
Research in biochemistry of amino acids (RF 36030)	10,000.00	2,500.00
University of Leeds, England		
Research in the x-ray analysis of biological tissues (RF 35145)	17,750.00	5,753.60
University of Michigan, Ann Arbor		
Research in the applications of spectroscopic methods to biological and medical problems (RF 35046)	9,900.00	7,000.00
Research in the physiology of respiration (RF 35049)	22,500.00	5,000.00
University of Missouri, Columbia		
Research in cytology and genetics (RF 36098)	20,000.00	7,750.00
University of Oxford, England		
Research in the application of mathematical analyses to biological problems (RF 35144)	12,750.00	4,951.25
Research on the synthesis of proteins (RF 36083)	40,800.00	4,220.25
University of Paris, France		
Research in endocrinology and vitamins (RF 35147)	8,400.00	2,317.75
University of Pennsylvania, Philadelphia		
Research on influence of minerals and other elements in diet upon resistance to infection (RF 36031)	10,000.00	6,000.00
University of Rochester, New York. School of Medicine and Dentistry		
Research on physiology of reproduction (RF 35052)	8,250.00	2,224.08
Studies on the biological effects of heat (RF 35140)	3,200.00	3,200.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
NATURAL SCIENCES—*Continued*		
Experimental Biology—*Continued*		
University of Stockholm, Sweden		
Increased facilities for investigations in zoophysiology (RF 31149)	$633.50	$254.00
Research in biophysics, chemical biology, and cell physiology (RF 35142)	9,850.00	4,719.13
University of Uppsala, Sweden. Institute of Physical Chemistry		
Research on the physicochemical properties of proteins and other heavy molecules (RF 34111, 35044)	59,698.67	8,672.99
University of Utrecht, Netherlands		
Research in spectroscopic biology (RF 35143)	16,800.00	8,169.15
University of Virginia, Charlottesville		
Research in endocrinology (RF 35161)	15,000.00	5,000.00
University of Wisconsin, Madison		
Purchase and installation of ultracentrifuges (RF 36101)	27,500.00	4,000.00
Research in immunogenetics (RF 36032)	11,400.00	4,490.68
Washington University, St. Louis, Missouri		
Research in the Department of Anatomy (RF 36118)	6,000.00	1,250.00
Research in nerve physiology (RF 35048)	13,500.00	5,750.00
Yale University, New Haven, Connecticut		
Experimental embryology (RF 36015)	22,000.00	7,000.00
Fellowships		
Administered by The Rockefeller Foundation (RF 31142, 32111, 34168, 35019, 35178, 36145)	439,731.64	72,527.49
National Research Council, Washington, D.C.		
Physical and biological sciences (RF 34169, 35037, 36070)	322,324.46	93,226.63
General		
China Medical Board, Inc., New York City		
Peiping Union Medical College, China		
Human paleontological research in Asia (RF 32100, 36119, 36137)	124,049.94	25,394.10

Grants in aid		
(RF 34170, 34171, 35179, 36079, 36149)	$385,579.42	$162,641.91
Massachusetts Institute of Technology, Cambridge		
Design and development of an improved differential analyzer (RF 35098)	5,000.00	4,970.49
Construction of differential analyzer (RF 36071)	85,000.00	.....
National Academy of Sciences, Washington, D.C.		
General expenses of National Research Council (RF 34106)	6,000.00	6,000.00
National Research Council, Washington, D.C.		
Administration budget and support of conferences (RF 36007)	35,000.00	35,000.00
Conferences (RF 32010)	7,000.00	4,191.26
Support of central purposes (RF 36136)	75,000.00	.....
Research aid fund (RF 34172)	29,375.00	19,375.00
Research aid fund. Europe (RF 32107, 34039)	5,167.65	3,093.14
University of Alaska, College, Alaska (Formerly Alaska Agricultural College and School of Mines)		
Study of the aurora (RF 29118)	1,573.16	.....
Yale University, New Haven, Connecticut		
Research in oceanography (RF 36084)	10,000.00	2,500.00
Former Program		
American Institute of Physics, New York City		
Scientific publications (RF 32017, 35122)	10,939.63	2,234.67
American Mathematical Society, New York City		
Scientific publications (RF 33014)	2,250.00	2,250.00
American Psychological Association, Princeton, New Jersey		
Psychological Abstracts (LS 694)	8,846.94	6,499.63
California Institute of Technology, Pasadena		
Development of natural sciences, including buildings and equipment (RF 30080)	500,000.00	.....
Harvard University, Cambridge, Massachusetts		
Developing and testing balloon radiometeorographs at the Blue Hill Meteorological Observatory (RF 36009)	4,000.00	4,000.00
Geophysical research (RF 31134, 35194)	50,000.00	10,000.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
NATURAL SCIENCES—*Continued*		
Former Program—*Continued*		
Hungarian Biological Research Institute, Tihany		
Maintenance (RF 31061)	$1,881.59	$.....
International Commission for the Polar Year 1932–33, Copenhagen, Denmark		
Equipment and expenses (RF 34132)	12,000.00	.....
Iowa State College of Agriculture and Mechanic Arts, Ames		
General research fund in the natural sciences (RF 31077)	1,250.00	1,250.00
Johns Hopkins University, Baltimore, Maryland		
Biological research (RF 30005)	143,750.00	36,250.00
Jungfraujoch Scientific Station, Switzerland		
Construction and equipment (RF 33111)	6,811.59	2,129.79
Long Island Biological Association, Cold Spring Harbor, New York		
Biological laboratory (RF 34149)	14,000.00	9,000.00
Marine Biological Association of China, Amoy		
Support of a marine institute of biology (RF 33039)	593.58	.....
Massachusetts Institute of Technology, Cambridge		
General research fund for physics, chemistry, geology, and biology (RF 31050)	10,000.00	10,000.00
National Research Council, Washington, D.C.		
Annual Tables of Constants and Numerical Data. Publication (RF 32020)	1,000.00	1,000.00
Biological Abstracts. Editing and indexing (RF 34005, 34152, 35123)	51,856.34	26,832.79
University of Leiden, Netherlands		
Purchase and endowment of a photographic telescope for the Union Observatory, Johannesburg, Union of South Africa (RF 30021, 34100)	112,673.02	.....
University of Oslo, Norway. Institute of Theoretical Astrophysics		
Construction and equipment (RF 31035, 34033)	5,193.96	3,122.32

University of Szeged, Hungary. Department of Science		
Maintenance (RF 31026)	$2,108.99	$.....
Scientific equipment (RF 31025)	2,695.68	797.91
University of Utrecht, Netherlands. Institute of Comparative Physiology		
Construction of building (RF 33038, 33081)	3,144.00	113.08
University of Virginia, Charlottesville		
Graduate research in the natural sciences (RF 34153)	35,000.00	10,000.00
University of Warsaw, Poland. Institute of Physics		
Research apparatus (RF 31027)	2.59	.....
Washington University, St. Louis, Missouri		
General research fund (RF 30038)	10,000.00	10,000.00
Woods Hole Oceanographic Institution, Massachusetts		
Current expenses (RF 30004)	15,000.00	9,098.76
Yale University, New Haven, Connecticut		
Maintenance of an anthropoid experiment station, Orange Park, Florida (RF 29090)	156,292.81	39,185.97
SOCIAL SCIENCES		
Social Security		
Austrian Institute for Trade Cycle Research, Vienna		
Research program (RF 30087, 33082, 35164)	13,317.40	4,845.57
Dutch Economic Institute, Rotterdam, Netherlands		
Research program (RF 31046, 33082, 36076)	23,981.00	7,055.50
Harvard University, Cambridge, Massachusetts		
Research on problems of the business cycle (RF 35083)	22,500.00	10,000.00
Industrial Relations Counselors, New York City		
Services to state and Federal agencies in field of social security (RF 35132, 36018)	16,000.00	10,348.97
Study of railroad retirement systems (RF 36094)	5,000.00	1,000.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
SOCIAL SCIENCES—*Continued*		
Social Security—*Continued*		
League of Nations, Geneva, Switzerland		
Analytical research work of the Financial Section and Economic Intelligence Service (RF 33023)	$118,235.97	$41,685.94
Social Science Research Council, New York City		
Committee on Social Security		
General budget (RF 35115)	177,500.00	47,500.00
Study of unemployment relief policies in New Jersey (RF 36114)	15,000.00	.....
Regional studies of labor market in relation to unemployment compensation (RF 36077)	15,500.00	14,730.84
University of Louvain, Belgium. Institute of Economics		
Business cycle research (RF 33010, 36115)	6,272.51	758.34
University of Sofia, Bulgaria. Statistical Institute of Economic Research.		
Budget (RF 35077)	12,611.55	5,105.89
Public Administration		
American Municipal Association, Chicago, Illinois		
Advisory service to municipalities (RF 34141)	35,600.10	35,600.10
American University, Washington, D.C.		
Training program in public administration (RF 35082)	18,000.00	10,000.00
Brookings Institution, Washington, D.C.		
Concurrent study of Agricultural Adjustment Administration (RF 34113)	11,367.41	11,367.41
Concurrent study of National Industrial Recovery Administration (RF 33067, 34078)	7,616.91	4,993.49
Dalhousie University, Halifax, Nova Scotia		
Program of training and research in public administration (RF 36093)	61,200.00	7,506.45
Harvard University, Cambridge, Massachusetts		
School of City Planning. Support (RF 29072)	30,061.95	14,984.27
Training in public service (RF 35078)	65,315.90	12,372.18

Industrial Relations Counselors, New York City		
Services to governmental agencies (RF 34003)	$574.54	$574.54
National Association of Housing Officials, Chicago, Illinois		
Emergency training course in management of housing developments (RF 34139)	29,194.94	18,485.46
National Institute of Public Affairs, Washington, D.C.		
Training of personnel attached to Federal services (RF 35138)	80,000.00	50,000.00
New Hampshire Foundation, Concord		
Research program (RF 35084)	9,000.00	3,000.00
Social Science Research Council, New York City		
Public Administration Committee		
General expenses, exploratory studies, conferences, and small projects (RF 35114, 36140)	167,020.65	25,187.13
Study of administrative problems in field of social security (RF 36005)	80,000.00	80,000.00
Study of Tennessee Valley Authority (RF 36040)	20,000.00	.....
Spelman Fund of New York, New York City		
Support of work in public administration (RF 35199)	1,000,000.00	300,000.00
Syracuse University, New York. School of Citizenship and Public Affairs		
Research and training (RF 32037, 35139)	55,000.00	13,500.00
University of California, Berkeley. Bureau of Public Administration		
Program of graduate training and research (RF 29108)	35,000.00	15,000.00
University of Chicago, Illinois		
Training and research in public administration (RF 32035)	37,500.00	18,750.00
University of Cincinnati, Ohio		
Training in public administration (RF 32036)	22,500.00	12,500.00
University of Minnesota, Minneapolis		
Program of training for the public service (RF 36065)	85,000.00	10,000.00
University of Virginia, Charlottesville. Bureau of Public Administration		
Program of service and research (RF 36066)	40,000.00	5,000.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
SOCIAL SCIENCES—*Continued*		
International Relations		
Agricultural economics. World-wide study (RF 35081)	$16,088.13	$6,582.26
American Geographical Society, New York City		
Preparation of publication of Millionth Map of Hispanic America (RF 34086, 35028)	38,500.00	33,500.00
Canadian Institute of International Affairs, Toronto, Ontario		
Research and educational activities (RF 36075)	15,300.00	3,747.66
Canton of Geneva, Switzerland. Department of Public Instruction		
Graduate Institute of International Studies. Maintenance (RF 29136)	534,769.93	93,540.01
Center for the Study of Foreign Relations, Paris, France		
Research in international relations (RF 35136)	70,000.00	25,000.00
Council on Foreign Relations, New York City		
Work of American Coordinating Committee on International Studies Conference (RF 36036)	30,000.00	15,000.00
Research program (RF 35189)	50,000.00	20,000.00
Foreign Policy Association, New York City		
Support of experimental educational program (RF 35080, 36138)	51,174.81	18,856.95
Support of Research Department (RF 35188)	75,000.00	25,000.00
Geneva Research Centre, Switzerland		
General research budget (RF 33027, 33082, 35100, 36113)	20,786.69	8,597.40
Harvard University and Radcliffe College, Cambridge, Massachusetts		
Research in the field of international relations (LS 993)	215,211.42	47,388.81
Institute of Economics and History, Copenhagen, Denmark		
Budget of International Relations Section (RF 36111)	8,500.00	.....
Institute of Pacific Relations.		
American Council, New York City. General expenses (RF 35187)	47,500.00	17,500.00
Pacific Council, Honolulu, Hawaii. General expenses and research program (RF 35186)	135,000.00	50,000.00

International Institute of Intellectual Cooperation, Paris, France		
Maintenance and conferences (RF 35137)	$30,000.00	$15,000.00
International Studies Conference		
Special grants in aid. (RF 36017)	40,000.00	17,182.05
John Casimir University, Lwow, Poland. Institute of Constitutional and International Law		
Research on problems of international relations (RF 35190)	15,000.00	3,000.00
League of Nations. Fiscal Committee		
Study of international double taxation problems (RF 33004)	50,000.00	.....
Library of International Relations, Chicago, Illinois		
Budget (RF 36095)	37,500.00	2,500.00
Royal Institute of International Affairs, London, England		
Research program (RF 32038, 33082, 34031, 34129, 36091)	60,367.50	59,150.00
Yale University, New Haven, Connecticut		
Research in international relations (RF 35079)	92,500.00	20,000.00
General		
Brookings Institution, Washington, D.C.		
General research program (RF 35066, 36062)	262,500.00	75,000.00
Grants in aid		
In the fields of social security, international relations, and public administration (RF 35089, 35192, 36150)	155,787.56	22,821.77
Institute of Economic and Social Research, Paris, France		
Establishment and support (RF 33072)	273,913.53	59,473.18
National Bureau of Economic Research, New York City		
General budget (RF 33063, 36063)	83,581.98	80,450.18
General research program and expense of office of Executive Director (RF 36064)	255,000.00	16,250.00
Social Science Research Council, New York City		
General budget (LS 875)	151,250.00	44,999.96
Conferences and planning (RF 31127)	149,394.75	33,422.58
General research projects (RF 31126)	185,114.04	49,245.43
Grants in aid of research (RF 31128, 36038)	57,400.00	23,900.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
SOCIAL SCIENCES—*Continued*		
General—*Continued*		
Yenching University, Peiping, China. College of Public Affairs		
Developmental aid (LS 946, RF 34081)*	$7,500.00	$.....
Fellowships		
Administered by The Rockefeller Foundation		
Social sciences (RF 34044, 34173, 35195)	244,650.42	116,802.59
In fields of social security, international relations, and public administration (RF 35088, 35191, 36146)	298,219.96	29,552.44
Social Science Research Council, New York City (RF 33053, 34045, 35039, 36037)	178,506.45	54,153.98
Former Program		
American Statistical Association, Washington, D.C.		
General budget (RF 35197)	22,500.00	7,500.00
American University of Beirut, Republic of Lebanon		
Work in the social sciences (RF 35070)	37,500.00	13,500.00
Australian National Research Council, Sydney		
Anthropological studies (RF 31095, 35013)	24,745.80	17,500.00
Canadian National Committee for Mental Hygiene, Toronto, Ontario		
Development of training centers for advanced students (RF 30088)	10,671.87	4,886.93
Program of mental hygiene and social research in Canadian universities (RF 33049)	31,754.82	14,943.75
Columbia University, New York City		
Research and field training in anthropology (RF 34072)	1,875.00	1,875.00
Research in the social sciences (RF 30036–37)	268,860.92	59,289.86
Commission on Interracial Cooperation, Atlanta, Georgia		
Forwarding the interests of the American Negro in the present economic emergency (RF 34008)	9,625.27	9,625.27
Community Council of Philadelphia, Pennsylvania		
Support of the Department of Research (RF 35165)	11,250.00	6,250.00

* Current appropriation will be found under China Program, p. 382.

Encyclopaedia of the Social Sciences, New York City		
Expenses of production and distribution (RF 32114)	$25,000.00	$.....
Grants in aid. Europe (RF 33009, 34040, 34174, 35196)	46,401.68	30,567.75
Harvard University, Cambridge, Massachusetts		
Research in industrial hazards (RF 30031)	351,271.04	103,039.95
Research in anthropology (RF 31042, 36035)	35,000.00	12,500.00
Research in the social sciences (RF 32032, 35086)	292,100.89	44,547.38
Institute of Economics and History, Copenhagen, Denmark		
General budget (RF 33071, 36110)	20,922.50	5,525.00
International Institute of African Languages and Cultures, London, England		
General budget (RF 31041, 35085)	175,138.76	32,826.83
Laboratory of Anthropology, Sante Fe, New Mexico		
Support of field training course in anthropology (RF 35014)	3,750.00	3,750.00
Leland Stanford, Jr., University, Palo Alto, California		
Research in the social sciences (RF 32031)	55,950.00	26,250.00
London School of Economics and Political Science, University of London, England		
Research fund (RF 35067)	45,000.00	15,000.00
Library development (RF 31030)	33,633.31	.....
Improving facilities for research and postgraduate teaching (RF 31031, 33082)	90,000.00	30,000.00
Purchase of land for expansion of school plant (RF 31028)	58,127.66	.....
McGill University, Montreal, Quebec		
Research in the social sciences (RF 30107, 36078)	55,013.80	15,601.34
Nankai University, Tientsin, China. Institute of Economics		
Support (RF 31123, 34080)*	25,435.15	13,932.85
National Bureau of Economic Research, New York City		
International study of the history of prices (RF 29138, 33113)	68,389.39	12,176.63
National Institute of Industrial Psychology, London, England		
Research program (RF 32085, 33054, 33082)	3,231.25	3,114.07
New York School of Social Work, New York City		
General budget (RF 32043)	62,500.00	22,500.00

* Current appropriation will be found under China Program, p. 381.

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
SOCIAL SCIENCES—*Continued*		
Former Program—*Continued*		
Polish Academy of Sciences, Cracow. Economic Institute		
Research program (RF 35076)	$9,000.00	$2,000.00
Royal Anthropological Institute of Great Britain and Ireland, London, England		
General budget (RF 31110)	500.00	500.00
Rumanian Institute of Social Sciences, Bucharest		
General administration and research program (RF 35071)	4,000.00	3,000.00
Social Science Research Council, New York City		
Instruction in agricultural economics (RF 30104)	11,105.25	6,964.42
Study of population redistribution (RF 34001)	10,941.90	6,551.88
Tulane University, New Orleans, Louisiana		
Department of Middle American Research		
Support (RF 34030)	10,000.00	7,500.00
School of Social Work		
General budget (RF 32044)	25,000.00	9,000.00
University of California, Berkeley. Institute of Social Sciences		
Research (RF 35068)	62,500.00	22,500.00
University of Chicago, Illinois		
Aid to social science facilities (RF 31133, 35087)	270,880.00	44,901.84
Endowment for development of the Division of the Social Sciences (RF 31032)	111,000.00	111,000.00
Local community research (RF 31131)	114,022.50	47,500.00
Research in anthropology (RF 34029)	10,000.00	7,500.00
School of Social Service Administration		
General endowment (RF 34057)	500,000.00	.....
Current expenses (RF 34058–59)	112,989.49	27,989.49
Purchase of basic documents in the social sciences (RF 34036)	30,162.07	30,162.07

University of Hawaii, Honolulu		
Racial research (RF 33050)	$7,000.00	$5,000.00
University of Manchester, England		
Economic Research Department (RF 35075)	15,000.00	.....
University of North Carolina, Chapel Hill		
Program in the social sciences (RF 35069)	62,500.00	22,500.00
University of Oslo, Norway. Institute of Economics		
Research program (RF 31122, 36112)	46,665.77	10,507.51
University of Oxford, England		
Development of program in the social sciences (RF 34154)	123,868.75	25,042.19
University of Paris, France		
Research in the social sciences (RF 34114, 35072)	119,869.66	18,750.00
University of Pennsylvania, Philadelphia. Wharton School of Finance and Commerce. Industrial Research Department. Support (35074)	62,500.00	22,500.00
University of Stockholm, Sweden		
Development of social science library (RF 33025, 33082)	12,000.00	8,000.00
General research program in the social sciences (RF 36092)	20,000.00	4,000.00
Special faculty appointment in the social sciences (RF 35073)	7,500.00	3,750.00
University of Texas, Austin		
Research in the social sciences (RF 32030)	58,333.33	12,500.00
University of Virginia, Charlottesville		
Research in the social sciences (RF 30106, 34175)	30,000.00	10,000.00
Welfare Council of New York City. Research Bureau		
Support (RF 35193, 36139)	210,000.00	60,000.00
Western Reserve University, Cleveland, Ohio. School of Applied Social Sciences		
Support (RF 32042, 33064, 34087)	31,250.00	11,250.00
Yale University, New Haven, Connecticut. Institute of Human Relations		
Research in psychology, child development, and social sciences (RF 29008)	525,000.00	150,000.00

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
HUMANITIES		
Drama		
Cornell University, Ithaca, New York		
Work in drama (RF 36002)	$15,000.00	$2,500.00
Leland Stanford, Jr., University, Palo Alto, California		
Building and equipment of theater and school of drama (RF 36116)	42,000.00	42,000.00
Northwestern University, Evanston, Illinois		
Development of School of Drama (RF 36073)	15,000.00	2,500.00
Play House Foundation of Cleveland, Ohio		
Program in community drama (RF 35183)	38,000.00	38,000.00
State University of Iowa, Iowa City		
Development of work in dramatic art (RF 34055, 35149)	46,250.00	42,500.00
University of North Carolina, Chapel Hill		
Development of drama as a college and regional activity (RF 35061)	6,750.00	4,750.00
Washington State Theatre, Seattle		
Touring of dramatic productions (RF 36052)	35,000.00	20,000.00
Western Reserve University, Cleveland, Ohio		
Development of Department of Drama and Theatre (RF 35062)	12,500.00	5,000.00
Yale University, New Haven, Connecticut		
Development of library in Department of Drama (RF 34017, 35092)	11,315.59	3,350.49
Aid in acquiring and operation of a motion picture camera for use of Department of Drama (RF 36096)	8,000.00	1,500.00
Libraries and Museums		
American Library Association, Chicago, Illinois		
Aid in connection with the General Catalogue of the Bibliothèque Nationale (RF 36020)	30,000.00	.....

Bibliographical Society of America, Providence, Rhode Island		
Index of American newspaper files (RF 33084)	$8,000.00	$8,000.00
Bibliothèque Nationale, Paris, France		
For classifying a collection of Library of Congress index cards (RF 35119)	8,852.50	6,141.47
British Museum, London, England		
To enable the museum to offer to American libraries, at a discount, subscriptions to the new edition of its Catalogue of Printed Books (RF 29086, 30076)	91,010.62	1,261.96
Additional service in connection with the new edition of the Catalogue of Printed Books (RF 29087)	4,762.57	880.94
Brooklyn Museum, Brooklyn, New York		
Training of museum personnel (RF 35116)	33,000.00	21,539.98
Library Association, London, England		
For establishing a service of information on library practice (RF 35060)	15,441.50	11,965.46
National Library of Peiping, China		
Support of *Quarterly Bulletin of Chinese Bibliography* (RF 35150)	5,000.00	2,000.00
Development of library services (RF 36072)	25,000.00	3,000.00
New York Museum of Science and Industry, New York City		
Development of new methods of museum exhibition (RF 35151)	45,000.00	15,000.00
Prussian State Library, Berlin, Germany		
Preparation of material for the Union Catalogue of Prussian Libraries (RF 32102)	25,942.78	15,942.78
Society of the Friends of the Bibliothèque Nationale, Paris, France		
Expenses of printing the General Catalogue (RF 29089, 34094, 35134)	11,169.44	5,344.54
University of Chicago, Illinois		
Laboratory for library microphotography (RF 36143)	23,000.00	.....
University of Oxford, England		
Bodleian and other libraries. Development (RF 31121)	2,029,417.58	401,423.49
Visits of architect and librarian of the Bodleian Library to the Continent, the United States, and Canada (RF 34069)	1,912.41	.....

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
HUMANITIES—*Continued*		
Radio and Film		
Museum of Modern Art, New York City		
Establishment of a motion picture department (RF 35090)	$98,000.00	$58,000.00
University Broadcasting Council of Chicago, Illinois		
Developing radio programs of educational and cultural value (RF 35117)	36,750.00	21,000.00
World Wide Broadcasting Foundation, Boston, Massachusetts		
Development of radio programs of educational and cultural value (RF 35118, 36051)	50,000.00	23,000.00
Studies of American Culture		
Authors' League of America, New York City		
Preparation of a series of American plays (RF 36124)	8,800.00	.....
Laboratory of Anthropology, Sante Fe, New Mexico		
Interpretative studies in Indian art (RF 34115)	2,500.00	Cr. 374.67
University of Alaska, College, Alaska		
Aid in the production of a history of the Territory of Alaska (RF 36074)	17,000.00	4,250.00
Latin-American and Far Eastern Interests		
American Council of Learned Societies, Washington, D.C.		
Development of a training center for Far Eastern studies at the Library of Congress, Washington, D.C. (RF 33094)	1,235.71	.....
Claremont Colleges, Claremont, California		
Materials for courses in Far Eastern subjects (RF 36001)	5,000.00	2,500.00
Columbia University, New York City		
Development of Far Eastern studies (RF 34116)	5,000.00	5,000.00
Studies of English usage at the Institute of Educational Research, Teachers College (RF 35063)	27,000.00	12,000.00
Harvard University, Cambridge, Massachusetts		
Translating, abstracting, and indexing works on Oriental art (RF 35120)	6,749.67	1,593.06
Harvard-Yenching Institute, Cambridge, Massachusetts		
Expenses of card catalogue (RF 36123)	8,600.00	.....

Institute for Advanced Study, Princeton, New Jersey		
Purchase of Gest Chinese Research Library (RF 36107)	$62,500.00	$62,500.00
Institute of Pacific Relations. American Council, New York City		
Experiments in intensive teaching of Chinese language (RF 35182)	17,500.00	4,500.00
International Committee of Historical Sciences, Zurich, Switzerland		
General expenses (RF 34135)	7,945.97	5,445.97
Library of Congress, Washington, D.C.		
Development of Far Eastern Center in Division of Orientalia (RF 35091)	24,500.00	10,500.00
Orthological Institute, London, England		
Research in the Chinese and Japanese languages in relation to Basic English (RF 33005, 35181)	34,817.20	17,533.75
Orthological Institute, Peiping, China		
General expenses (RF 36019)	15,000.00	10,000.00
Pomona College, Claremont, California		
Development of Far Eastern studies (RF 36033)	6,000.00	1,250.00
Princeton University, New Jersey		
Development of Far Eastern studies (RF 36034)	10,000.00	1,500.00
Tulane University, New Orleans, Louisiana. Department of Middle American Research		
Survey of archives and libraries in Central America and the West Indies (RF 36142)	17,000.00	.....
University of California, Berkeley		
Expenses of two summer seminars for teaching Russian (RF 36004)	10,750.00	4,820.00
University of Chicago, Illinois		
Development of new materials for teaching Chinese language and literature (RF 36122)	25,000.00	.....
University of Colorado, Boulder		
Development of Far Eastern studies (RF 36117)	10,000.00	2,000.00
Fellowships		
Administered by The Rockefeller Foundation (RF 29142, 35065, 35184, 36147)	163,587.03	24,888.96
American Council of Learned Societies, Washington, D.C.		
Fellowships and research aid grants in the field of humanistic studies (RF 33032, 35038, 36141)	83,888.39	41,174.01

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
HUMANITIES—*Continued*		
General		
American Council of Learned Societies, Washington, D.C.		
Completion of *Dictionary of American Biography* (RF 34134)	$10,000.00	$10,000.00
Expenses of planning committees (RF 36141)	30,000.00	.....
Support of executive offices (RF 34158)	18,327.00	18,327.00
General activities (RF 34157, 35168)	134,668.34	40,890.53
Research in paleography (RF 29133)	4,920.57	4,920.57
Grants in aid, support of projects, and administration (RF 33122)	6,131.30	6,131.30
Grants in aid		
(RF 33095, 34043, 35064, 35185, 36109, 36151)	176,709.93	57,423.22
Research aid funds. Europe		
(RF 30008, 32108)	13,192.81	2,325.00
Former Program		
American School of Classical Studies, Athens, Greece		
Fellowships in archeology in connection with the excavation of the Athenian Agora (RF 32093, 35093, 36021)	43,350.00	18,350.00
Preparation of volume of research studies in classical archeology (RF 35163)	5,000.00	5,000.00
American Schools of Oriental Research, Baghdad, Iraq, and Jerusalem, Palestine		
Current expenses (RF 29134, 36061)	60,000.00	25,000.00
Endowment (RF 29134, 36061)	351,118.35	11,699.49
Columbia University, New York City		
General research fund for development of advanced humanistic work (RF 35030)	25,000.00	15,000.00
Harvard University, Cambridge Massachusetts		
Research in humanities (RF 35031)	30,000.00	20,000.00
Johns Hopkins University, Baltimore, Maryland		
General research fund in the humanities (RF 30035, 35032)	22,050.59	14,925.09
Princeton University, New Jersey		
Research in the humanities (RF 35034)	3,750.00	3,750.00

Thesaurus Linguae Latinae, Munich, Germany		
General budget (RF 32104)	$8,000.00	$4,000.00
University of Chicago, Illinois		
Chaucer project (RF 35162)	11,000.00	11,000.00
Oriental Institute		
Support of foreign work (RF 34096, 35121, 35148, 36059)	1,380,167.66	1,380,167.66
Endowment (RF 36060)	1,000,000.00	1,000,000.00
Research in the humanities (RF 35029)	62,500.00	22,500.00
Studies in comparative philology (RF 29135)	7,817.63	.....
University of London, England. School of Oriental Studies		
Research in African linguistics (RF 35017, 36003)	45,000.00	19,768.75
University of Michigan, Ann Arbor		
Research in humanities (RF 35033)	35,000.00	20,000.00
University of Pennsylvania, Philadelphia		
Excavations at Ur of the Chaldees (RF 31078)	4,000.00	.....
University of Virginia, Charlottesville		
General research fund in the humanities (RF 35035)	6,250.00	5,000.00
Yale University, New Haven, Connecticut		
Excavations at Dura-Europos, Syria (RF 35018)	22,500.00	15,000.00
Research in the humanities (RF 32033)	100,000.00	50,000.00
CHINA PROGRAM		
Chinese Mass Education Movement		
General budget (RF 35103, 36041)	92,413.87	37,427.05
Chinese Ministry of Education, Nanking		
Expenses of Commission on Medical Education (RF 35105, 36045)	18,418.44	8,735.73
Fellowships administered by The Rockefeller Foundation		
Foreign and local (RF 34160, 35101, 36050)	138,630.52	58,930.35
Lingnan University, Canton, China		
Maintenance of science departments (RF 36028)	10,000.00	10,000.00
Nankai University, Tientsin, China. Institute of Economics		
Support (RF 35107, 36042)	25,903.12	12,437.15

EXHIBIT H—*Continued*

	APPROPRIATIONS	1936 PAYMENTS
CHINA PROGRAM—*Continued*		
Ministry of Industries and Agriculture, Nanking, China. National Agricultural Research Bureau. Insect control work (RF 35157, 36048)	$30,500.00	$16,334.49
National Central University, Nanking, China. College of Agriculture		
Development of work in animal husbandry and veterinary preventive medicine (RF 35156, 36047)	28,975.00	15,661.71
National Economic Council, Nanking, China		
Expenses of Institute for Central Information and Coordination (RF 36049)	13,350.00	.....
National Health Administration of China, Nanking		
Training of health personnel (RF 35104, 36044)	62,565.09	28,880.22
Research and Developmental Aid (RF 34161, 35102, 36014, 36089)	40,167.28	22,652.28
University of Nanking, China. Departments of Agricultural Economics and Science		
General budget (RF 35155, 36046)	70,750.00	40,752.16
Yenching University, Peiping, China		
College of Natural Sciences		
General budget (RF 35106, 36043)	12,797.57	6,538.38
College of Public Affairs		
Development of training courses (RF 35158)	6,800.00	5,747.68
General budget (RF 35106, 36043)	35,415.12	17,540.59
MISCELLANEOUS		
Commission on Interracial Cooperation, Atlanta, Georgia		
General budget (LS 999)	137,248.38	42,077.71
Exchange Fund (RF 33054, 33082, 35100)	52,260.17	.....
Harvard University, Cambridge, Massachusetts		
Purchase of Beyer collection of Filipiniana (LS 638)	47,000.00	Cr. 29.28
Institute of International Education, New York City		
General budget (LS 911)	37,000.00	30,100.00
New Education Fellowship, London, England		
General budget (RF 36006)	5,000.00	5,000.00

Playground and Recreation Association of America, New York City		
General budget (LS 1000)	$150,000.00	$50,000.00
Research Aid. Europe		
Grants to returned fellows of the Rockefeller boards (RF 32048, 34107, 35006)	15,252.76	478.21
Special fund for European scholars (RF 33055, 33077, 34018, 34028, 35020, 35135, 35153, 36090)	261,250.88	98,103.61
State University of Iowa, Iowa City		
Work in child study and parent education (LS 931–32)	149,161.80	60,895.79
Travel funds in aid of selection of personnel for teaching and research (RF 36088)	10,000.00	321.65
University of Minnesota, Minneapolis		
Child study and parent education (LS 933–34)	112,106.55	40,692.98
General research fund (RF 31007)	30,000.00	22,500.00
University of Pennsylvania, Philadelphia		
General research fund (RF 30094)	2,500.00	2,500.00
University of Toronto, Ontario		
Development of child research and parent education (RF 30054)	64,949.66	29,991.62
Visits by individuals and commissions (RF 30101)	13,895.78	576.52
ADMINISTRATION		
Executive offices		
1934 (RF 33117)	28,008.52	Cr. 65.23
1935 (RF 34179)	58,939.29	22,177.58
1936 (RF 2824, 34007, 35007, 35008, 35133, 35167, 35200)	698,939.29	617,618.18
1937 (RF 36126)	673,050.00	.....
Treasurer's office		
1935 (RF 34180)	8,783.12	7,422.30
1936 (RF 35201, 36108)	33,897.26	24,619.43
1937 (RF 36127)	34,235.00	.....
Paris office		
1935 (RF 34181)	44,746.04	23,231.19
1936 (RF 35202)	130,600.00	85,017.46
1937 (RF 36128)	95,110.00	.....

EXHIBIT H—*Continued*

		APPROPRIATIONS	1936 PAYMENTS
ADMINISTRATION—*Continued*			
Shanghai office			
1935 (RF 34182)		$4,007.92	$2,474.85
1936 (RF 35203)		12,500.00	8,194.74
1937 (RF 36129)		11,020.00	.....
Surveys by others than officers (RF 29096, 31003)		23,489.52	4,954.71
Total appropriations		$38,502,016.60	
Unused balances of appropriations allowed to lapse			
Rockefeller Foundation	$861,562.71		
International Health Division	243,085.89	1,104,648.60	
TOTAL NET APPROPRIATIONS AND EXPENDITURES		$37,397,368.00	$13,377,514.17
REFUNDS ON PRIOR YEAR APPROPRIATIONS			
American Mathematical Society (RF 34019)		$61.35	
American University, Washington, D.C. (RF 35004)		402.38	
Grants in aid. Medical sciences (RF 34041)		438.33	
Grants in aid. Natural sciences (RF 34133)		974.36	
Harvard Infantile Paralysis Commission (RF 35131)		67.52	
International Institute of Public Law, Paris, France (RF 31001)		37.88	
Journal of Industrial Hygiene (IH 32198)		450.86	
McGill University (RF 34051)		212.56	
Northwestern University Medical School (RF 34023)		28.60	
Paris office building (RF 21151)		625.00	
Science Advisory Board, Washington, D.C. (RF 33086)		158.30	
State University of Iowa (RF 34053)		31.08	
University of California (RF 33112)		5.13	
University of Chicago (RF 35026)		1,966.26	
University of Liverpool (RF 32014)		533.17	
University of New Mexico (RF 34097)		150.00	
Virginia Historical Index (RF 34159)		1.42	
Washington University (RF 32056)		35.64	
Yale University (LS 900)		5,000.00	$11,179.84

EXHIBIT I
INTERNATIONAL HEALTH DIVISION DESIGNATIONS AND PAYMENTS

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
CONTROL AND INVESTIGATIONS OF SPECIFIC DISEASES			
Anemia			
Studies			
Puerto Rico			
1936 (IH 35146)	$.....	$3,330.00	$672.64
Cancer			
Studies			
Massachusetts			
1932–35 (IH 31154)	2,451.06	.....	772.33
Diphtheria			
Europe			
Austria			
1934–35 (IH 34001)	2,266.73	.....	2,198.96
1936 (IH 35145, 36006)	.....	850.00	.....
The East			
China, Peiping			
1935–36 (IH 35059)	1,350.00	.....	554.99
Hookworm Disease			
Control			
Egypt			
1935 (IH 34101)	2,154.76	.....	471.10
1936 (IH 35119)	.....	3,960.00	1,283.77
Investigations and surveys			
Egypt			
1933–35 (IH 32124)	594.03	.....	.....
1935 (IH 34139)	739.69	.....	387.02
1936 (IH 35120)	.....	1,964.00	1,316.39

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
CONTROL AND INVESTIGATIONS OF SPECIFIC DISEASES—*Continued*			
Hookworm Disease—*Continued*			
Investigations and surveys—*Continued*			
Egypt—*Continued*			
Helminth studies			
1936–37 (IH 36018)	$.....	$1,800.00	$700.19
United States			
Alabama			
1932 (IH 31020, 31102)	511.20	.....	.....
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland			
1935–36 (IH 34067)	887.58	.....	887.05
1936–37 (IH 35149)	1,200.00	.....	260.75
North Carolina			
1935–37 (IH 35052)	4,500.00	.....	3,610.32
Vanderbilt University, Nashville, Tennessee			
Research on carbon tetrachloride			
1932–36 (IH 32039, 33174, 34038)	1,826.30	.....	1,182.83
Malaria			
Control			
Caribbean Area			
Central America			
Costa Rica			
1935 (IH 34103)	450.00	.....	450.00
1936–37 (IH 36025)	.....	500.00	.....
Guatemala			
1936–37 (IH 36038)	400.00	1,000.00	.....
Nicaragua			
1935 (IH 35046)	600.00	.....	315.78

Panama			
1935 (IH 34104)	$514.14	$.....	$397.48
1936 (IH 35122)	.....	3,100.00	2,514.84
Salvador			
1934–35 (IH 34061)	382.31	.....	308.74
1935–36 (IH 35057)	600.00	.....	255.36
West Indies			
Cuba			
1936 (IH 35121)	.....	5,100.00	2,239.79
Europe			
Albania			
1933–34 (IH 33092)	1,331.84	.....	.....
1935 (IH 34105)	8,822.40	.....	8,079.28
1936 (IH 35123)	.....	16,750.00	13,603.28
South America			
Brazil			
1929–30 (IH 28183, 29217)	15,174.19	.....	.....
Colombia			
1935 (IH 34102)	1,073.52	.....	242.66
1936 (IH 35153)	.....	3,000.00	1,581.96
Investigations and surveys			
Caribbean Area			
West Indies			
Cuba			
1935 (IH 35044)	2,618.44	.....	2,124.59
1936 (IH 35126)	.....	14,000.00	12,899.46
Puerto Rico			
1935 (IH 34108)	2,663.52	.....	2,663.48
1936 (IH 35127)	.....	4,000.00	2,003.59
Europe			
Albania			
1934 (IH 33094)	651.68	.....	.....
1935 (IH 34109)	3,526.93	.....	3,214.85

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
CONTROL AND INVESTIGATIONS OF SPECIFIC DISEASES—*Continued*			
Malaria—*Continued*			
Investigations and surveys—*Continued*			
Europe—*Continued*			
Albania, Italy, and Northern Europe			
1936 (IH 35128)	$.....	$11,500.00	$8,089.06
Bulgaria			
1934 (IH 33095)	209.98	.....	.....
1935 (IH 34110)	10,119.16	.....	3,468.55
1936 (IH 35129)	.....	12,500.00	8,041.57
Cyprus			
1936 (IH 35155)	.....	5,100.00	1,765.70
England			
University of Cambridge. Molteno Institute of Parasitology			
1936–39 (IH 36051)	.....	2,375.00	.....
Greece			
1934 (IH 33096)	5,933.66	.....	.....
1935 (IH 34111)	27,663.49	.....	11,778.77
1936 (IH 35130)	.....	21,456.00	15,733.59
Italy			
Institute of Public Health, Rome. Laboratory			
1935 (IH 34112)	13,390.80	.....	7,728.92
1936 (IH 35131)	.....	26,700.00	17,535.98
Experiment station for malaria control			
1934 (IH 33097)	4,637.64	.....	.....
Special studies in therapeutic malaria			
1934 (IH 33098)	270.52	.....	.....
1935 (IH 34113)	2,021.99	.....	1,509.37
Netherlands. Amsterdam			
1930–35 (IH 29091)	457.26	.....	345.27

Portugal			
1934 (IH 33099)	$276.53	$.....	$.....
1935 (IH 34114)	5,599.46	.....	2,064.94
1936 (IH 35132)	.....	7,000.00	3,935.86
Spain			
1935 (IH 34115)	2,245.11	.....	1,147.24
1936 (IH 35133)	.....	3,750.00	1,295.94
The East			
India. Mysore			
1935 (IH 34140–41)	864.85	.....	374.94
1936–37 (IH 36031)	.....	585.00	7.48
India. Madras			
1936 (IH 35134)	.....	7,800.00	4,897.33
Philippine Islands			
1934 (IH 33141)	957.70	.....	.....
United States			
Florida			
1935 (IH 34107)	2,315.79	.....	2,264.74
1936 (IH 35124)	.....	11,000.00	8,623.52
University of Chicago, Illinois			
1935 (IH 34106)	757.27	.....	757.27
1936 (IH 35125)	.....	2,000.00	1,118.84
Miscellaneous			
Special investigations			
1937 (IH 36017)	.....	10,000.00	.....
Surveys of the anophelines of the Eastern Mediterranean			
1936–37 (IH 36009)	.....	1,000.00	445.03
Mental Hygiene			
Europe			
Poland. National Department of Health			
Development of a division of mental hygiene in the Warsaw School of Hygiene			
1935–36 (IH 35012)	15,000.00	.....	5,124.18
1936–37 (IH 36007)	.....	5,000.00	.....

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
CONTROL AND INVESTIGATIONS OF SPECIFIC DISEASES—*Continued*			
Mental Hygiene—*Continued*			
United States			
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland. Study			
1935–36 (IH 35037)	$10,700.00	$.....	$10,276.76
1936–37 (IH 36019)	.....	10,700.00	.....
Tennessee, State Department of Health, Research			
1935–36 (IH 34133)	13,158.29	.....	12,204.95
1936–38 (IH 36005)	.....	28,750.00	2,448.10
Rabies			
Alabama			
1936–37 (IH 36010, 36034, 36048)	.....	19,560.00	.....
Respiratory Diseases			
Influenza studies			
Studies in any country			
1935–37 (IH 35063)	25,000.00	.....	10,000.00
1937 (IH 36049)	.....	20,000.00	.....
University of Pennsylvania, Philadelphia			
1937 (IH 36050)	.....	4,500.00	.....
Studies of the common cold			
Columbia University, New York City			
1935–36 (IH 35001)	10,000.00	.....	10,000.00
1936–37 (IH 36002)	.....	11,000.00	.....
Sanitation			
Cook Islands. Soil sanitation			
1932–35 (IH 31160, 34066)	1,752.89	.....	.....
Scarlet Fever			
Rumania			
1934–36 (IH 34051, 34057, 36042)	20,000.00	1,000.00	13,515.71
1937 (IH 36043)	.....	20,000.00	.....

Smallpox			
Europe			
Spain			
Study of vaccine virus			
1934 (IH 34058)	$78.49	$.....	$.....
1935 (IH 34126, 35014)	1,330.36	.....	921.73
1936 (IH 35144)	.....	3,600.00	1,649.92
United States			
Tennessee			
Study of vaccine virus			
1935–37 (IH 34125, 35150)	3,500.00	.....	2,000.00
Tuberculosis			
Caribbean Area			
Jamaica			
Mental Hospital			
Studies			
1935 (IH 34118)	856.33	.....	730.16
Mental Hospital and Stony Hill Industrial School			
Studies			
1936 (IH 35139)	.....	1,530.00	1,135.09
Special studies			
1935 (IH 34117)	879.67	.....	186.38
1936 (IH 35138)	.....	2,550.00	1,617.14
Tuberculosis work and rural isolation studies			
1936 (IH 35137)	.....	2,555.00	1,556.90
Europe			
Austria			
1934 (IH 33101, 34060)	422.63	.....	.....
1935 (IH 34119)	6,115.00	.....	5,951.06
1936 (IH 35140)	.....	7,253.00	.....

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
CONTROL AND INVESTIGATIONS OF SPECIFIC DISEASES—*Continued*			
Tuberculosis—*Continued*			
United States			
Alabama			
1935 (IH 34129)	$8,762.39	$.....	$5,419.35
1936 (IH 35136)	.....	22,875.00	9,533.77
Cornell University Medical College, New York City			
1932–36 (IH 32037)	3,089.24	.....	.....
1935–37 (IH 34006, 35003, 35064)	22,880.47	.....	12,495.94
1936–37 (IH 36001)	.....	5,000.00	1,257.92
New York Hospital-Cornell Medical College Association, New York City			
1935–36 (IH 35002)	4,300.20	.....	3,933.11
Tennessee			
1935–36 (IH 35004, 36003)	7,500.00	2,500.00	7,500.00
1936–37 (IH 36004)	.....	10,000.00	2,463.52
Typhoid Fever and Tuberculosis			
Poland			
Institute of Hygiene, Warsaw			
1935–36 (IH 35013)	634.80	.....	571.39
Undulant Fever			
France			
Investigations			
1934 (IH 33102)	179.11	.....	.....
1935 (IH 34124)	5,908.81	.....	.....
Yaws			
Jamaica			
Central office and laboratory			
1935 (IH 34120)	3,110.95	.....	1,774.62
1936 (IH 35141)	.....	5,690.00	4,268.91
Entomological unit			
1935 (IH 34123)	477.49	.....	116.09

Field units			
1935 (IH 34121–22)	$3,872.49	$.....	$1,593.83
1936 (IH 35142–43)	.....	10,710.00	7,631.71
Yellow Fever			
Control			
Brazil			
1935 (IH 34116)	48,326.95	.....	47,505.98
1936 (IH 35135)	.....	237,400.00	145,309.67
Investigations			
Caribbean Area			
Cuba			
1934–36 (IH 35045)	955.00	.....	823.36
Europe			
France, Pasteur Institute, Paris			
1935 (IH 34116)	964.55	.....	700.87
1936 (IH 35135)	.....	2,880.00	1,579.54
South America			
Brazil			
Laboratories			
1934–37 (IH 33106, 34116, 36014)	40,369.30	7,500.00	26,349.79
Colombia			
1936 (IH 35135)	.....	30,000.00	20,364.89
Other countries of South America, including international administration			
1936 (IH 35135)	.....	9,000.00	5,234.24
West Africa			
1934 (IH 33106)	30,909.85	.....	1,989.00
Surveys and investigations in any region			
1934–35 (IH 33106)	14,570.58	.....	.....
1935 (IH 34116)	9,908.78	.....	3,525.67
1936 (IH 35135)	.....	3,500.00	1,311.44
Statistical Analyses of the Records of Certain Specific Diseases			
1936–37 (IH 36033)	.....	1,000.00	518.58

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
LABORATORIES OF THE INTERNATIONAL HEALTH DIVISION AT THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK CITY			
1935 (IH 34127, 35020)	$12,506.37	$.....	$8,539.44
1936 (IH 35147)	.....	80,000.00	68,824.47
STATE AND LOCAL HEALTH SERVICES			
Public Health Administration			
Canada			
Nova Scotia			
1938–41 (IH 36022)	.....	33,400.00	.....
Caribbean Area			
Central America			
Costa Rica. Office in San José			
1935 (IH 34070)	985.11	.....	961.62
1936 (IH 35092)	.....	2,200.00	1,058.43
Panama			
1936 (IH 35093)	.....	2,500.00	2,123.15
West Indies			
Puerto Rico			
1934–35 (IH 33107)	837.83	.....	53.29
1936 (IH 35091)	.....	2,100.00	1,105.10
West Indies and Central America			
1935 (IH 34069)	1,167.78	.....	512.66
1936 (IH 35090)	.....	2,075.00	1,273.21
Mexico			
Central administration and training station			
1935 (IH 34134)	606.92	.....	416.20
1936 (IH 35088–89)	.....	4,300.00	3,519.59

The East			
India			
1935 (IH 34071–72, 35015)	$960.26	$.....	$640.18
1936 (IH 35094–95)	.....	3,705.00	1,708.45
Netherlands Indies			
1935 (IH 34073, 35016)	1,819.78	.....	859.10
1936 (IH 35096)	.....	4,375.00	3,311.45
Philippine Islands			
1935 (IH 34074)	2,030.10	.....	1,165.74
Fiji Islands			
1935 (IH 34075)	1,073.93	.....	740.15
1936 (IH 35097)	.....	1,500.00	990.03
United States			
Alabama			
1934–36 (IH 35051)	600.00	.....	585.41
Idaho			
1935–36 (IH 35082)	3,675.00	.....	591.15
Kentucky			
1935–36 (IH 35024, 35051)	2,000.00	.....	1,333.33
Maryland			
1932–36 (IH 32001)	1,178.52	.....	808.88
Michigan			
1933–36 (IH 32003)	2,280.54	.....	1,877.91
North Carolina			
1935–36 (IH 35027, 35051)	1,081.26	.....	606.89
Tennessee			
1932–36 (IH 32005)	511.05	.....	114.64
1935–36 (IH 35030, 35051)	1,350.00	.....	900.00
Virginia			
1935–36 (IH 35066)	3,300.00	.....	3,300.00
West Virginia			
1935–36 (IH 35035, 35051)	2,475.00	.....	.....
State health surveys			
1935–37 (IH 35065)	5,000.00	.....	558.37

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
STATE AND LOCAL HEALTH SERVICES—*Continued*			
Divisions of Vital Statistics			
Europe			
Rumania			
1930–35 (IH 30051, 30171, 32016, 34002)	$4,589.58	$.....	$862.81
Spain			
1930–35 (IH 29094)	17,485.09	.....	629.01
United States			
Alabama			
1935–36 (IH 35051)	600.00	.....	600.00
Massachusetts			
1933–35 (IH 31020, 33009)	720.00	.....	640.00
Missouri			
1934–35 (IH 34018)	345.00	.....	345.00
1935–36 (IH 35025, 35051)	1,035.00	.....	766.66
New York			
1936–37 (IH 36020)	.....	2,200.00	.....
Tennessee			
1935–36 (IH 35033, 35051)	981.25	.....	261.67
Divisions of Epidemiology			
Canada			
British Columbia			
1935 (IH 33151)	548.77	.....	417.23
Europe			
Austria			
1931–35 (IH 30163)	567.02	.....	291.47

Denmark			
1935 (IH 34077)	$5,000.00	$.....	$4,375.50
1936 (IH 35098)	.....	2,750.00	.....
United States			
Arizona			
1935–36 (IH 35021, 35051)	1,996.86	.....	1,457.79
Georgia			
1934–35 (IH 34045)	3,000.00	.....	3,000.00
1936 (IH 35051)	750.00	.....	750.00
Iowa			
1934–35 (IH 33149)	300.00	.....	300.00
1935–36 (IH 35023, 35051)	450.00	.....	450.00
Kentucky			
1935–36 (IH 34076, 35051)	900.00	.....	900.00
Maryland			
1934–35 (IH 34130)	512.59	.....	512.59
1935–36 (IH 35051)	687.50	.....	499.37
Michigan			
Detroit, City Department of Health			
1935–36 (IH 35067)	1,500.00	.....	937.50
Minnesota			
1935–36 (IH 35038, 35051)	3,375.00	.....	2,534.19
Mississippi			
1935 (IH 33150)	1,500.00	.....	1,500.00
1936 (IH 35051)	750.00	.....	250.00
Missouri			
1934–35 (IH 34019)	836.32	.....	804.28
1935–36 (IH 35026, 35051)	1,665.00	.....	1,269.02
New York			
1934–35 (IH 34046, 34131)	350.00	.....	Cr. 9.19
1935–36 (IH 35039)	1,225.00	.....	700.00

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
STATE AND LOCAL HEALTH SERVICES—*Continued*			
Divisions of Epidemiology—*Continued*			
United States—*Continued*			
North Carolina			
1935–36 (IH 35028, 35051)	$1,163.58	$.....	$588.70
South Carolina			
1935–36 (IH 35040, 35051)	1,950.00	.....	1,950.00
Tennessee			
1935–36 (IH 35032, 35051)	1,350.00	.....	900.00
Public Health Laboratories			
Caribbean Area			
Central America			
Costa Rica			
1936 (IH 36023)	.....	500.00	.....
Nicaragua			
Training center			
1935 (IH 35054)	400.00	.....	201.35
1936 (IH 35099)	.....	1,000.00	715.00
West Indies			
Puerto Rico			
Equipment and supplies			
1935–36 (IH 35053)	1,000.00	.....	999.53
South America			
Colombia			
1935 (IH 34078)	933.57	.....	524.70
1936 (IH 35100)	.....	1,500.00	479.20

United States			
North Carolina			
1934–35 (IH 34048)	$530.26	$.....	$464.49
1935–36 (IH 35068)	937.50	.....	75.00
Tennessee			
1935–36 (IH (35031, 35051)	750.00	.....	500.00
Divisions of Public Health Nursing			
Europe			
Hungary			
1933–35 (IH 33003, 34055)	7,901.28	.....	6,598.03
1936 (IH 35101)	.....	2,930.00	.....
Poland			
1934–35 (IH 33142)	169.49	.....	.....
1935–36 (IH 34079)	965.00	.....	.....
Divisions of Sanitary Engineering			
Canada			
Nova Scotia			
1934–37 (IH 34064)	8,500.00	.....	1,542.97
Caribbean Area			
Central America			
Costa Rica and Nicaragua			
Studies of water supplies (IH 32047)	28.90	.....	.....
West Indies			
Jamaica			
1935 (IH 34080)	176.91	.....	46.79
West Indies and Central America			
1936 (IH 35102)	.....	325.00	92.75
Egypt			
1934–35 (IH 33137)	1,235.78	.....	3.10
1936 (IH 35104)	.....	1,000.00	.....

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
STATE AND LOCAL HEALTH SERVICES—*Continued*			
Divisions of Sanitary Engineering—*Continued*			
Europe			
Greece			
1934 (IH 33078)	$1,081.17	$.....	$.....
1935 (IH 34081)	5,275.93	.....	2,979.79
1936 (IH 35103)	.....	5,800.00	2,785.04
United States			
Arizona			
1935–36 (IH 35022, 35051)	1,443.75	.....	1,122.92
South Dakota			
1935–36 (IH 35029, 35051)	2,400.00	.....	1,566.76
Tennessee			
1935–36 (IH 35034, 35051)	1,150.00	.....	766.66
Other State Health Services			
Canada			
Quebec			
Division of Industrial Hygiene			
1936–38 (IH 35042)	8,000.00	.....	.....
Division of Hygiene of Nutrition			
1936–38 (IH 35043)	8,000.00	.....	.....
Caribbean Area			
Jamaica, Bureau of Health Education, Kingston			
1935 (IH 34082)	505.64	.....	256.79
Europe			
Hungary, Survey of public health machinery			
1936–37 (IH 35105, 36041)	.....	4,175.00	.....

Poland. Bureau of District Health Work, Warsaw			
1934–35 (IH 33079)	$184.33	$.....	$.....
1935–36 (IH 34084)	1,075.00	.....	.....
South America			
Colombia			
1935 (IH 34083)	3,732.67	.....	1,845.74
Local (County) Health Departments			
Canada			
Alberta			
1934–37 (IH 34025–26)	2,065.08	.....	800.00
British Columbia			
1935–39 (IH 35083)	8,415.00	.....	2,681.32
1936–41 (IH 36021)	.....	71,475.00	.....
Manitoba			
1932–35 (IH 32044)	248.56	.....	.....
1935–36 (IH 35151)	1,180.00	.....	1,155.94
Ontario			
1935–37 (IH 34065)	34,000.00	.....	14,144.45
Caribbean Area			
Central America			
Costa Rica			
1934–35 (IH 34136)	474.88	.....	472.02
1935–36 (IH 35055)	600.00	.....	600.00
1936–37 (IH 36024)	.....	1,000.00	.....
Guatemala			
1936–37 (IH 36037)	.....	500.00	.....
Nicaragua			
1935–36 (IH 35047, 35056)	2,400.00	.....	1,532.95
1936–37 (IH 36026, 36039)	.....	1,000.00	.....

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
STATE AND LOCAL HEALTH SERVICES—*Continued*			
Local (County) Health Departments—*Continued*			
Caribbean Area—*Continued*			
Central America—*Continued*			
Panama			
1935 (IH 34086)	$81.19	$.....	$81.19
1936 (IH 35111)	.....	1,000.00	901.44
West Indies			
Puerto Rico			
1932–36 (IH 32072, 34085)	3,086.35	.....	2,744.67
Europe			
Albania			
1936–40 (IH 36028)	.....	27,525.00	500.00
Tirana Health Center (IH 36052)	.....	5,000.00	.....
Austria			
1935 (IH 34088)	2,105.00	.....	2,041.65
1936–39 (IH 35154)	.....	7,080.00	.....
Greece			
1936–40 (IH 36029)	.....	10,000.00	.....
Hungary			
1935 (IH 34089–93)	25,875.00	.....	14,791.51
1936 (IH 35112)	.....	11,381.00	.....
Irish Free State			
1930–35 (IH 29245–46, 30050, 35010–11)	9,945.76	.....	2,825.41
Italy			
1931–35 (IH 31170, 33082)	2,821.21	.....	2,376.67

Rumania			
Gilau District			
1931–36 (IH 30170)	$1,612.41	$.....	$895.77
Institute of Hygiene, Bucharest			
Development of health center			
1935–37 (IH 35058)	15,000.00	.....	3,941.99
Spain			
1932–36 (IH 32065)	936.22	.....	741.13
1935 (IH 34094)	942.47	.....	682.25
1936 (IH 36008)	.....	3,000.00	.....
Turkey			
1934–35 (IH 34003)	272.44	.....	Cr. 11.19
1935–36 (IH 35049)	4,000.00	.....	3,735 31
1936–39 (IH 36016)	.....	6,000.00	.....
Mexico			
1935–40 (IH 34135, 35084, 35106–10)	39,151.71	6,500.00	13,685.26
The East			
Ceylon			
1934–35 (IH 33177, 34053)	2,211.54	.....	.....
India			
Madras			
1935–37 (IH 35060)	7,040.00	.....	3,163.68
1937–40 (IH 36044)	.....	14,820.00	.....
Mysore			
1936–40 (IH 35156)	.....	23,400.00	923.23
Travancore			
1934–35 (IH 33138, 34142)	58.90	.....	41.32
1935–37 (IH 35061, 35086, 36032)	4,200.00	600.00	2,051.44
United Provinces			
1932–37 (IH 31163)	11,472.34	.....	3,036.65

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
STATE AND LOCAL HEALTH SERVICES—*Continued*			
Local (County) Health Departments—*Continued*			
The East—*Continued*			
Java			
1933–38 (IH 32189, 33077, 34143)	$31,589.80	$.....	$8,465.83
1938–40 (IH 36045)	.....	11,260.00	.....
United States			
Kentucky			
1935–36 (IH 35069–77)	10,495.83	.....	6,011.75
New York			
1935–39 (IH 34047, 34132)	36,451.97	.....	10,887.49
North Carolina			
1935–36 (IH 35078)	1,500.00	.....	108.33
Virginia			
1935–36 (IH 35079–81)	6,700.00	.....	6,258.59
Mississippi flood area (1927–32)			
Training station (IH 31006)	2,853.22	.....	.....
PUBLIC HEALTH EDUCATION			
Schools of Hygiene and Public Health			
Europe			
Greece. National Institute of Hygiene, Athens.			
Maintenance			
1935–36 (IH 35009, 35048)	7,000.00	.....	3,561.09
1936–37 (IH 36015)	.....	6,000.00	.....
Hungary. State Hygienic Institute, Budapest			
1935 (IH 34099)	4,665.00	.....	3,094.85
1936–37 (IH 35116, 36040)	.....	3,437.00	.....
Norway. School of Public Health, Oslo			
Maintenance			
1930–35 (IH 30012)	1,368.17	.....	487.10

Turkey. School of Hygiene, Ankara			
1936–37 (IH 36030)	$.....	$5,000.00	$.....
Yugoslavia. School of Public Health, Zagreb			
Maintenance			
1933–35 (IH 33050, 34004)	10,925.00	.....	10,924.66
1935–36 (IH 35050)	15,000.00	.....	.....
The East			
Japan. Institute of Public Health, Tokyo			
Field training area			
1935–37 (IH 32188)	90,165.00	.....	.....
Schools of Nursing			
Canada			
University of British Columbia, Victoria			
1936–39 (IH 36035)	.....	7,650.00	.....
Europe			
England. Nursing survey			
1936 (IH 35117)	.....	1,750.00	1,750.00
Rumania. School of Nursing, Bucharest			
Developmental aid			
1936–38 (IH 35085)	12,000.00	.....	.....
South America			
Brazil. School of Nursing, Rio de Janeiro			
Salary and travel of acting directress			
1934–40 (IH 33171, 36027, 36036)	2,362.17	8,600.00	2,280.83
United States			
Skidmore College, Saratoga Springs, New York			
1935–36 (IH 35041)	7,471.15	.....	7,471.15
1936–37 (IH 36011)	.....	10,000.00	5,000.00
University of Washington, Seattle			
1935–39 (IH 35005)	25,000.00	.....	10,000.00
Vanderbilt University, Nashville, Tennessee			
1935–36 (IH 35006)	13,333.33	.....	10,000.00
1936–40 (IH 36012)	.....	12,000.00	1,500.00

EXHIBIT I—*Continued*

	PRIOR DESIGNATIONS	1936 DESIGNATIONS	1936 PAYMENTS
PUBLIC HEALTH EDUCATION—*Continued*			
Schools of Nursing—*Continued*			
United States—*Continued*			
Western Reserve University, Cleveland, Ohio			
University district for public health nurse training			
1935–36 (IH 35007)	$5,000.00	$.....	$5,000.00
1936–37 (IH 36013)	.....	10,000.00	5,000.00
Other Schools			
The East			
Fiji. Central Medical School for Native Medical Students, Suva			
For enlarging laboratory building and for equipment (IH 35087)	6,750.00	.....	6,750.00
Training Stations			
Caribbean Area			
Puerto Rico			
1935 (IH 34097)	2,476.10	.....	1,571.43
1936 (IH 35114)	.....	8,320.00	6,772.50
Europe			
Italy			
1934 (IH 33088)	257.18	.....	.....
South America			
Colombia			
1935 (IH 34098)	700.00	.....	.....
1936 (IH 35115)	.....	700.00	.....
United States			
Harvard University. School of Public Health			
Field training and study area			
1935–39 (IH 34068)	25,000.00	.....	4,106.11
Johns Hopkins University. School of Hygiene and Public Health			
Field training and study area			
1932–36 (IH 32195–96)	19,164.72	.....	18,735.66
1937 (IH 32196, 34050)	29,165.00	.....	5,537.06

Fellowships, Travel of Government Health Officials, and Training of Health Workers			
1933 (IH 32111, 32113–14, 32116)	$9,782.01	$.....	$75.00
1934 (IH 33086–87, 34007)	18,856.00	.....	2,196.43
1935 (IH 32042, 34095–96, 35017–18, 35062)	148,438.74	.....	130,696.45
1936 (IH 35113, 35118)	.....	215,510.00	91,519.60
Aid to Former Fellows			
Bulgaria and Yugoslavia			
1935 (IH 34100)	3,000.00	.....	.....
The Journal of Industrial Hygiene			
1936 (IH 35019)	2,000.00	.....	2,000.00
FIELD SERVICE			
Salaries and Expenses of Staff			
1934–36 (IH 34128, 35148)			
Salaries	21,615.13	504,000.00	486,702.83
Commutation	13,533.93	50,000.00	40,055.08
Travel	24,913.30	143,000.00	142,559.78
Medical examinations	456.75	1,000.00	759.15
Field equipment and supplies	955.41	5,000.00	2,845.00
Pamphlets and charts	2,102.22	6,000.00	5,067.87
Express, freight, and exchange	909.94	1,000.00	Cr. 166.46
Insurance and retirement allowances	26,856.89	57,000.00	55,017.52
Bonding	1,648.75	3,000.00	1,766.46
Automobiles	1,000.00	1,000.00	.....
Field office expenses	.....	6,000.00	2,118.16
Director's Fund for Budget Revision (IH 34006, 36047)	2,209.00	5,000.00	.....
Exchange Fund (IH 33052, 33077)	19,664.84	.....	.....
	$1,454,008.95	$2,099,016.00*	$1,908,767.07

* The Foundation appropriated $2,100,000 for the work of the International Health Division during 1936, the undesignated balance of $984.00 being allowed to lapse as of December 31, 1936.

EXHIBIT J

SCHEDULE OF SECURITIES ON DECEMBER 31, 1936

BONDS

Name	Interest Rate Per Cent	Date of Maturity	Amount	Foundation's Ledger Value Per Cent	Foundation's Total Ledger Value
Armour & Co. (Illinois) Real Estate First Mortgage Gold	4¼	June 1939	$838,000.00	87.	$729,060.00
Atchison, Topeka, & Santa Fe Ry. One Hundred Year Adjustment Mortgage Gold (Stamped)	4	July 1995	420,000.00	75.	315,000.00
Baltimore & Ohio R.R. Refunding & General Mortgage Gold Series "A"	5	Dec. 1995	1,750,000.00	80.	1,400,000.00
Baltimore & Ohio R.R. Refunding & General Mortgage Series "F"	5	Mar. 1996	495,500.00	101.8848	504,839.38
Burlington, Cedar Rapids, & Northern Ry. Consolidated First Mortgage Gold	5	Apr. 1934	64,000.00	101.5625	65,000.00
Calgary Protestant Public School District No. 19, Province of Alberta	5	Serially June2,1937–48	107,250.00	85.	91,162.50
Carolina, Clinchfield, & Ohio Ry. First Mortgage Thirty Year Gold	5	June 1938	1,488,000.00	75.	1,116,000.00
Chicago & Alton R.R. Refunding Mortgage Gold	3	Oct. 1949	551,000.00	65.	358,150.00
Chicago City & Connecting Rys. Collateral Trust (Certificates of Deposit)	5	Jan. 1927	1,305,000.00	52.	678,600.00
Chicago & Erie R.R. First Mortgage Gold	5	May 1982	156,000.00	93.	145,080.00

Chicago, Junction Rys., & Union Stockyards Co. Forty Year Mortgage and Collateral Refunding	5	Apr. 1940	$500,000.00	93.	$465,000.00
Chicago, Milwaukee, & St. Paul Ry. Receivers' Equipment Gold Series "D" (40% paid)	5	Aug. 1935	133 bonds @ $600 each, or 79,800.00	97.08333	77,472.50
Chicago, Milwaukee, & St. Paul Ry. Receivers' Equipment Gold Series "D" (20% paid)	5	Aug. 1936	133 bonds @ $800 each, or 106,400.00	97.8125	104,072.50
Chicago, Milwaukee, & St. Paul Ry. Receivers' Equipment Gold Series "D"	5	$133,000 due Aug. 1 each year, 1937–40	532,000.00	98.25	522,690.00
Chicago, Milwaukee, & St. Paul Ry. General Mortgage Gold Series "C"	4½	May 1989	500,000.00	103.	515,000.00
Chicago, Milwaukee, St. Paul, & Pacific R.R. Fifty Year Mortgage Series "A"	5	Feb. 1975	446,300.00	95.	423,985.00
Chicago, Milwaukee, St. Paul, & Pacific R.R. Convertible Adjustment Mortgage Series "A"	5	Jan. 2000	1,785,200.00	62.5	1,115,750.00
Chicago & North Western Ry. General Mortgage	5	Nov. 1987	201,000.00	98.097	197,175.00
Chicago Rys. Co. First Mortgage Gold (25% paid) (Certificates of Deposit)	5	Feb. 1927	500 bonds @ $750 each, or 375,000.00	96.	360,000.00
Chicago, Rock Island, & Pacific Ry. Equipment Gold Series "Q" (10% paid)	4½	June 1935	100 bonds @ $900 each, or 90,000.00	100.95141	90,856.27

EXHIBIT J—*Continued*

Name	Interest Rate Per Cent	Date of Maturity	Amount	Foundation's Ledger Value Per Cent	Foundation's Total Ledger Value
Chicago, Rock Island, & Pacific Ry. Equipment Gold Series "Q" (10% paid).....	4½	Dec. 1935	100 bonds @ $900 each, or $90,000.00	100.996266	$90,896.64
Chicago, Rock Island, & Pacific Ry. Equipment Gold Series "Q" (10% paid).....	4½	June 1936	100 bonds @ $900 each, or 90,000.00	101.04015	90,936.14
Chicago, Rock Island, & Pacific Ry. Equipment of 1927 Series "O" (10% paid)....	4½	July 1936	129 bonds@ $900 each, or 116,100.00	101.05465	117,324.45
Chicago, Rock Island, & Pacific Ry. Equipment of 1927 Series "O".....	4½	July 1937	143,000.00	100.461573	143,660.05
Chicago, Rock Island, & Pacific Ry. Equipment Gold of 1929 Series "P" (Stamped) (Extended) (10% paid).....	4½	Aug. 1937	128 bonds@ $900, each or 115,200.00	101.181823	116,561.46
Chicago, Rock Island, & Pacific Ry. First and Refunding Mortgage Gold.....	4	Apr. 1934	3,345,000.00	81.458204	2,724,776.93
Chicago, St. Louis, & New Orleans R.R. Consolidated Mortgage Gold.....	3½	June 15, 1951	200,000.00	66.	132,000.00
Cleveland, Cincinnati, Chicago, & St. Louis Ry. General Mortgage.....	4	June 1993	700,000.00	83.8928571	587,250.00
Cleveland Short Line Ry. First Mortgage Gold.....	4½	Apr. 1961	500,000.00	95.	475,000.00
Consolidation Coal Co. Secured Notes.....	5	July 1950	500,000.00	100.	500,000.00
The Delaware & Hudson Co. Fifteen Year Gold.....	5½	May 1937	178,000.00	105.380623	187,577.51

Denver & Rio Grande R.R. First Consolidated Mortgage Gold	4	Jan. 1936	$810,000.00	96.4238456	$781,033.15
Denver & Rio Grande Western R.R. General Mortgage (Stamped)	5	Aug. 1955	574,000.00	59.	338,660.00
Edmonton Public School District No. 7 of the Province of Alberta, Debenture	5	Apr. 15, 1953	350,000.00	81.	283,500.00
Erie R.R. General Mortgage Convertible Gold Series "B"	4	Apr. 1953	1,065,000.00	74.717586	795,742.30
Houston Belt & Terminal Ry. First Mortgage Sinking Fund Gold	5	July 1937	5,000.00	100.5	5,025.00
Illinois Central R.R. Equipment Series "M"	4½	$80,000 due May 1 each year, 1937–41	400,000.00	98.5	394,000.00
Illinois Central R.R. Refunding Mortgage Gold	4	Nov. 1955	1,233,000.00	82.45985	1,016,730.00
Illinois Central R.R. & Chicago, St. Louis, New Orleans R.R. Joint First Refunding Gold Series "A"	5	Dec. 1963	1,000,000.00	90.	900,000.00
Imperial Chinese Government Hu Kuang Rys. Sinking Fund Loan of 1911	5	June 15, 1951	£189,000.00	34.	321,300.00
Interborough Rapid Transit Co. First & Refunding Mortgage Gold (Stamped) (Certificates of Deposit)	5	Jan. 1966	$1,750,000.00	96.85714	1,695,000.00
Kansas City, Fort Scott, & Memphis Ry. Refunding Mortgage Gold	4	Oct. 1936	274,000.00	95.755708	262,370.64
Kansas City Southern Ry. Refunding & Improvement Mortgage Gold	5	Apr. 1950	550,000.00	84.	462,000.00
Kansas City Terminal Ry. First Mortgage Gold	4	Jan. 1960	500,000.00	75.	375,000.00

EXHIBIT J—*Continued*

Name	Interest Rate Per Cent	Date of Maturity	Amount	Foundation's Ledger Value Per Cent	Foundation's Total Ledger Value
The Laclede Gas Light Co. Refunding & Extension Mortgage Gold	5	Apr. 1939	$200,000.00	102.3797	$204,759.41
Lake Erie & Western R.R. Second Mortgage Gold	5	July 1941	100,000.00	100.	100,000.00
Lake Shore & Michigan Southern Ry. First Mortgage Gold	3½	June 1997	926,000.00	87.	805,620.00
Louisville & Nashville-Southern Ry. Monon Collateral Joint Fifty Year Gold	4	July 1952	775,000.00	72.	558,000.00
Mexico, Republic of, Consolidated External Loan, Series "C" (Assenting bonds)	5	June 1945	354,000.00	34.	120,360.00
Class "A" Certificates for interest in arrears			150,228.75	6.	9,013.73
Missouri-Kansas-Texas R.R. Prior Lien Gold Series "A"	5	Jan. 1962	331,250.00	78.5	260,031.25
Missouri-Kansas-Texas R.R. Prior Lien Gold Series "B"	4	Jan. 1962	331,250.00	64.5	213,656.25
Morris & Essex R.R. First Refunding Mortgage Gold	3½	Dec. 2000	175,000.00	82.75	144,812.50
Mutual Fuel Gas Co. First Mortgage Gold	5	Nov. 1947	250,000.00	100.	250,000.00
National Rys. of Mexico Prior Lien Fifty Year Sinking Fund (Assenting Bonds)	4½	July 1957	350,000.00	13.	45,500.00
Secured 6% Notes for coupon due January 1, 1914		Jan. 1933	1,125.00	59.	663.75
National Rys. of Mexico Certificates Series "A" Interest in arrears			47,857.50	5.50	2,632.16
National Rys. of Mexico Certificates Series "B" Interest in arrears			94,500.00	.50	472.50

New Orleans, Texas, & Mexico Ry. Non-Cumulative Income Gold Series "A" (Certificates of Deposit)	5	Oct. 1935	$75,000.00	99.050026	$74,287.52
New York Central R.R.—New York Central Lines Equipment Gold Series of 1922	5	June 1937	29,000.00	103.3310689	29,966.01
New York Central R.R.—New York Central Lines Equipment Gold Series of 1923	5	June 1937	14,000.00	103.4270714	14,479.79
New York Central R.R. Equipment Gold Series of 1930	4½	May 15, 1937	125,000.00	100.988664	126,235.83
New York Central R.R. Ten Year Secured Sinking Fund	3¾	Apr. 1946	1,000,000.00	97.948125	979,481.25
New York Connecting R.R. First Mortgage Gold Series "A"	4½	Aug. 1953	500,000.00	95.69073	478,453.65
New York, Lake Erie, & Western Docks & Improvement Co. First Extended Gold	5	July 1943	400,000.00	90.	360,000.00
Northern Pacific Ry. Refunding & Improvement Mortgage Gold Series "A"	4½	July 2047	1,390,000.00	85.04676	1,182,150.00
Northwestern Elevated R.R. First Mortgage Gold	5	Sept. 1941	500,000.00	70.	350,000.00
The Pacific Telephone & Telegraph Co. First & Collateral Mortgage Gold	5	Jan. 2, 1937	500,000.00	89.5	447,500.00
Pennsylvania R.R. General Equipment Trust Certificates Series "D"	4½	$30,000 due May 15 each year, 1937–41	150,000.00	98.5	147,750.00
Pennsylvania R.R. General Mortgage Gold Series "A"	4½	June 1965	1,500,000.00	98.25	1,473,750.00
Philadelphia & Reading Coal & Iron Co. Refunding Mortgage Sinking Fund Gold	5	Jan. 1973	167,000.00	94.252347	157,401.42
Pittsburg, Cincinnati, Chicago, & St. Louis Ry. Consolidated Mortgage Gold Series "I"	4½	Aug. 1963	500,000.00	103.	515,000.00

EXHIBIT J—*Continued*

Name	Interest Rate Per Cent	Date of Maturity	Amount	Foundation's Ledger Value Per Cent	Foundation's Total Ledger Value
Public Service Corporation of New Jersey Perpetual Interest Bearing Certificates...	6		$550,000.00	84.	$462,000.00
Raleigh & Gaston R.R. First Mortgage Gold Fifty Year (Certificates of Deposit).....	5	Jan. 1947	250,000.00	95.	237,500.00
Reading Co. Equipment Trust Gold Series "M".....	4½	Nov. 1937	100,000.00	102.10579	102,105.79
Reading Co. General & Refunding Mortgage Gold Series "A".....	4½	Jan. 1997	333,000.00	94.25	313,852.50
St. Louis-San Francisco Ry. Equipment Gold Series "CC".....	4	$50,000 due May 15 each year, 1936–43	400,000.00	91.55082	366,203.27
St. Louis-San Francisco Ry. Prior Lien Gold Series "A".....	4	July 1950	1,500,000.00	72.75	1,091,250.00
St. Louis-San Francisco Ry. Consolidated Mortgage Gold Series "A".....	4½	Mar. 1978	2,500,000.00	14.	350,000.00
St. Louis Southwestern Ry. General & Refunding Mortgage Gold Series "A".....	5	July 1990	1,918,500.00	66.79274	1,281,418.80
Southern Pacific Co. Equipment Gold Series "I".....	4½	$100,000 due June 1 each year, 1937–41	500,000.00	98.5	492,500.00
Southern Pacific Co.-Central Pacific Stock Collateral Gold.....	4	Aug. 1949	100,000.00	76.	76,000.00
Southern Pacific R.R. First Refunding Mortgage Gold.....	4	Jan. 1955	100,000.00	86.	86,000.00

Standard Oil Co. (New Jersey) Twenty Five Year Debenture	3	June 1961	$15,000,000.00	98.	$14,700,000.00
Tennessee Coal, Iron, & R.R. Co. General Mortgage	5	July 1951	400,000.00	92.	368,000.00
United Electric Co. of New Jersey First Mortgage Gold	4	June 1949	500,000.00	72.	360,000.00
United States of America Treasury Notes, Series "B" dated June 15, 1933	2¾	June 15, 1938	7,000,000.00	100.986272	7,069,039.06
United States of America Treasury Notes, Series "D" dated September 15, 1934	2½	Sept. 15, 1938	1,305,000.00	100.	1,305,000.00
United States Rubber Co. First & Refunding Mortgage Gold Series "A"	5	Jan. 1947	3,820,000.00	85.	3,247,000.00
Wabash R.R. Second Mortgage Gold	5	Feb. 1939	120,000.00	97.8	117,360.00
Washington Ry. & Electric Co. Consolidated Mortgage Gold	4	Dec. 1951	450,000.00	83.5	375,750.00
Western Pacific R.R. First Mortgage Gold Series "A" (Assenting)	5	Mar. 1946	200,800.00	83.	166,664.00
TOTAL BONDS					$63,690,857.86

EXHIBIT J—*Continued*

STOCKS

NAME	NUMBER OF SHARES	FOUNDATION'S LEDGER VALUE PER SHARE	FOUNDATION'S TOTAL LEDGER VALUE
American Telephone & Telegraph Co. Capital	5,400	$182.917129	$987,752.50
Atchison, Topeka, & Santa Fe Ry. 5% Non-Cumulative Preferred	5,000	98.25	491,250.00
Atchison, Topeka, & Santa Fe Ry. Common	19,944	93.188823	1,858,557.89
Atlanta Birmingham & Coast R.R. 5% Guaranteed Cumulative Preferred	4,062	94.	381,828.00
Bethlehem Steel Corporation (Delaware) 7% Cumulative Preferred	400	129.07367	51,629.47
The Buckeye Pipe Line Co. Capital (Par value $50)	49,693	76.	3,776,668.00
Central National Bank of Cleveland Common (Par value $20)	8,482	32.114764	272,397.43
Chehalis & Pacific Land Co. Capital	220		1.00
Chicago City & Connecting Rys. Participation Certificates Preferred (Certificates of Deposit) (No par value)	17,530		1.00
Chicago City & Connecting Rys. Participation Certificates, Common (No par value)	10,518		1.00
Chicago & Eastern Illinois Ry. 6% Cumulative Preferred	3,000	5.	15,000.00
Cleveland Arcade Co. Capital	2,500	98.62222	246,555.56
Cleveland Trust Co. Capital	638	192.22824	122,641.62
Colorado & Southern Ry. 4% First Non-Cumulative Preferred	4,800	54.	259,200.00
Consolidated Edison Co. of New York, Inc., $5 Cumulative Preferred (No par value)	13,333	91.75	1,223,302.76
Consolidated Edison Co. of New York, Inc., Common	22,200	45.260923	1,004,792.50
Consolidation Coal Co. Voting Trust Certificates for Common Stock	2,937½	3.75	11,015.63
Rights to purchase Common Stock	5,875		0
Continental Oil Co. (Delaware) Capital (Par value $5)	60,627	11.46601	695,149.77

Denver & Rio Grande Western R.R. 6% Cumulative Preferred	3,280	$5.	$16,400.00
Eureka Pipe Line Co. Capital (Par value $50)	12,357	54.30	670,985.10
Illinois Central R.R. 6% Non-Cumulative Preferred "A"	2,857	15.50	44,283.50
Illinois Central R.R. Common	4,070	9.625	39,173.75
Indiana Pipe Line Co. Capital (Par value $10)	74,535	12.3	916,780.50
International Harvester Co. 7% Cumulative Preferred	45,721	115.	5,257,915.00
International Nickel Co. of Canada, Ltd., Common	30,600	65.139	1,993,253.40
Interstate Natural Gas Co., Inc., Capital (No par value)	33,763	14.958453	505,042.25
Kanawha & Hocking Coal & Coke Co. 7% Cumulative Preferred	202	20.	4,040.00
Kanawha & Hocking Coal & Coke Co. Common	668	4.	2,672.00
Kennecott Copper Corp. Capital (No par value)	33,100	59.780393	1,978,731.03
Manhattan Ry. Capital (Modified Guarantee)	10,000	60.	600,000.00
Middle West Corporation Capital (Par value $5)	68,351.92	9.75	666,431.22
Missouri-Kansas-Texas R.R. 7% Cumulative Preferred "A"	10,499	41.982284	440,772.00
National Fuel Gas Co. Capital (No par value)	847,060	7.75	6,564,715.00
National Transit Co. Capital (Par value $12.50)	126,481	16.70	2,112,232.70
New York Central R.R. Capital	49,635	16.875003	837,590.78
New York Transit Co. Capital (Par value $5)	24,784	6.969448	172,730.80
Northern Pipe Line Co. Capital (Par value $10)	27,000	8.3333	225,000.00
The Ohio Oil Co. Non-Voting Cumulative 6% Preferred	15,000	103.5	1,552,500.00
The Ohio Oil Co. Common (No par value)	94,684	35.375	3,349,446.50
Pere Marquette Ry. Cumulative 5% Preferred	5,740	49.6600627	285,048.76
Phelps Dodge Corp. Capital	37,600	53.060543	1,995,076.40
Provident Loan Society of New York 6% Certificates	266,000	100%	266,000.00
Southern Pipe Line Co. Capital (Par value $10)	24,845	6.25	155,281.25
South West Pennsylvania Pipe Lines, Capital (Par value $50)	8,000	52.	416,000.00
Standard Oil Co. (California) Capital (No par value)	60,967	17.25	1,051,680.75
Standard Oil Co. of Indiana, Capital (Par value $25)	691,140	28.90	19,973,946.00

EXHIBIT J—*Continued*

Name	Number of Shares	Foundation's Ledger Value Per Share	Foundation's Total Ledger Value
Standard Oil Co. (N.J.) Capital (Par value $25)	1,077,005	$34.319735	$36,962,526.27
The Standard Oil Co. (Ohio) Cumulative 5% Preferred	15,000	101.	1,515,000.00
The Standard Oil Co. (Ohio) Common (Par value $25)	135,648	25.50	3,459,024.00
Tilden Iron Mining Co. Capital	667½	27.350258	18,256.29
Union Tank Car Co. Capital (No par value)	240,000	6.6920332	1,606,087.97
United States Steel Corporation 7% Cumulative Preferred	6,600	143.1079545	944,512.50
Western Pacific R.R. Corporation 6% Preferred	28,609	30.	858,270.00
Wilson Realty Co. Capital	591		1.00
Total Stocks			$108,855,150.85

Summary

Bonds	$63,690,857.86
Stocks	108,855,150.85
Total Ledger Value of Investments	$172,546,008.71

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