

The
Rockefeller Foundation

Annual Report

1941

THE ROCKEFELLER
FOUNDATION

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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, 1941, to December 31, 1941, together with detailed reports of the Secretary and the Treasurer of the Foundation, the Director of the International Health Division, the Directors of 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

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THE
PRESIDENT'S REVIEW
FOR 1941

PRESIDENT'S REVIEW

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PRESIDENT'S REVIEW

THE YEAR IN BRIEF

DURING 1941 the appropriations of The Rockefeller Foundation amounted to \$9,313,964. The income of the Foundation from investments during the year was \$8,734,992. This income was supplemented by a transfer of \$600,000 from the Principal Fund.

The appropriations were distributed for the most part in six major fields, roughly as follows:

Public health	\$2,450,000
Medical sciences	2,120,000
Natural sciences	1,271,000
Social sciences	1,227,000
Humanities	1,020,000
Program in China	154,000

Details of the Foundation's finances for the year appear on pages 321 to 395 of this REPORT. Of the money spent during the year, 74 per cent was for work in the United States and 26 per cent for work in other countries.

The war, of course, has radically affected the activities of the Foundation abroad. In June 1940 the Foundation's Paris office was closed, and the Lisbon office was closed in July 1941. There are now no Foundation representatives on the continent of Europe, but an office is being

maintained in London. Late in 1940 the Far Eastern office of the Foundation was moved from Shanghai to Manila. At the time of the capture of Manila the head of the office, Dr. M. C. Balfour, was in Kunming. Unfortunately, his associate, Dr. Charles N. Leach, and some of the personnel of the Peiping Union Medical College who were on their way to the United States, were in Manila when the city fell. The Peiping Union Medical College was closed by the Japanese authorities early in 1942 and the leading members of the staff were interned.

MAKING THE PRESENT SERVE THE FUTURE

Confronted with a world in which ruthlessness must be employed to destroy a far more dangerous kind of ruthlessness, organizations like The Rockefeller Foundation, dedicated to the extension of knowledge, can only reaffirm their undiscourageable belief in the ultimate power of reason. As Alvin Johnson says: "The rules of civilization, wrought out on Sinai and the Areopagus, . . . are prior to the bomber and poison gas, and will survive beyond them." The Bill of Rights will outlast *Mein Kampf* just as the scientist's objective search for truth will outlive all the regimented thinking of totalitarianism. Temporarily eclipsed, the proud names of Paris, Stras-

bourg, Prague, Louvain, Warsaw, Leyden, as well as of Heidelberg and Leipsic and Berlin, will once again stand for the quest for truth; once again will they be centers of candid and fearless thinking — homes of the untrammled and unafraid, where there is liberty to learn, opportunity to teach, and power to understand.

The task which faces all institutions concerned with the advance of knowledge is not only to keep this faith alive but to make certain, as far as they can, that the streams of culture and learning, wherever they may be located or however feebly they may now flow, shall not be blocked. In line with this latter function, in so far as circumstances and limited funds make possible, the Foundation conceives its principal role.

This concern for the future is a matter of stern, practical sense. The specialized talents and abilities that are meeting this emergency and those that will meet emergencies to come are not produced by feverish last-minute activities. No amount of pressure can suddenly create a supply of thoroughly trained and broadly experienced physicists, mathematicians, chemists, biologists, economists, and political scientists. These men represent the trained intelligence without which a war cannot be won, or a lasting peace achieved. They emerge spontaneously, unpredictably, but irresistibly out of long, patient, and sustained

effort. Pure research, the clean urge to gain new knowledge, the sympathetic appreciation of imaginative scholarship even when it seems remote and unrelated — these we must steadfastly sponsor or our vital intellectual resources will fail us in the days to come.

It is true, of course, that in an attempt to maintain long-range programs aiming at the future rather than at the present, no institution can escape the urgencies of the moment. We are all of us in the war and it is idle to pretend that business can proceed as usual. A substantial proportion of the appropriations of The Rockefeller Foundation has some relation to the present emergency. For example, the Foundation is furnishing yellow fever vaccine for the Army and Navy; it is speeding up its research in influenza, malaria, and typhus, which have a vital bearing on the war; it has financed the microfilming of countless historical records in England that might be destroyed; it has given aid to the development of brain surgery necessitated by war wounds; it has tried to salvage as much of the scholarship of Europe as possible by bringing outstanding university men to the United States.

All this has to do with war or its results. And yet it is possible to say that this type of emergency help has invariably been related to the far target. In trying to be of service in the calamity

that engulfs us all the Foundation has endeavored to make certain, in so far as it could, that its work had some constructive reference to the world after the war. The development of brain surgery or of techniques for the control of specific diseases has significance for the future as well as for the present; much of the historical material of England is being opened to the students of other countries for the first time; the deposed scholars of Europe are enriching the intellectual life of America; the natural sciences, whether in physics or biology or chemistry, can and will be used to serve a world at peace as well as at war. In all the reordering of human life and habits which the war makes necessary it is still possible, not only in the field of the physical and social sciences, but in the humanities as well, to make the present serve the future.

THE SEARCH FOR UNITY

If we are to have a durable peace after the war, if out of the wreckage of the present a new kind of cooperative life is to be built on a global scale, the part that science and advancing knowledge will play must not be overlooked. For although wars and economic rivalries may for longer or shorter periods isolate nations and split them up into separate units, the process is never complete because the intellectual life of the world, as

far as science and learning are concerned, is definitely internationalized, and whether we wish it or not an indelible pattern of unity has been woven into the society of mankind.

There is not an area of activity in which this cannot be illustrated. An American soldier wounded on a battlefield in the Far East owes his life to the Japanese scientist, Kitasato, who isolated the bacillus of tetanus. A Russian soldier saved by a blood transfusion is indebted to Landsteiner, an Austrian. A German soldier is shielded from typhoid fever with the help of a Russian, Metchnikoff. A Dutch marine in the East Indies is protected from malaria because of the experiments of an Italian, Grassi; while a British aviator in North Africa escapes death from surgical infection because a Frenchman, Pasteur, and a German, Koch, elaborated a new technique.

In peace as in war we are all of us the beneficiaries of contributions to knowledge made by every nation in the world. Our children are guarded from diphtheria by what a Japanese and a German did; they are protected from smallpox by an Englishman's work; they are saved from rabies because of a Frenchman; they are cured of pellagra through the researches of an Austrian. From birth to death they are surrounded by an invisible host — the spirits of men who never thought in terms of flags or boun-

dary lines and who never served a lesser loyalty than the welfare of mankind. The best that every individual or group has produced anywhere in the world has always been available to serve the race of men, regardless of nation or color.

What is true of the medical sciences is true of the other sciences. Whether it is mathematics or chemistry, whether it is bridges or automobiles or a new device for making cotton cloth or a cyclotron for studying atomic structure, ideas cannot be hedged in behind geographical barriers. Thought cannot be nationalized. The fundamental unity of civilization is the unity of its intellectual life.

There is a real sense, therefore, in which the things that divide us are trivial as compared with the things that unite us. The foundations of a cooperative world have already been laid. It is not as if we were starting from the beginning. For at least three hundred years the process has been at work, until today the cornerstones of society are the common interests that relate to the welfare of all men everywhere.

In brief, the age of distinct human societies, indifferent to the fate of one another, has passed forever; and the great task that will confront us after the war is to develop for the community of nations new areas and techniques of cooperative action which will fit the facts of our twentieth century interdependence. We need rallying points

of unity, centers around which men of differing cultures and faiths can combine, defined fields of need or goals of effort in which by pooling its brains and resources the human race can add to its own well-being. Only as we begin to build, brick by brick, in these areas of common interest where cooperation is possible and the results are of benefit to all, can we erect the ultimate structure of a united society.

A score of inviting areas for this kind of cooperation deserve exploration. Means must be found by which the potential abundance of the world can be translated into a more equitable standard of living. Minimum standards of food, clothing, and shelter should be established. The new science of nutrition, slowly coming to maturity, should be expanded on a world-wide scale. The science of agriculture needs development, not only in our own climate but particularly in the tropic and subtropic zones. With all their brilliant achievements the medical sciences are in their infancy. Public health stands at the threshold of new possibilities. Physics and chemistry have scarcely started their contributions to the happiness and comfort of human living. Economics and political science are only now beginning to tell us in more confident tones how to make this world a home to live in instead of a place to fight and freeze and starve in.

All these matters await the future peace. Nevertheless they constitute the stern realities of the present, for as Vice-President Wallace has said: "From the practical standpoint of putting first things first, at a time when there are not enough hours in a day and every minute counts, planning for the future peace must of necessity be a part of our all-out war program."

YELLOW FEVER IN 1941

In 1936 the laboratories of the International Health Division of the Foundation developed a vaccine which provides active immunity against yellow fever after a single injection. As a result of the war emergency the demand for this vaccine has been so great that, in order to produce it in the quantities required, the Foundation has had to double both its laboratory space and the number of its technicians.

The distribution of yellow fever vaccine manufactured by the Foundation in New York in 1941 was as follows:

	<i>Number of Doses</i>
United States Army	959,300
United States Navy	960,000
United States Public Health Service	3,000
Panama Canal Zone	4,000
Virgin Islands	12,000
	<hr/>
Total for United States Government	1,938,300

	<i>Number of Doses</i>
West Africa	152,000
South Africa	158,000
East Africa	1,662,380
	<hr/>
Total for Africa	1,972,380
India	222,000
Brazil	100,000
Singapore	28,000
	<hr/>
Grand total	4,260,680

In addition to the amounts listed above, the United States Army and Navy have asked the Foundation to supply them with several million doses more during 1942. In all cases, both here and abroad, the vaccine is, of course, furnished without charge.

Research work in yellow fever by the field staff of the Foundation was continued during the year in Brazil and Colombia in South America and in Uganda in Africa, and assistance in control activities was given in Bolivia, Peru, and British Guiana. For the fourth consecutive year no aegypti-transmitted yellow fever, either urban or rural, was recorded anywhere on the American continents, but outbreaks of jungle yellow fever during 1941 in the Magdalena Valley and in the llanos of Colombia, in the Cuyuni Valley in Venezuela, and in the Amazon Valley in Peru, Bolivia, and Brazil, emphasize the ever-present threat of reinfection of aegypti-infested areas.

Continued investigation of jungle yellow fever in Colombia brought added evidence that, in certain areas at least, a *Haemagogus* mosquito is the chief villain in the tragedy. One of the puzzling aspects of this problem has been the complete disappearance of this mosquito at certain periods, especially during the dry season, while at the same time the disease has continued among both animals and men. How could the disease be accounted for in those seasons when the vector supposedly responsible was not to be found? This problem was resolved by the discovery that *Haemagogus* is characteristically an inhabitant of the tree tops and may be found there when it is absent in catches made at ground level. The investigators were forced to develop techniques new to yellow fever work, and as one of them expressed it, it became necessary "to associate with the monkeys in the interlacing branches high above the jungle floor."

With this knowledge available, it was possible to capture haemagogus mosquitoes throughout the entire dry season of 1941, and yellow fever virus was found repeatedly in the mosquitoes caught in the tree tops. An adequate mechanism was thus demonstrated for the carry-over of yellow fever virus from one rainy season to the next, and an explanation was afforded of the known frequency of jungle yellow fever among men engaged in felling trees.

In the western part of Uganda, Africa, the recent presence of yellow fever had been repeatedly disclosed by blood tests for acquired immunity in man, but before 1941, in spite of careful search, no active cases of the disease had been observed. This last year, in the area where the Ituri forest overlaps Uganda, it was found that natives, accurately identified by fingerprinting, were becoming immune, which meant that the virus must actually be present. The investigation was intensified, and as a result yellow fever virus was isolated from one of two observed human cases and also from two wild-caught lots of a prevalent mosquito, *Aedes simpsoni*. The mystery of the "jungle" yellow fever of Central Africa, in regions in which the *aegypti* mosquito is scarce, seems at last to be on the way to solution.

THE DEATH OF THE GAMBIAE

In the last number of this REVIEW it was reported that no evidence of the presence of the *Anopheles gambiae* mosquito had been discovered in Brazil during the final forty-seven days of 1940. It will be remembered that this was the mosquito which, imported from Africa by airplanes or fast navy destroyers, had been responsible for a widespread and devastating malaria epidemic. As a malaria vector this mosquito was

more efficient than any anopheline indigenous to America, and its further spread was greatly feared. Over twelve thousand square miles of northeastern Brazil became involved; more than two million dollars was spent and an army of over two thousand trained workers was mobilized, under the leadership of Dr. Fred L. Soper of The Rockefeller Foundation, to attack the invaders.

A year ago we reported that it no longer seemed rash to speak of the eradication of *gambiae* from Brazil, although some mopping-up operations might be necessary if any areas became infested at the onset of the rainy season in 1941. It is a satisfaction to report that no such infested areas were discovered during the entire year. Except for a short period of two months in a small area in which infestation was first found in October 1940, no control measures were carried out during the year in the *gambiae* region, and a free opportunity was thus afforded for any remaining members of the species to increase their numbers at will. Thorough search by well-trained and selected personnel throughout the entire area of previous infestation, and even far beyond the old limits, failed to reveal the presence of a single *gambiae*.

This particular battle would seem to have been won — at great labor and cost, and after enormous suffering. But the *gambiae* mosquitoes have

apparently not given up their intention of establishing themselves in the Western Hemisphere. Airplanes are crossing the Southern Atlantic with increasing frequency, and commercial planes, of course, are now carefully fumigated, both after they leave Africa and again before their passengers are discharged in Brazil. A dead female gambiae was discovered after fumigation in a plane arriving in Brazil in October 1941, and two more in January 1942. The original infestation, with all its subsequent miseries, could readily have been started by a single fertilized female. Truly the price of liberty, as far as this malaria-carrying mosquito is concerned, is eternal vigilance.

In this connection attention should perhaps be called to the increasing danger of transportation by airplanes of dangerous mosquitoes of various species, and of other disease vectors as well, especially during wartime when military necessity has a tendency to override civilian attempts to control plane movements in the interests of public health. The gambiae could just as easily travel to Asia as it could to the Americas. An infected yellow fever mosquito needs only to be introduced into India to start a conflagration of what might be appalling proportions. We do not know whether or not the tsetse fly, one of the vectors of African sleeping sickness, can suc-

cessfully establish itself in the Americas, but a male of this species was found on a plane going to Brazil from Africa in November 1941. Undoubtedly many types of disease-bearing insects, not yet universally distributed, could take advantage of the airplane to infect plants, animals, and men in regions far removed from their original habitat. Our modern inventions in bringing the populations of the world closer together have brought their diseases closer together, too.

MALARIA IN WARTIME

Because it includes one of the recently acquired military bases of the United States, Trinidad takes on new importance to this country. At the request of the Army and Navy and on the invitation of the Government of Trinidad, The Rockefeller Foundation is participating in a study of malaria in the civilian population of that island. Malaria is the outstanding health problem there, and while the identity of the principal vectors responsible for the disease in Trinidad has not been definitely established, evidence points to two species of anopheline mosquitoes. One of these species breeds in the water which collects in the leaves of a plant growing on trees. Malaria is thus often prevalent in regions where the usual marshes and streams, commonly associated with the disease, are ab-

sent, and this probably accounts for the fact that malaria is found at nearly all altitudes in Trinidad. The Foundation has assigned a malariologist to determine the factors of the problem, and when these have been obtained it will be possible to make intelligent plans for controlling the disease.

Another project in malaria under Foundation auspices is on the Burma Road. This project was begun in 1940 under the direction of Dr. W. C. Sweet of the Foundation staff. On one section of the Road, troops and truck drivers became heavily infected with malaria a short time after their arrival, and investigations were begun at that point. More than twenty species of anopheline mosquitoes were found in this area, but only one proved to be an effective carrier of the disease. A laboratory has been established directly on the Road, and although under the war circumstances the project has encountered great difficulties, it is hoped that effective control measures will soon reduce the incidence of malaria at this critical section of the highway.

TYPHUS

“In its tragic relationship to mankind,” said Hans Zinsser, “the disease of typhus is second to none — not even to plague or to cholera.” In most major wars of the past more persons have

succumbed to typhus than have fallen on the battlefield — and Zinsser speaks of “the relative unimportance of generals.” Whether a similar disaster will accompany this war we do not know, but typhus is now active in many parts of Europe. Epidemics are building up in southern Spain. Other known focuses of the disease are in Poland, Rumania, and the neighboring countries, whence it may be expected to spread in disastrous epidemics as the result of conditions imposed by prolonged warfare.

In spite of the fact that it is an age-old problem, our basic knowledge regarding this disease is far from adequate. We know in a general way that it is spread from person to person by means of the body louse and that it develops rapidly with devastating results when people are crowded together under unsanitary conditions and when there is a heavy louse infestation. We also know that in most instances one attack confers lifelong immunity, and we have certain rudimentary knowledge regarding the prevention of its spread by such measures as general delousing and quarantine. But we do not know how best to control or eradicate louse breeding under war conditions. Nor has there been found any highly effective or reliable method of immunization against typhus. Moreover, no specific treatment for the disease, once it is contracted, has thus far been discovered.

The chief reason that so little progress has been made in the study of this malady is the lack of an experimental animal which would equal man in its susceptibility to typhus, and in which the disease could be reproduced as it occurs in human beings. Until such an animal is found, progress in the study of typhus is bound to be slow. In the past the standard animal employed for this purpose has been the guinea pig, but in comparison with man the susceptibility of the guinea pig to typhus is slight. The infection in this animal is usually characterized by a short transitory period of fever followed by recovery. There has been a tendency to believe that the various preventive measures effective in the comparatively refractory guinea pig are equally effective in the highly susceptible human being. The hazards of such reasoning were recently demonstrated when vaccines which fully protected guinea pigs failed to afford similar protection to laboratory workers exposed to infection due to accident. Two doctors on the staff of The Rockefeller Foundation contracted typhus this last year, although they had been vaccinated with the latest and supposedly the most effective type of vaccine.

The International Health Division of The Rockefeller Foundation began laboratory research in typhus in January 1941, and soon after-

ward a field worker was sent to Spain to study on the ground the epidemic active in that country. Some progress was made during the year in finding a better tool for typhus research in the form of a more susceptible animal. This proved to be the Eastern cotton rat, previously used in the United States in the investigation of infantile paralysis. These rats are highly susceptible to European typhus, but only when very young. During the period when they are expected to develop immunity as a result of vaccination, they also acquire a certain degree of natural resistance by simply growing up. On the other hand, they have proved extremely valuable in facilitating comparison of different vaccines as well as in the study of chemotherapy in typhus.

Although the cotton rat is greatly superior to the guinea pig for typhus studies, the search for a still better experimental animal is being continued. Ever since 1938 field workers of the Foundation's International Health Division have been collecting and testing wild animals for their susceptibility to virus diseases, particularly in the jungles of Brazil and Colombia, on the island of Jamaica, and in Africa. The previous discovery of the value of the ferret in influenza and the hedgehog in yellow fever suggested that other animals might be discovered if a systematic search were made. It is to be hoped that some

animal more susceptible than the cotton rat will soon be found so that advance in knowledge of typhus can be hastened.

INFLUENZA

A year ago in this REVIEW a report was made of the development of a vaccine for influenza A and of the field studies then in progress, both in this country and in England, to determine its efficacy. These studies indicated that while the vaccine effected about a 50 per cent reduction in the incidence of influenza A, it would have to be greatly improved in quality before it could really control the disease.

During 1941 the research was energetically pushed in relation not only to influenza A but to influenza B; and the laboratories of the Foundation were successful in developing a new technique for measuring antibodies in the blood before and after vaccination. Aided by this technique, eleven different types of vaccines have been prepared and tested in human volunteers in groups varying in size from 150 to 200 persons. Generally speaking, the number of antibodies in the blood of persons vaccinated with some of these types was about the same as that which would follow an actual attack of influenza.

On the basis of these results it was decided to make a field trial of one of the most promising

vaccines containing both influenza A and B viruses. Groups of 1,000 persons have therefore been vaccinated in Oklahoma, Georgia, Virginia, Ohio, and New York. All vaccinations have been done in large institutions where a similar number of persons living under identical conditions have been left unvaccinated, to serve as controls. At the moment no influenza has been reported anywhere in the United States. If this should be an "off year" for influenza, there may not be an opportunity this winter to test the efficacy of the new type of vaccine.

NUTRITION IN WARTIME

Among the calamities imposed by war comparable to violent destruction and to epidemics of infectious disease, is the damage from malnutrition, ranging from plain starvation to the various manifestations of the lack of essential food elements. Since 1938 the International Health Division of The Rockefeller Foundation has been active in promoting the long overdue acceptance of the prevention of malnutrition as an essential function of official health agencies. In line with this activity, two field studies were set up, centering in Vanberbilt and Duke Universities, for the exploration of the possibilities of nutritional correction on a community-wide basis, and for the evaluation of the clinical and

laboratory methods employed in determining the changing physical conditions arising from inadequate diets.

In 1940, when The Rockefeller Foundation Health Commission was formed within the International Health Division to facilitate health activities related to the war, the needs in the nutritional field commanded its early attention. In 1941 studies were made in Marseille and Madrid and information was obtained as to the nature of the effects of the then relatively brief food restrictions in Unoccupied France and of the more serious consequences in Spain as the result of the years of deprivation since the civil war. Not until there are opportunities to observe changing symptoms over a period of time and to study the effects of experimental correction of certain elements in the diet of selected groups will the full significance of the clinical, laboratory, and x-ray findings become apparent.

In England in 1941 the Foundation undertook a cooperative project through the Ministry of Health with the Oxford Nutrition Survey. The Foundation provided a medical expert in nutrition, and together with the British Medical Research Council and the Nuffield Trust it is contributing toward the costs of the project. The importance of recognizing promptly even moderate nutritional deficiencies in a population un-

der food restrictions cannot be overemphasized. The intensive study centered at the University of Oxford will furnish basic facts regarding a sample population and its food, while the clinical and dietary investigations at points of special interest throughout the country will profit from the laboratory facilities and experience at Oxford. Perhaps the beneficial activities thus developed under the strain of war will carry over through the permanent health organizations to the less difficult times of peace.

THE FLOW OF SCIENTIFIC THOUGHT

Scientific journals are the circulatory system for the ideas of science. It is largely through them that science develops, for scientific growth is the result of cross-fertilization between laboratories and groups in different countries. One of the evil consequences of war is that it stops the flow of scientific ideas from one nation to another. And to the extent that this process is blocked the development of science is definitely retarded.

Over a period of ten years following the last war the Foundation contributed roughly three hundred thousand dollars to fill the gaps in the files of medical journals in European universities and to supply journals to medical faculties that were too impoverished to buy them. The same

problem is arising again, not only in medicine but in the other sciences as well. Today, however, the problem is more acute, for the war is now world wide and the difficulties of transportation are correspondingly increased.

During 1941 the Foundation took several actions relating to this general question. The sum of \$110,000 was given to the American Library Association to enable it to forestall the growth of serious gaps in the files of American scholarly journals in the libraries of countries affected by the war, especially those in Europe, Asia together with India, South Africa, and Australia. A special committee of the Association has selected the most important journals and has placed subscriptions with the publishers equal to the subscriptions from abroad that have been canceled or remain unpaid during the year. The publishers are storing the copies thus ordered until such time as safe delivery can be assured.

A grant in aid of \$2,100 was made to the same Association to enable it to expedite the flow of scientific and scholarly journals from Europe to the United States. Difficulties had arisen in Bermuda and elsewhere which fortunately the Association succeeded in resolving.

For these same general purposes two grants were made in 1941 to the Royal Society in London. The first, for \$12,500, was to enable the

Society to assist English scientific journals whose publication is jeopardized by the war. In 1940 a grant of \$20,000 for a similar purpose had been made by the Foundation to the American Institute of Physics. The second appropriation to the Royal Society, of \$13,000, was for the micro-filming of the sharply limited supply of current foreign scientific periodicals in Great Britain so that a quicker and wider distribution can be obtained.

As the crisis deepens around the world this problem of maintaining both the publication and the distribution of scholarly journals will undoubtedly become more acute. It is a problem which deserves the continued serious attention of philanthropic organizations.

THE WELCH FELLOWSHIPS

With the sharp reduction of income as a result of the war, American medical schools, together with all other types of privately supported educational institutions, face an uncertain future. Private sources of support can no longer maintain the former income levels of these institutions.

For the medical schools this situation arises at a peculiarly unfortunate time. Only within recent years has American medicine begun to take a place of world leadership. If the continuity of the high standards laboriously established over the

last three decades cannot be maintained, we shall lose an impetus which has been one of the promising hopes in the whole field of the sciences.

The reduction of income which our medical schools are suffering is inevitably reflected in the number and salaries of junior posts in the teaching personnel, and this situation in turn forces out into private practice young physicians who are the potential teachers of the future. Even where personnel has not been materially affected, there has been a conspicuous reduction in the funds available for research work. As a consequence the type of training now being given to men on whom will fall the major teaching responsibilities ten or fifteen years hence is being radically altered.

There is a further aspect of this situation. Some fifteen or twenty years ago a number of chairs in medicine were filled by the appointment of men of about the same age group. This means that eight or ten years hence the professors of medicine in eleven out of thirteen of our leading medical schools will begin to retire on account of age; and illness or accident may hasten the process. If present and predictable limitations in all schools continue for another decade, convenience rather than quality will determine the choice of selection of the most important posts in American medicine.

In 1941 The Rockefeller Foundation took a step which represents an attack on this particular angle of the many-sided problem. An appropriation of \$168,000 was made to the National Research Council in support of a plan of senior fellowships in internal medicine, offering long training and adequate stipends to carefully selected men from thirty to forty years of age. These fellowships, named in honor of a wise and beloved leader in American medicine, will be known as the Welch Fellowships, and in tenure and terms of appointment will resemble the Cambridge Trinity College Fellowships and the Beit Fellowships in Great Britain. Stipends will be adjusted to the locality and the needs of the holder, but will not exceed \$6,000 annually; in addition, allowances not to exceed \$1,000 a year will be made for equipment and technical assistance. The first appointment will be for a period of three years, and subsequent appointment will be at the discretion of the Council up to a total term of six years for each fellow. Fellowship holders will be free to move to the clinics best equipped to train them. They will have clinical and teaching experience as well as opportunities for research, and will thus receive a type of training appropriate for future teaching posts.

Since 1922 the Foundation has contributed over seven hundred thousand dollars to the National

Research Council for fellowships in the clinical and preclinical branches of medicine. The recipients of these fellowships, however, have been men younger and less mature than those who will be eligible for the proposed Welch Fellowships. Furthermore, of the 279 fellows appointed between 1922 and 1941, the majority served for only one year, and very few for more than two years. Valuable as these junior fellowships have been, they have not touched the more serious weakness in the system of recruitment and selection of professors.

If these Welch Fellowships succeed in their purpose of training men of real scientific stature and at the same time meet in some measure the serious needs of the future, the Foundation would expect to make further grants along this line.

TROPICAL MEDICINE

Forty-four years after the Spanish-American War there is still lacking in the United States a real center for the study of tropical diseases. These diseases — malaria, dysentery, yellow fever, dengue, plague, cholera, hookworm, to mention only a few — are giants among the illnesses which afflict mankind. In wartime they have often determined victory or defeat “before the generals knew where they were going to place the

headquarters' mess" — to use Zinsser's colorful phrase.

Great Britain has its London School of Hygiene and Tropical Medicine, which, connected on the one hand with the University of London and on the other with the British Colonial Office, constitutes a base for training and research that serves every part of Britain's tropical empire. In spite of our fast-growing contacts with tropical and subtropical countries, we have no such center, although at Johns Hopkins, Columbia, Harvard, and California courses in certain aspects of tropical medicine have been given over a number of years. But there is no continental base where the medical officers of such American industries as fruit, sugar, oil, rubber, and mining can be adequately trained. With American armed forces already in the tropics, and with the prospect of vastly larger expeditions to go, the need is becoming acute. The present centers under American influence for the study of tropical diseases are outside continental United States — e.g., the Philippine Bureau of Science, the School of Tropical Medicine of the University of Puerto Rico, the Gorgas Memorial Institute at Panama. These are field stations, not American bases. Neither singly nor collectively can they do for the United States what the London School of Tropical Medicine does for the British Empire.

In the development of such an enterprise a beginning has been made at the School of Medicine of Tulane University in New Orleans, and for the use of its Department of Tropical Medicine the Foundation appropriated \$200,000 in 1941. For a number of years research in tropical parasitology has been carried on at Tulane, but funds were needed for additional staff both on the clinical side and for preventive medicine, in order to develop a more rounded unit.

Tulane's location in New Orleans is fortunate. Abundant clinical material exists which is augmented by cases coming in by ship from Central America and the Caribbean area. New Orleans is also convenient as a base from which expeditions can be sent to study tropical diseases and to which physicians from the tropics of America can have recourse.

Tulane already reports progress. During the first half of the 1941-42 term a comprehensive postgraduate course in tropical medicine was conducted. Seventeen doctor-students were enrolled, including nine from Latin America, seven from the United States, and one from Canada. Of the nine from Latin America, eight were selected for fellowship awards by the American Foundation for Tropical Medicine following careful scrutiny of a large group of endorsed applications. Some of the North American physicians in at-

tendance plan to practice in missionary stations in Africa, India, and the Netherlands East Indies. Others expect to specialize in tropical medicine in the United States or with the armed forces.

PUBLIC HEALTH AND PREVENTIVE MEDICINE

The largest appropriation made by the Foundation in 1941 was \$600,000 toward the endowment of the Department of Public Health and Preventive Medicine of the Cornell University Medical College in New York. This contribution represents the capitalization of annual grants which the Foundation has been making since 1936.

Though modern urban life is made possible by the services of the engineer and the sanitarian, the training of the physicians of the future in public health problems of large cities has not received the attention it deserves. The Cornell Medical College is helping to meet this need under unusually favorable circumstances. It has an ideal practice area for training students in public health and enjoys the full cooperation of a city health department in applied preventive health measures.

The City of New York has built at a cost of \$342,770 the Kips Bay-Yorkville Health Center on land adjacent to the Medical College. The area served by this Center is an official health dis-

tract with some two hundred thousand inhabitants. The Center and its district are used for the practical instruction of medical and nursing students and graduates, for research in public health, and for the training of various types of professional and technical personnel employed by the Health Department of the City. The two upper floors of the Health Center building are assigned to the Medical College for teaching and research.

In the last four years the Department of Public Health and Preventive Medicine of the Cornell Medical College has been reorganized under the leadership of Dr. W. G. Smillie, formerly of Harvard, who now directs a staff of twelve associates. The teaching and research work has been substantially increased and improved. It is now coordinated with the City Department of Health, the New York Hospital, the Cornell Medical College, the Guggenheim Dental Clinic, and various social agencies and visiting nursing organizations. Special studies are being made in pneumonia, in tuberculosis with assistance from The Rockefeller Foundation, in nutrition with support from the Milbank Fund and from the United States Public Health Service, and in population problems and the influence of social factors on illness, with Macy Foundation support.

The Foundation's contribution will serve to stabilize the present budget of the Department of Public Health and Preventive Medicine.

THE NATURAL SCIENCES IN 1941

The Foundation's program in the natural sciences continues to place its emphasis, whenever and wherever possible, on basic research. Not only do these basic researches of the present prepare us to serve the future, but there is a comforting proportion of instances in which practical results can become immediately available. In addition, opportunities have already appeared for assistance to projects which, although specifically related to the emergency, nevertheless form a natural and worthy part of a long-range program.

Of emergency origin but of obvious long-range value was the grant in 1941 to the University of Oxford to bring to the United States Professor H. W. Florey and Dr. N. C. Heatley in connection with their work on a chemical substance called "penicillin," which has been found to have an extraordinary antibacterial activity. Facilities for the prosecution of this study are more advanced in this country than in England. Similarly, to the Massachusetts Institute of Technology a grant was made for the development of a scientifically sound concentrated food.

Support was continued at Stanford Univer-

sity for research in genetics under the direction of Dr. G. W. Beadle. This study of the laws of heredity has surprisingly resulted in the development of a method which not only is important for the assay of known vitamins and amino acids but has apparently already resulted in the discovery of new vitamins and a new amino acid. These results promise to be of significance in the field of nutrition.

Most of the appropriations which the Foundation made in the field of the natural sciences during the year could be broadly characterized as biochemistry or biophysics, although there was one particularly interesting grant to the University of Texas for researches which bear on the old and fascinating problem of the origin of new forms in nature. Among the grants in biophysics, two recognized the growing interest in this field at the University of Minnesota; while two others, at the Massachusetts Institute of Technology and at Stanford, provided for development and research centering around the new precision tool, the electron microscope. One grant, out on the far border line between chemistry and biology, was designed to assist Professor Linus Pauling and his associates at California Institute of Technology in their attempts to gain an understanding of the structure and formation of those chemical substances called "antibodies,"

whose presence in the blood of certain people is responsible for the fact that they possess a "natural" immunity to infectious diseases, and whose absence from the blood of other people makes them susceptible.

Another grant in 1941 continued the research in biochemistry at Cornell University Medical College under Dr. Vincent du Vigneaud. A phase of his work has to do with biotin, a vitamin supposed to be necessary to all plant and animal life, and yet apparently intimately related to the cause of a certain kind of cancer. Biotin has travelled under a number of aliases. In 1901 at the University of Louvain it was "bios"; in 1920 in England it was "protective factor X"; in 1931 in Hungary it was "vitamin H"; in 1933 in Washington it was "co-enzyme R"; but in 1936 in Utrecht, Holland, the organic chemist, Fritz Kögl, isolated a few pure crystals of the vitamin, and found its potency so great that one part in 400 billion would influence the growth of yeast. Professor Kögl named it biotin, and this is the accepted name today.

The work on biotin involves three continents and a score of workers and has been called a milestone in cancer research. Six of the laboratories working on biotin have been receiving assistance from the Foundation — those of Dr. du Vigneaud at Cornell Medical College, Dr. C. P.

Rhoads at Memorial Hospital, Dr. R. J. Williams at the University of Texas, Dr. W. J. Robbins at the New York Botanical Garden, Dr. Kögl at the University of Utrecht, and Dr. E. W. McHenry at Toronto.

THE SOCIAL STUDIES AND THE POSTWAR WORLD

It has been said that most of the countries of the world fear the peace even more than they do the war. To understand this fear one has only to make up any list he may choose of the important problems the postwar world will face. Here is a random selection:

1. Repair of the vast physical destruction of the war.
2. Reestablishment of international economic life in a shattered world.
3. Organization of international political life to safeguard the peace of the future.
4. Reconciliation of political nationalism with our cultural and economic internationalism.
5. Restoration of tolerance and faith in a world indoctrinated with hate and fear.
6. Efficient organization of government — for legislation and administration in a technical, large-unit world.
7. Readjustment from war economy to peace economy so as to avoid great depressions and their waves of unemployment.
8. Mitigation of insecurity — social and psychological.
9. Education of people everywhere toward greater economic, political, and social literacy.

Whatever list one may write down it will portend the catastrophes which await the world if wise and statesmanlike decisions are not made. Leadership in the formulation of these decisions does not rest solely with any one group. The economists and political scientists must help us, but so must the physicists and the biologists. And particularly must we rely on the humanists — the historians, the philosophers, the artists, the poets, the novelists, the dramatists — all those who fashion ideas, concepts, and forms that give meaning and value to life and furnish the patterns of conduct. It is they who really construct the world we live in, and it is they who with sensitive awareness to human perplexity and aspiration and with the power of imaginative presentation can speak effectively to a distracted world.

But with due recognition of the fact that the adjustment of human relationships is perhaps more of an art than a science, the part that ordered knowledge must play in shaping the new society needs to be kept constantly in mind. It is here that we lean heavily upon the social sciences, and particularly upon that minority of able scholars who, silently and in the face of great discouragement, are helping to untangle the skein of cause and effect in human affairs. Whatever doubts the layman may have, those

who look beyond the headlines perceive the solid progress which social students have made even in the confusion of the last two decades. During that period a flood of new data bearing upon social processes has become available from government and private sources. The shift in emphasis from deductive theory to empirical investigation has been marked.

At the time of the first World War, relatively few trained and competent workers were available. Today the picture is changed. The personnel with technical competence and understanding, while still grossly inadequate for the task, is growing. A steady improvement has been made in the tools of analysis and investigation. As one compares the present situation with that which existed when this country entered the first World War, one realizes that we are today far better equipped for intelligent judgment and action than we ever were before, in such fields as production, trade, finance, national income, and a whole range of other economic and social data. Systematic research has given us insight and knowledge in relation to many of the intricacies involved in international questions about which only hazy guesses were possible a quarter of a century ago. We face the hazards of the post-war world with the assurance that two decades in the development of the social sciences have

not been wasted and that we are better prepared for our tasks than we were when the first World War came to its close.

This inner growth in the social sciences has been paralleled by a growth of institutions for advanced work and teaching. Before 1920 there was no National Bureau of Economic Research, no Brookings Institution, no Social Science Research Council, no Institute of Pacific Relations, no Foreign Policy Association, no Council on Foreign Relations, no Royal Institute of International Affairs, no Institute for Advanced Study, no Institute of Human Relations, no Public Administration Clearing House, no Food Research Institute, and no Industrial Research Department. Today these and other centers, in universities and outside, constitute public assets of immeasurable importance. They have provided increased accessibility to materials; they have aided group effort, group criticism, and group morale; they have facilitated the making of comparative studies. On the forge of their broad activities in research and in teaching, the basis for better understanding of the relations between man and his fellow man is being shaped.

Toward the support of such research and teaching groups and institutions in the social sciences, the Foundation has contributed sums running into many millions of dollars. Its funds have

helped to support each of the institutions listed above and many others. Part of this money may have seemed wasted in the sense that some of the projects led to no identifiable results; but this is inevitably true in all types of research. Whether it is physics or economics, experimentation leads to closed doors as well as to open corridors. But the Foundation confidently believes that the work it has helped to finance in the social sciences has given this generation better men and better tools for analysis and judgment, and has contributed to the growing reserve of knowledge of human relationship and of those institutions and processes through which that relationship is organized and expressed.

SAVING THE PAST FOR THE FUTURE

Human lives are not the only casualties in war. Cherished wherever civilization has existed are the irreplaceable relics of the past — buildings, monuments, books, and manuscripts. Nowhere is that store richer or in greater danger than in England. Already destruction has been extensive. Many noble buildings are rubble and many unique records have been destroyed. At the University of London, to take one instance, the Egyptology collection was badly damaged by water, the Mocatta Library and collection of

Anglo-Judaica were shattered by incendiary bombs and over 100,000 books were consumed in the fire. Other libraries, too, have been destroyed, involving the loss of thousands of books. There are no duplicates of much of this material; it can never be replaced. Fortunately, however, most of the valuable records of England are still unharmed. In the hope of preserving for the future the substance of this universal heritage, and of making it available to scholars everywhere, the Foundation, in 1941, appropriated funds for two emergency projects for copying and recording important historical, literary, and architectural treasures.

The first project employs the process of micro-filming, which is perhaps the most fundamental advance in duplicating the printed or written word since Gutenberg. Already developed for the peacetime uses of libraries, universities, learned societies, daily newspapers, and business files, it has proved readily adaptable to wartime needs.

Microfilm represents the collaboration of two techniques. One is the technique of microphotography, by which a page of printing, manuscript, or drawing is reduced to the miniature dimensions of the film. The resultant film may represent an area less than one two-hundredth of the original page. A strip of film 16 millimeters wide and 100 feet long, compact enough to carry in the

vest pocket, will record 1,600 pages, the equivalent of five books of ordinary volume. The whole of the New York Public Library's three million books could in this manner be compressed into the space now occupied by its card catalogue.

The other technique is that of projection, by which the microphotograph is magnified to its original size or larger, and brought conveniently in view for easy reading. For this purpose several types of apparatus have been developed and are now in use.

Toward this microfilming project in England the Foundation appropriated a total of \$170,000. With this fund the American Council of Learned Societies has arranged for the copying of irreplaceable books and documents in the British Museum, the Public Record Office, the libraries of Oxford and Cambridge, and in other locations where material of great historical importance is housed. With the full cooperation and assistance of English authorities, and having in mind not only the relative intrinsic values of the different collections but also the varying risks to which the originals are subjected, the Council has selected a broad list of material covering American and English history, legal history, the history of science and medicine, literary and philological studies, medieval studies, classical studies, Slavic and Oriental studies, fine arts, and music.

Of first importance, perhaps, are the indexes of the Public Record Office in London. These indexes provide a key to more than eight hundred years of British history. They give the dates, proper names, and place references to original documents bearing upon practically all the great personalities of government, trade, industry, science, literature, art, and other pursuits. A Chaucer scholar will find here, for example, references to all the official documents touching on his subject — and so will researchers seeking data about Roger Bacon, Cromwell, Milton, Pitt, Isaac Newton, and a thousand others.

As the microfilms of this material are completed, they are stored in Great Britain and in the Library of Congress in Washington, where they are available to the scholars of the world.

A second emergency project in saving the past for the future was in connection with the documentation of architectural records. English architecture, whether in cathedral, church, college, manor house, or town and village street, is a vital element in the cultural background of Anglo-American civilization. Wanton and indiscriminate air attacks have caused the destruction of many of its most precious examples. Only recently has it been realized how partial has been the graphic documentation of these buildings in England, and the National Buildings Record,

under the chairmanship of Lord Greene, Master of the Rolls in the Public Record Office, has been formed with the object of recovering lost ground and obtaining adequate records before it is too late. The work falls into several parts: (1) the preparation of lists of the great number of buildings of interest, with some guiding note as to their individual character, (2) the collection in a central index of particulars of existing records (drawings and photographs) in public and private hands, (3) the production of accurate records of buildings that have hitherto received insufficient documentation, and (4) the careful examination and noting of structures which, through the injuries received, disclose points of growth of construction which are of value to the student. Men and women volunteers, expert in this work but unfit for war service, are being employed in a systematic canvass of the country.

To this project in 1941 the Foundation contributed \$20,000.

LANGUAGE AND INTERNATIONAL UNDERSTANDING

If America is to cooperate intelligently with the sixty-odd nations that comprise the neighborhood of the world, far more attention must be paid to the question of language. Particularly as our thoughts and interests turn toward the East

we must be able to interpret ideas, traditions, and customs through the medium of tongues other than English. America has never developed a school for the study of Oriental languages and cultures, although such schools have been maintained in Europe over many years. Chief among them have been the School of Oriental and African Studies of the University of London, the *École Nationale des Langues Orientales Vivantes* in Paris, and the Enekidze Institute of Oriental Languages in Leningrad. Similar schools have existed in Prague, Warsaw, Rome, Leyden, and other cities. These institutions combined the practical teaching of Oriental languages to diplomats, businessmen, and scholars with the development of the highest type of specialized study of the cultures themselves.

A similar development in this country has long been hoped for, and for ten years the American Council of Learned Societies has been stimulating courses in Chinese, Japanese, and Russian languages and culture in a number of institutions. The program began with a sequence of summer institutes at Harvard, Columbia, California, and Cornell. Today twelve institutions have their special courses involving the use of one or more of these three languages. Toward this general development, both through the American Council and directly through universities, the Founda-

tion, over the last decade, has appropriated roughly \$650,000.

The outbreak of the war, however, has greatly increased the significance of this development. Officials of the State Department, the Federal Bureau of Investigation, the Federal Communications Commission, as well as Army and Navy personnel, face the necessity of becoming familiar with Oriental languages, and the demand for educational facilities has grown almost overnight.

To meet this situation the Foundation in 1941 appropriated \$100,000 to the American Council of Learned Societies. Of this sum \$50,000 is being used for intensive courses in various universities to enable students to read and speak Japanese, Chinese, and Russian. Another \$50,000 is being employed in providing instruction in Turkish, Arabic, Persian, Hindustani, Malayan, Tibetan, and Siamese, and in supplying governmental agencies with translations, bibliographies, and other information. Our present implementation in these languages is woefully incomplete. New instruments are needed — primers, grammars, dictionaries, glossaries of technical terms — as well as new methods of intensive teaching. In view of the shortage of qualified Americans, it is fortunate that among European refugee scholars now in the United States there are

several authorities in these little-known tongues of the Far East. In addition, help is being secured from the London School of Oriental and African Studies. This nucleus will provide the services required by the emergency and will perhaps lay the basis for permanent work when the war is over. The Foundation appropriation covers administrative expenses, stipends for professors, and fellowships to train Americans.

Related to these efforts is a project for the development of a dictionary of Japanese technical terms, for which in 1941 the Foundation contributed \$20,000 to the United Engineering Trustees. No adequate dictionary now exists, and engineers familiar with the Far East, as well as officers of the armed forces, agree as to its need.

Two further appropriations in 1941 for language study recognize the growing importance of this country's relations to South America. To the American Council of Learned Societies the Foundation gave \$25,000 for the expenses of a special summer institute at the University of Wyoming for intensive study in the Spanish and Portuguese languages. Persons admitted to the institute were selected from applicants listed by the three national research societies, by Federal agencies, and by universities. In all, sixty students enrolled, including teachers, librarians, journalists, staff members of the State Depart-

ment and of the Library of Congress, and personnel of the Army and Navy.

The second appropriation was \$15,000 to the University of Michigan for a three-year summer course in English for the benefit of Latin American students. The number of these students in the United States is rapidly increasing and too little attention has been paid to the language problem which they face. The University of Michigan with an unusually large enrollment of Latin Americans is a favorable site for this project.

THE RURAL PROGRAM IN CHINA

For over six years the Foundation has been maintaining a program in China in rural reconstruction. When the Japanese attack on China drove her institutions into the southwestern provinces this program was shifted to the new locations, where it has been carried on amid increasing difficulties. Appropriations by the Foundation for this purpose in 1941 amounted to \$104,000, of which \$40,000 was for fellowships and \$37,000 for grants in aid. The balance is being used to support the National Council for Rural Reconstruction and the Mass Education Movement, both with headquarters in Chungking; the Nankai University Institute of Economics, Chungking; and the Department of

Agricultural Economics of the University of Nanking, now located at Chengtu.

Agriculture is the basis of the economic life of China, and it has been felt that as long as it was humanly possible to keep them going, there should be no interruption in these fundamental studies.

FELLOWSHIPS

During 1941 the Foundation supported 412 fellowships for citizens of 34 different countries at a cost of \$594,000. One hundred eighty-one studied in countries other than their own. Of the 412 fellowships, 276 were administered directly by the Foundation. Fellowships for Latin Americans increased by 52 per cent over 1940; fellowships for Europeans, already at a low figure in 1940, decreased by 40 per cent. The fields represented by these 276 fellowships were as follows: public health, 107; public health nursing, 22; medical sciences, 53; natural sciences, 18; social sciences, 26; humanities, 41; and the program in China, 9 (not including local fellowships for study in China). Of the 136 fellowships awarded by other agencies, the National Research Council was responsible for 66; the Social Science Research Council for 48; the American School of Classical Studies at Athens, Greece, for 3; the Authors' League of America for 7; the National

Theatre Conference for 12. In addition to these 136 fellowships, the American Council of Learned Societies assisted 30 individuals through supplementary fellowships and study grants.

APPLICATIONS DECLINED DURING 1941

During 1941 the Foundation was obliged to decline a total of 2,378 applications for financial aid. Some of these applications represented projects of interest to the Foundation but were declined because other opportunities seemed more promising. The great majority, however, were declined because they fell outside the areas of work in which the Foundation is attempting to be of service.

The Foundation does not make gifts or loans to individuals, or finance patents or altruistic movements involving private profit, or contribute to the building or maintenance of churches, hospitals, or other local organizations, 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 1941 may be classified under the following headings: conferences and meetings, 10; continued aid to projects, 29; cures, remedies, investigations of theories and inventions, 94; development of edu-

cational and cultural institutions and projects, 370; European refugees, 690; fellowships, travel, and training grants, 451; local institutions (including hospitals, theatres, libraries, museums, churches, etc.), 99; personal and medical aid, 80; public health projects, 66; publication projects, 73; research projects, 397; miscellaneous, 19.

REPORT OF THE SECRETARY

SECRETARY'S REPORT

THE members and trustees of The Rockefeller Foundation during the year 1941 were:

Walter W. Stewart, *Chairman*

Winthrop W. Aldrich	Ernest M. Hopkins
Chester I. Barnard	William I. Myers
Karl T. Compton	Thomas I. Parkinson
Harold W. Dodds	Thomas Parran, M.D.
Lewis W. Douglas	Alfred N. Richards
John Foster Dulles	John D. Rockefeller, 3rd
Raymond B. Fosdick	Robert G. Sproul
Douglas S. Freeman	Arthur Hays Sulzberger
Herbert S. Gasser, M.D.	Harold H. Swift
Walter S. Gifford	George H. Whipple, M.D.

The officers of the Foundation were:

Walter W. Stewart	<i>Chairman of the Board of Trustees</i>
Raymond B. Fosdick	<i>President</i>
Thomas B. Appleget	<i>Vice-President</i>
Selskar M. Gunn	<i>Vice-President</i>
Alan Gregg, M.D.	<i>Director for the Medical Sciences</i>
Warren Weaver	<i>Director for the Natural Sciences</i>
Joseph H. Willits	<i>Director for the Social Sciences</i>
David H. Stevens	<i>Director for the Humanities</i>
Wilbur A. Sawyer, M.D.	<i>Director, International Health Division</i>
Norma S. Thompson	<i>Secretary</i>
Edward Robinson	<i>Treasurer</i>
George J. Beal	<i>Comptroller</i>
Thomas M. Debevoise	<i>Counsel</i>
Chauncey Belknap	<i>Associate Counsel</i>

The following were members of the executive committee during the year:

The President, *Chairman*

Winthrop W. Aldrich	William I. Myers
Chester I. Barnard	John D. Rockefeller, 3rd
Karl T. Compton	Walter W. Stewart
Herbert S. Gasser, M.D.	

The following served as scientific directors of the International Health Division of the Foundation during 1941:

Thomas Parran, M.D., *Chairman*

Stanhope Bayne-Jones, M.D.	Lowell J. Reed
Charles H. Best, M.D.	Thomas M. Rivers, M.D.
Harry S. Mustard, M.D.	
The Director of the Division	

MEETINGS

Regular meetings of The Rockefeller Foundation were held on April 2 and December 3, 1941. 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 1941 and a statement of its Principal Fund follow.

SUMMARY OF APPROPRIATIONS ACCOUNT

FUNDS AVAILABLE	FUNDS APPROPRIATED
Balance from 1940. \$1,355,491	Appropriations
Income for 1941 . . . 8,734,992	Public health . . . \$2,450,000
Unexpended bal- ances of appro- priations allowed to lapse and re- funds on prior year grants 741,389	Medical sciences 2,120,700
Transferred from Principal Fund in accordance with resolution of the trustees, April 2, 1941 600,000	Natural sciences 1,271,535
	Social sciences . . . 1,227,279
	Humanities 1,020,770
	Program in China 154,000
	Miscellaneous . . . 185,500
	Administration Scientific divi- sions 541,287
	General 269,228
	\$9,240,299
	Less appropriation for which funds were previously authorized 40,000
	\$9,200,299
	Authorization for later appropria- tion by the Ex- ecutive Commit- tee 113,665
	\$9,313,964
	Balance available for appropriation in 1942 2,117,908
\$11,431,872	\$11,431,872

PRINCIPAL FUND

Book value as of December 31, 1940.....		\$145,068,366
Add		
Contingent project canceled in accordance with trustees' action at meeting of April 2, 1941.....	\$500,000	
Unused balance of appropriations of April 5, 1939, returned to Principal Fund.....	2,264	502,264
		<hr/>
		\$145,570,630
Deduct		
Amount withdrawn from principal in accordance with resolution of trustees April 2, 1941.....		600,000
		<hr/>
Principal Fund as of December 31, 1941.....		<u><u>\$144,970,630</u></u>

INTERNATIONAL HEALTH DIVISION

INTERNATIONAL HEALTH DIVISION

SCIENTIFIC DIRECTORS

Charles H. Best, M.D. Thomas Parran, M.D.
Stanhope Bayne-Jones, M.D. Lowell J. Reed
Harry S. Mustard, M.D. Thomas M. Rivers, M.D.
Wilbur A. Sawyer, M.D.

STAFF DURING 1941

Director

Wilbur A. Sawyer, M.D.

Associate Directors

John A. Ferrell, M.D. George K. Strode, M.D.

Assistant Directors

Lewis W. Hackett, M.D. Andrew J. Warren, M.D.

Staff

Marshall C. Balfour, M.D.	Harold D. Chope, M.D. ¹
Marston Bates	Lowell T. Coggeshall, M.D. ²
Johannes H. Bauer, M.D.	Porter J. Crawford, M.D.
George Bevier, M.D.	Wilbur G. Downs, M.D.
Mark F. Boyd, M.D.	Brian R. Dyer
John C. Bugher, M.D.	Monroe D. Eaton, Jr., M.D.
Henry P. Carr, M.D.	John E. Elmendorf, M.D.
Joseph C. Carter	Edward W. Flahiff, M.D. ³
Ottis R. Causey	John P. Fox, M.D.

¹ Appointed September 1, 1941.

² Resigned August 31, 1941.

³ Resigned October 25, 1941.

Kenneth Goodner
John B. Grant, M.D.
Richard G. Hahn, M.D.
Rolla B. Hill, M.D.
George K. Hirst, M.D.
Frank L. Horsfall, Jr.,
M.D.¹
Thomas P. Hughes
John L. Hydrick, M.D.
Henry R. Jacobs, M.D.
William P. Jacocks, M.D.
John H. Janney, M.D.
Harald N. Johnson, M.D.
John F. Kendrick, M.D.
J. Austin Kerr, M.D.
Stuart F. Kitchen, M.D.
Frederick W. Knipe
Henry W. Kumm, M.D.
Charles N. Leach, M.D.
Edwin H. Lennette, M.D.
Estus H. Magoon
Alexander F. Mahaffy,
M.D.
John Maier, M.D.
William A. McIntosh, M.D.
D. F. Milam, M.D.
Hugo Muench, M.D.

J. Harland Paul, M.D.
George C. Payne, M.D.
Edward G. Pickels
Persis Putnam
Elsmere R. Rickard, M.D.
William D. Robinson,
M.D.²
Paul F. Russell, M.D.
Francis F. Schwentker,
M.D.
Raymond C. Shannon
Hugh H. Smith, M.D.
Kenneth C. Smithburn,
M.D.
John C. Snyder, M.D.
Fred L. Soper, M.D.
Winfield C. Sweet, M.D.³
Richard M. Taylor, M.D.
Ruth G. Taylor
Mary Elizabeth Tennant
Max Theiler, M.D.
John M. Weir, M.D.
Clifford W. Wells, M.D.
Loring Whitman, M.D.
D. Bruce Wilson, M.D.
Daniel E. Wright
Clark H. Yeager, M.D.

¹ Resigned June 30, 1941.

² Appointed November 16, 1941.

³ Died May 20, 1942.

INTERNATIONAL HEALTH DIVISION

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INTERNATIONAL HEALTH DIVISION

OUTSTANDING ACTIVITIES

THE year 1941 brought about a considerable shift in International Health Division activities, not away from its fundamental program of public health, but rather in the direction of emphasis on problems of immediate interest in wartime and on work in such geographical areas as still remained open.

The Rockefeller Foundation Health Commission, after for a time expanding its work in Europe, was forced to discontinue most of the activities there because of increasingly severe war conditions and the impossibility of maintaining staff in Continental Europe. This agency, however, has carried on a broad program of emergency health activities related to the war in various parts of the world.

The shift in geographical areas was almost entirely from Europe to South America. At the end of the year, only five small International Health Division cooperative projects were still active in Europe: (1) malaria research at the Molteno Institute at Cambridge, England; (2) a malaria investigation in Portugal; (3) aid to the Lisbon Health Center, (4) to the School of Nursing in

Lisbon, and (5) to the National Institute of Health in Madrid. Everywhere the war caused withdrawal, even of types of work greatly needed.

However, in South America and also in various other parts of the world, including Africa and China, it was still possible to make headway with the normal International Health Division program. In South America yellow fever work was continued and a campaign against the invading malaria mosquito, *Anopheles gambiae*, was brought to a successful close except for the continuance of a close watch for the possible reappearance of this malaria-carrying mosquito.

On the east coast of South America new work in influenza research was started in Argentina. The International Health Division continued to be of assistance in connection with the investigation of the recent epidemic of yellow fever in the Nuba Mountains of the Anglo-Egyptian Sudan. It also cooperated with Chinese and American authorities in connection with a malaria program on the Burma Road.

There were no widespread outbreaks of yellow fever in Brazil. Neither in England nor in the United States did any serious epidemic of influenza break out, but at various centers further experimentation in connection with influenza vaccine was actively pursued. During the year the International Health Division's general pub-

lic health program, with emphasis on field studies and laboratory research in a limited number of diseases, proceeded in thirty-one countries. The customary aid to local health activities went on without interruption on a number of public health frontiers. Prominent among the public health laboratory activities was the aid to a new Institute of Hygiene in South America, at Guayaquil, Ecuador. Through a fellowship program in public health, 129 full-time fellowships were supported, forty-two of them from Latin America.

VACCINE PRODUCTION

The large-scale production of vaccines for yellow fever and influenza in the laboratories of the International Health Division, which was a feature of the year's work, came as a result of requests which had a direct relationship to the present war. It will be recalled that The Rockefeller Foundation Health Commission was organized to study health problems resulting from war conditions. This Commission was established in 1940 with funds furnished by The Rockefeller Foundation to the International Health Division. Part of its personnel came from the International Health Division staff, and the wide distribution of vaccines was financed by funds of the Commission.

The first extensive and spectacular epidemic of the war period was the yellow fever outbreak in the latter part of 1940 in the Nuba Mountains of the Anglo-Egyptian Sudan, as described in the ANNUAL REPORT for that year. The epidemic had been investigated in the field by officers of the Sudan Medical Service, and by staff members of the International Health Division stationed in Africa who were studying the epidemiology of yellow fever in Uganda and the Belgian Congo. The laboratory studies were continued in 1941 by staff members working at the Yellow Fever Research Institute in Entebbe, Uganda. The epidemic in the Nuba Mountains undoubtedly stimulated the demands for yellow fever vaccine from many parts of Africa. Requests from Freetown, Sierra Leone; Johannesburg, Transvaal; and Lagos, Nigeria, were met by shipments as quickly as possible.

In April 1941 vaccine was requested by the National Health Department of Spain in Madrid, in connection with a yellow fever outbreak in Spanish Guinea (Rio Muni) on the Atlantic coast of Africa. The vaccine was shipped via Lisbon, and a Foundation staff member went by air to that region and spent about a month there. He carried with him 12,500 doses of vaccine from Uganda. The last cases of yellow fever occurred in April.

Much yellow fever vaccine also went direct to the United States Army and Navy. During 1941 the Army had a policy of vaccinating for yellow fever all personnel likely to go to tropical America, and the Navy required complete vaccination. That the laboratories should meet all legitimate requests for yellow fever vaccine became doubly important since the Wellcome Bureau of Scientific Research in London, the only important source of the vaccine other than the International Health Division laboratories in New York, Rio de Janeiro, and Bogotá, was unable to produce it in quantity, chiefly because of difficulty in obtaining large numbers of fertile eggs under war conditions.

At the end of the year the International Health Division laboratories of The Rockefeller Foundation were the sole source of yellow fever vaccine for the armed forces of the United States, as well as the major one for the African continent. However, the South African Institute for Medical Research at Johannesburg laid plans for the manufacture of yellow fever vaccine in Africa. The Union of South Africa has made funds available for the construction of a special yellow fever vaccine laboratory, and The Rockefeller Foundation Health Commission has agreed to furnish the necessary equipment for the preparation of vaccine. The officer designated to take charge of

this laboratory arrived in New York in January 1942 to study the methods of preparing yellow fever vaccine. The steps taken to provide for the production of yellow fever vaccine in South Africa are considered, not a temporary wartime measure, but a permanent step in the control of the disease on that continent.

According to the cycles which influenza epidemics have followed in the past, it was feared that England might have a relatively severe epidemic during the winter of 1940-41. Toward the end of 1940 the health authorities in England requested shipments of influenza vaccine from The Rockefeller Foundation, as well as the collaboration of an American bacteriologist to assist in the study of the results of the vaccinations. The bacteriologist arrived in London December 13, 1940. Part of his task was to carry out additional sterility tests on the vaccine to meet the British legal requirements covering biologicals.

It turned out that the influenza epidemic that ensued was neither severe nor widespread. The vaccine was distributed by the Medical Research Council through the agency of the National Institute for Medical Research. It was supplied only upon request from medical officers. A total of 198,900 doses was distributed for human use between December 12, 1940, and April 30, 1941.

Because a systematic plan could not be fol-

lowed in the application of the vaccine at the time of the mild epidemic in England, it was difficult to evaluate its effectiveness as a control measure. Therefore, it was necessary to base judgment on the results of the extensive tests in the United States rather than on those in England. As previously reported in the ANNUAL REPORT for 1940, the field investigation in the United States in the winter of 1940-41 indicated that the number of influenza A cases among the vaccinated was about half that among the unvaccinated.

Part of the activity of The Rockefeller Foundation Health Commission in Spain consisted of distributing typhus vaccine. The vaccines supplied were not prepared in the Foundation laboratories but included two or three kinds which were considered sufficiently promising to submit for field trial. Chief among these was the Cox type of typhus vaccine donated by the United States Public Health Service for tests in Spain. In Madrid around twenty thousand persons were vaccinated with the material supplied by the Commission. The results were inconclusive. Typhus studies in Spain were discontinued on June 23 when the member of the Commission conducting these studies returned to the United States. Three of the typhus strains isolated in Madrid were brought to the United States

for further study. All work in Spain had to be stopped on October 4, the date of the departure of the last representative of The Rockefeller Foundation Health Commission from that country.

HEALTH COMMISSION WORK

In March 1941 the name of The Rockefeller Foundation Health Commission to Europe was shortened to The Rockefeller Foundation Health Commission. Its work was expanded to include war emergency activities anywhere in the world.

From the beginning of the work of the Commission there was considerable emphasis on the nutrition problem. Spain toward the end of 1940 seemed to offer exceptional opportunities for a study of nutrition. In certain regions there had been a food shortage since the summer of 1936, when the civil war began.

Approval of a plan of study involving the dietary habits of three population groups was obtained from the Director of the National Health Department of Spain. As worked out by February 1941 this program included a family survey, a study of specific age groups, and special laboratory research. The District of Puente de Vallecas in Madrid, where a well-equipped health center had been in operation for a number of years, was chosen as the most suitable area for a

family survey. A member of the Commission from the International Health Division staff started work in Madrid in March 1941. In May he was joined by Dr. William D. Robinson, former fellow of the International Health Division.

The enthusiastic cooperation of the people who were to take part in the survey was obtained. Good progress had been made toward the completion of the survey when, at the end of August, it became necessary for the men in charge of the work to return to America. Plans were made to have the work continued by the National Health Department through the Institute of Medical Research in Madrid. The Commission donated its equipment to the Department and funds were provided for the remainder of the year.

Meanwhile, the Commission had also undertaken some nutrition work in France. In Paris the Institut des Recherches d'Hygiène, with a Section of Nutrition, was established. This Section was intended to be a permanent part of the Public Health Service. The work was started under the direction of International Health Division staff members, but was continued under French auspices. Assistance was given also in establishing an Institut des Recherches d'Hygiène in the Marseille area, which likewise included a Section of Nutrition. The first work of the Section of Nutrition in the Marseille region was to make a

survey and assessment of the nutrition of the general population of the metropolitan Marseille area, and of certain special groups, such as school children. This work was for a time under the direction of Dr. John B. Youmans, associate professor of medicine and director of postgraduate instruction at Vanderbilt University. After the close of the general survey, and the withdrawal of American participation in June 1941, plans were made for French nutrition experts, largely from the University of Marseille, to continue the study. The Institut des Recherches d'Hygiène in Marseille contained also sections of sanitary engineering and laboratory. These sections were inaugurated by members of the Commission, and their work was continued under French auspices.

Early in the year the Ministry of Health in England requested the services of a medical nutritionist for collaboration in certain nutrition studies going on at Oxford University and elsewhere. Dr. Arnold P. Meiklejohn, of the Boston City Hospital and Harvard Medical School, a British subject who was selected for this work, left for Europe as a member of the Commission in April 1941. The purpose of the Oxford study conducted by the Department of Biochemistry of Oxford University was to inaugurate clinical and laboratory studies in nutrition and give a training to personnel assigned to similar work in other

parts of the country. Although there were war-time difficulties to be faced in regard to facilities and material, progress was made. By the end of the year steps had been taken to organize mobile types of nutrition surveys radiating from Oxford. Arrangements were likewise completed to provide an additional nutritionist from the United States.

As has been mentioned in the section on vaccines above, there was for a time considerable apprehension concerning the possibility of an influenza epidemic in the winter of 1941-42. Dr. N. Paul Hudson, professor of bacteriology, Ohio State University, was loaned to The Rockefeller Foundation Health Commission for one year, in connection with influenza work. Dr. Hudson, in collaboration with Dr. C. H. Andrewes of the National Institute for Medical Research in England, was able to carry forward several interesting studies on influenza vaccination. Dr. Hudson left London toward the end of June 1941 to return to his University duties, and was replaced, as a member of the Commission and principal representative in England, by Dr. Hugh H. Smith, who is a staff member of the International Health Division.

Dr. John C. Snyder, who was a member of The Rockefeller Foundation Health Commission from the International Health Division staff, and was

especially interested in the study of typhus, arrived in Madrid in March 1941 and immediately arranged for a field trip to southeastern Spain, where ninety cases of typhus fever had been reported. Presently it was learned that typhus was occurring in Madrid. The epidemic did not assume large proportions, and the number of cases went down after May 1, 1941. As has been stated above, some twenty thousand persons in all were inoculated with vaccine supplied through the Commission. When Dr. Snyder left Madrid in June 1941 five mild cases of typhus had occurred among those vaccinated. The subject of typhus vaccination is under further study in the International Health Division laboratories, with strains isolated in Madrid. Meanwhile a better laboratory animal for typhus studies, the cotton rat, has been found, and typhus work with this animal is proceeding.

The Rockefeller Foundation Health Commission is cooperating with a medical commission, appointed by the Surgeon-General of the United States Public Health Service, to take care of the malaria problem which exists on the Burma-Yunnan Railroad section, and to direct the sanitation and medical care required. International Health Division cooperation consisted in lending the intermittent services of a staff member in southwest China as consultant, and in assigning

a sanitary engineer as full-time member of the Commission.

A staff member was assigned to study an outbreak of dengue in Bermuda and to give advice concerning mosquito control. A survey was made from November 1 to November 12, 1941. The investigation was undertaken at the invitation of the Government of Bermuda.

The Rockefeller Foundation Health Commission has also provided a travel grant for Dr. Chintaman Gorind Pandit, a former International Health Division fellow connected with the King Institute in Guindy, Madras. Dr. Pandit was given this grant in order to make a study of the manufacture of yellow fever and typhus vaccines in the United States. A travel grant has likewise been made to Major James Gear, of the South African Institute for Medical Research, to study methods of manufacturing yellow fever vaccine in the Health Division laboratories.

A staff member, Dr. F. F. Schwentker, participated in the investigation of streptococcic infections in Army camps in the United States and his work was financed in part by The Rockefeller Foundation Health Commission. Dr. Schwentker worked officially as a member of the Commission on Hemolytic Streptococcal Infections of the Board for the Investigation and Control of Epidemic Diseases in the Army.

DISEASE CONTROL

YELLOW FEVER

The Rockefeller Foundation continued during 1941 to collaborate in the study and control of yellow fever through the laboratories of the International Health Division in New York and cooperative programs in Brazil, Colombia, Peru, Bolivia, and British Guiana in South America, and in Uganda in Africa. Developments of the year included continued success of control work, investigation of danger to the Panama Canal region, incrimination of jungle mosquitoes as vectors, verification of jungle yellow fever in Africa, the large-scale preparation and use of yellow fever vaccine for the protection of both civil and military populations.

For the fourth consecutive year, no aegypti-transmitted yellow fever, either urban or rural, was recorded anywhere on the American continent. It will be recalled that the urban form of yellow fever is transmitted solely by *Aedes aegypti*, a mosquito which favors breeding places near human habitations and which is, therefore, associated first of all with urban yellow fever. The success in controlling this mosquito takes care of only a small part of the yellow fever problem, because the real danger lies in the large areas of jungle in which yellow fever occurs in the absence of *Aedes aegypti*. The occurrence of

cases infected from the jungle during 1941 at various points in the Magdalena Valley and in the llanos of Colombia, in the Cuyuni Valley in Venezuela, and in the Amazon Valley in Peru, Bolivia, and Brazil, emphasizes the ever-present threat of reinfection of *aegypti* infested areas. The species reduction technique adopted in Brazil, Bolivia, and Peru has as its goal the regional eradication of the *aegypti* mosquito. With every lowering of the *aegypti* indices, the possibility of urban infection from the virus reservoir of the jungle is lessened.

A dangerous situation exists in Peru, where air lines and new highways are beginning to connect the jungle yellow fever area along the Amazon with the coast. In 1941 the Director of Health in Peru suggested that the International Health Division take over the supervision of the yellow fever and malaria services under the same sort of contract for cooperative work with regard to yellow fever as that in force in Bolivia and Brazil. The signing of this contract was hastened by the occurrence of over seventy deaths from yellow fever between March 26 and the end of April. This yellow fever and malaria work is regarded as an effective approach to the whole field of public health in Peru, and the International Health Division is assigning a staff member and is increasing its financial contribution to that country.

The increased military importance of Panama, in the present war emergency, emphasizes the hazard of jungle yellow fever in relation to the defense of the Canal Zone. The results of immunity surveys during the past year indicate unmistakably the recent existence of yellow fever in the Republic of Panama east of the Canal Zone. The region bordering on Colombia closely resembles jungle yellow fever areas in that country. The last known and well-established cases of yellow fever in Panama occurred in 1905. The recent surveys, however, show that in the province of Darien and in the San Blas islands, children not over nine years old have protective substances in their blood. This indicates that they must have had the disease, probably in light form, sometime within the last nine years. Panama has now passed a law making it compulsory to investigate all deaths following brief febrile illness in the region, and has organized a service which is to be constantly on the alert for the occurrence of yellow fever.

Meanwhile jungle yellow fever continues to be vigorously attacked in its native stronghold. Perhaps the outstanding feature of the work in South America was the conviction of the *Haemagogus capricornus* mosquito as the "villain in the tragedy" of yellow fever in certain areas of Colombia (for details see page 15 of this REPORT).

The observation of the arboreal tendencies of this vector clearly demonstrated the mechanism for the carry-over of yellow fever virus from one rainy season to the next, and explained the frequency of jungle yellow fever among men engaged in felling trees. Other proven vectors of yellow fever in South America are *Aedes leucocelaenus* and an unidentified *Sabethine* which, like the *Haemagogus capricornus*, breeds in tree holes and parasitic plants above the ground in the tropical forests.

Jungle yellow fever appears to be primarily a disease of certain jungle animals, including the larger primates and marsupials. Transmission from one animal to another may be effected by any one of several species of forest mosquitoes. It appears that the main flow of virus through the jungle occurs at the higher levels in the forest. Studies are being conducted in an effort to demonstrate the possibility of birds acting as reservoirs and carriers of yellow fever virus, though to date no incriminating evidence has been obtained.

Although test surveys had given evidence that jungle yellow fever must be present in Africa, no definite proof of its existence there was obtained until 1941, when yellow fever virus was successfully isolated in the Bwamba forest of Uganda from a human case and two lots of

wild-caught mosquitoes of the species *Aedes simpsoni*. The isolation of this virus was the work of the staff of the Yellow Fever Research Institute in Entebbe, Uganda. The purpose of the work which was started in 1936 in this territory was to delimit more precisely the zone of yellow fever immunization in this region, to inquire into the type of yellow fever that gave rise to these immunizations, and to investigate the danger of spread to uninfected portions of Africa and India.

Bwamba County, some two hundred miles west of Entebbe, was selected as an area for concentrated study, because surveys made in that region had brought out the fact that forty-eight persons out of 168 had had yellow fever within the previous two years. There is reason to believe that most of these infections were the result of an outbreak of yellow fever which began in April 1940. This outbreak had not yet entirely subsided by the summer of 1941. In August of that year, an intensive investigation finally turned up two active cases of yellow fever. Close laboratory investigation of these cases and the mosquitoes of the region brought the long-sought-for proof of the existence of jungle yellow fever in Africa.

Entomological investigations in the forest in Bwamba have revealed the presence of four

species of mosquitoes known to be potential vectors of yellow fever. Here was a setting for an epidemic, provided there were enough susceptible persons. Certainly there were plenty of mosquitoes to pass it on. Fortunately that part of Bwamba County is not much traveled, but the British director of medical services thought it wise to order mass vaccination, and every man, woman, and child that could be reached throughout a wide zone, was given an injection of the yellow fever vaccine made in the New York laboratory. The zone was put under quarantine; no one was allowed to cross its boundary earlier than two weeks after vaccination. No subsequent cases have been found.

The discovery of recent immunizations in Bwamba County raised the question as to whether the virus was still active in the Sudan. In 1941 a study was made of material obtained in the 1940 epidemic of yellow fever in the Nuba Mountains of the Anglo-Egyptian Sudan. This was the most extensive epidemic of yellow fever ever recorded in Africa, and the first to be observed in the eastern portion of the African yellow fever belt. Two strains of yellow fever virus were isolated during the course of this epidemic. Three common species of mosquito in the Anglo-Egyptian Sudan, *Aedes metallicus*, *Aedes taylori*, and a pale form of *Aedes aegypti* quite different

from the typical *aegypti* specimens, were tested and found capable of transmitting yellow fever. *Aedes taylori* is a very prevalent mosquito in the Nuba Mountains area. It breeds in tree holes, has a wide range of flight, and it is believed that this vector may have been the cause of the explosive outbreak in the Nuba Mountains. As a further step in the control program in Africa, all transport workers in Kenya have been immunized, and a large program of mass vaccination is under way in the coastal area.

The year 1941 was one of unusual yellow fever activity in Colombia. During the first six months of 1941 twenty-two cases were diagnosed by the Bogotá laboratory. Old areas became reactivated and new ones entered upon the scene. This resurgence of yellow fever throughout many regions of Colombia lent urgency to prompt vaccination campaigns in widely separated regions. Vaccinations totaling 172,462 were made.

The large-scale preparation and use of yellow fever vaccine for the protection of both civil and military population has been discussed on pages 71-74.

INFLUENZA

Epidemics in 1941. The year 1941 was ushered in by an extensive epidemic of influenza which spread throughout the United States, but in most



Photograph Excised Here

Porters and packs assembled for yellow fever serum collections, Bwamba, Uganda.



Photograph Excised Here

Field laboratory, yellow fever study expedition, San Vicente de Chucurí, Santander, Colombia.

cases produced a disease mild in character. The epidemic appeared first in the Hawaiian Islands, reached California during November of 1940, and then spread rapidly eastward, with outbreaks occurring through the Middle West and Southwest, and the Atlantic coastal and southern states by January 1941. From studies by the Laboratories of the International Health Division, it was found that the vast majority of cases in most areas were influenza A. However, in the epidemic outbreaks of Florida and Alabama, which were most extensively investigated, 30 per cent of the cases were neither influenza A nor influenza B. In most of these cases, the infection was probably due to some yet undiscovered virus. Considerable effort was expended to learn something about this unidentified virus, but none of these efforts were successful. No evidence was obtained that any agent present could infect ferrets, or could be transferred to the chick embryo, which grows the influenza A and B viruses.

Previous studies had shown that in a normal population nearly everyone possesses in his blood, in varying degree, protective substances or antibodies against influenza A. Some of these normally occurring antibody levels were very high, and relatively few people were found in whom no protective substances could be demonstrated against influenza A. It was noted that



Photograph Excised Here

Malaria control measures, Alivalem, India. Constructing field outlet channel.



Photograph Excised Here

Antimalaria drainage work, San Miguel, El Salvador.
Hauling sand and gravel from river bed for washing.

infection occurred with higher frequency among those individuals who possessed low antibody levels.

The wealth of material obtained from the southern epidemics made possible an investigation of this problem on a much larger scale. Again there appeared a distinct tendency for influenza to occur in those people who possessed a low antibody level. On the other hand, influenza did occur, although less frequently, even in people who possessed the highest levels of antibodies. In other words, there seems to be no demonstrable level of antibodies which confers absolute immunity in an epidemic of influenza.

Vaccination Studies. The importance of the above type of study lies in its application to the question of how successful influenza prophylaxis, through vaccination, may be expected to prove. It seems likely that the amount of influenza could be reduced by raising the general antibody level of a population. However, even if this level were considerably raised, it is still to be expected that an appreciable number of persons will be subject to the disease. Since studies have shown that elevated antibody levels do have an effect in increasing human resistance to influenza, the next obvious step is to find out under what conditions such optimal antibody response can be

obtained with the preparations of influenza virus available.

In the fall of 1941, a large-scale human vaccination study was undertaken to determine the conditions under which the best antibody response occurred. Since human beings are in several ways different from experimental animals, and since the ultimate aim of these studies is to protect the human population, the advantages of direct experimentation with human beings are obvious. Previous studies of the human response to influenza virus have been more or less ambiguous, because of the small number of people observed. The reason for the small size of these groups has been the great expense and effort involved in testing their blood for antibody response by means of the only technique formerly available, the neutralization test in mice. The large-scale investigations needed can now be carried out because of a new technique discovered in 1941.

New Technique. Much of the slowing down of biological laboratory work is the necessity, at every turn, of using animals. Animals are indispensable and are often the only means of gaining necessary information but, compared with the direct methods of the physics and chemistry laboratory, animal experimentation is cumber-

some. Through a fortunate discovery in the Laboratories of the International Health Division in 1941, work in connection with influenza vaccine was greatly simplified in the direction of substituting test tube for animal technique. The clue was given by the discovery that influenza virus, as grown on the chick embryo or other living substance, possesses the power of clumping or agglutinating red blood cells. This unique type of activity proved to be closely linked with the virus particle itself. It is not due to any substance accompanying the virus. Moreover, it occurred with every known strain of influenza virus, including A and B.

Even more important than the agglutination itself was the concomitant disclosure that immune serum has the capacity to inhibit this agglutination phenomenon. This means that the protective bodies in the human blood, which heretofore have been measureable only by complex processes, can now be studied in a less complicated manner. The new technique gives results which are entirely similar to those formerly obtained by neutralization tests in mice. This same ability of specific antibodies to inhibit the agglutination can also be used to diagnose influenza.

In the fall of 1941 a large-scale human vaccination study was undertaken. Eleven different

preparations of influenza vaccine were investigated, each of them with trials in one hundred and fifty individuals or more. The preparation of influenza vaccine has been greatly facilitated since the discovery that the virus need not be left in an active state. The virus can be inactivated with heat or formalin without noticeably impairing its potency. Moreover, there are ways in which it can be made more effective through concentration, for example, by centrifugation. Previous experiments had led to the conclusion that the addition of a certain strain of distemper virus enhanced the potency of influenza virus. The results of the large-scale tests referred to did not bear out these previous conclusions. However, it was shown that within certain limits antibody response in human beings increases as the amount of virus is increased. When large amounts of influenza A virus are given, the antibody response may be as large as that following actual infection with the virus.

The Rockefeller Foundation also gave support to and cooperated with influenza studies in three places in the United States outside of New York City and vicinity, and also in Buenos Aires. In California the International Health Division continued laboratory and field investigations of influenza, under the direction of a staff member and in cooperation with the State Department

of Health. There was emphasis on the study of the efficacy of various influenza vaccines in human beings. In one experiment, vaccination against influenza A with active tissue culture influenza A virus in comparison with the complex influenza A distemper vaccine made from chick embryo suspensions, it was found that the two preparations were equally good. Among a total of 1,102 persons vaccinated, the amount of influenza A was 4.2 per cent. Among 7,987 unvaccinated persons who served as controls the amount of influenza A was 9.3 per cent.

In Minnesota The Rockefeller Foundation has cooperated with the State Department of Health in maintaining an influenza laboratory for conducting laboratory and field studies. Aid to the influenza studies formerly conducted at the New York University College of Medicine was, during the year, transferred to the School of Public Health at the University of Michigan. The chief studies of this project center around the methods of infection in respiratory diseases. In an effort to enhance the effectiveness of intranasal vaccination, both active and inactive virus were subjected to various techniques. Nasal secretions were studied in an effort to determine whether vaccination by the subcutaneous route has any effect on the protective power of nasal tissues.

In Argentina The Rockefeller Foundation is cooperating with the Virus Section of the Bacteriological Institute at Buenos Aires. An investigation of local kinds of virus causing influenza has been made from an epidemic occurring in 1940. Both influenza A and B occur in Argentina. An epidemic of influenza A occurred in that country some six months preceding an epidemic of the same kind in the United States.

MALARIA

Species Eradication. Both the American sanitarian, Gorgas, and the Brazilian sanitarian, Oswaldo Cruz, worked to control malaria as well as yellow fever, but the fame of each is based on results obtained with yellow fever rather than with malaria. In yellow fever the fight was against a single mosquito, and operations against a single species can be more easily organized than a campaign against the dozen or more species of *Anopheles* that carry malaria. However, in any particular country it is generally only one or a few species of *Anopheles* that are the chief culprits, and the question arises whether the same type of intensive species suppression that has been used so effectively against yellow fever cannot also be put to use in malaria work.

The method did work in the recent successful

campaign against the malaria-carrying gambiae mosquito of Brazil. The Malaria Service of Northeast Brazil was created in January 1939. An ample budget was available. From the beginning the attack was directed solely toward the extermination of *Anopheles gambiae*. The work was recognized to be a gamble, as nothing of the sort in the malaria field had been attempted before. The attack was against a mosquito which had crossed 1,600 miles of the South Atlantic and had had nine years to spread over a section of South America.

The Malaria Service of the Northeast began operations after the rainy season in 1939. The first six months were discouraging. Before the end of the year certain areas seemed to be cleaned up. The rapidity of gambiae retraction during the second year of the campaign passed all expectations. Before the end of June 1940 it became apparent that the gambiae was conquered. The last evidence of its presence in Brazil to date was recorded on November 14, 1940. Since January 1941 all antigambiae measures in Brazil have been suspended. Watchfulness is continued. It is still too early to claim that the last infestation with gambiae has disappeared from Brazil, but hundreds of well-trained searchers now fail to find any trace of the mosquito.

Species eradication is neither easy nor simple. Moreover, the measures used against gambiae, Paris green and pyrethrum, unlike draining and filling, leave the country as susceptible to gambiae infestation as before. The real risk that gambiae may reestablish itself in the Western Hemisphere, is indicated by the finding of a dead female gambiae after the spraying of a plane arriving in Natal, Brazil, from West Africa in October 1941. The application of yellow fever combat methods against malaria is an important event in public health administration.

Behind the Lines. Various places throughout the globe in which The Rockefeller Foundation is cooperating in campaigns against malaria skirt present war areas. The survey work carried out in Trinidad is described on pages 19-20, where mention is also made of the Burma Road project.

Malaria in the Yunnan Province of China is very old. Records indicate its existence seventeen hundred years ago. The importance of the Yunnan-Burma Highway was attested by the appointment, by the United States Public Health Service in 1940, of a commission to study the malaria situation and the more recent selection by the same Service of a large health and medical commission to work on the route of the proposed

Yunnan-Burma Railway. Very recently work on the highway was much slowed down by attacks of malaria. The Rockefeller Foundation established a laboratory for the study of malaria at Chefang, Yunnan Province, in March 1940. The village of Chefang, with a population of about twenty-five hundred, lies on the Burma Road in a hill-encircled valley. The population of the valley is about twenty-five thousand. The valley itself is typical of conditions in most of southern and western Yunnan. The people of the valley are a pastoral and agricultural folk whose chief crop is rice.

During a period covering sixteen months, in the Chefang Valley 26,372 female anophelines of thirteen species were dissected, and malaria infection was found in one species only, *Anopheles minimus*. One hundred and sixty-four *A. minimus* were found to be infected, out of a total of 18,707 dissected. *Minimus* uses houses and stables as daytime resting places, especially the former, and this may be an indication that it prefers human blood for meals. *Minimus* is almost entirely limited to more or less quickly moving clean water in its breeding, and is almost never found in rice fields. Mosquito control of malaria in southwestern Yunnan, must envisage first of all, it seems highly probable, the destruction of *minimus*.

In India, another area bordering on the war zone, the Foundation has for many years been engaged in both malaria control and general public health work. In 1941 there were five important malaria investigations under way: (1) studies of the sporozoites of the chicken malaria organism (*Plasmodium gallinaceum*); (2) experiments in spray killing of adult mosquitoes; (3) intermittent irrigation as a malaria control measure in rice fields; (4) ecological studies involving an investigation into the reason why *Anopheles culicifacies*, a dangerous malaria mosquito, frequents borrow pits; (5) further studies of *A. culicifacies* density in relation to the prevalence of malaria.

Larva-eating fish have not proved as successful in India as elsewhere, and other forms of combat have come into their own.

At the village of Pattukkottai, three hundred miles south of the city of Madras, the chief health hazard was malaria engendered in the rice fields. After an entomologist had determined the breeding, feeding, and resting habits of the local malaria mosquitoes, an experiment in intermittent irrigation of the rice fields was decided upon. Agricultural interests had to be taken into account, and no health measures could be taken which would sacrifice quality or quantity of the crop yield. A routine of intermittent irrigation

was followed for four years, and the results were soon reflected in the malaria survey of the population. The number of enlarged spleens diminished and, after some months, an almost complete disappearance of malaria parasites was registered in the blood examinations.

In another series of experiments use was made of pyrethrum to spray the inside of homes and kill mosquitoes in their daytime resting places. This measure had met with some success in South Africa, at the Malaria Institute of India, and elsewhere, but for a time it was doubted whether it could have much effect in South India, where the homes in rural districts are of open construction. However, following the use of spray, even in primitive hamlets, enlarged spleen and malaria parasite incidence dropped noticeably, but the cost during the first year averaged 30 cents per person, which was too expensive for impoverished rural districts. A systematic study of every engineering detail connected with methods of spraying, apparatus, and degree of dilution was made, and a procedure was standardized to provide effective spraying service for small rural villages at a cost of not more than 8 cents per person per year. During 1941 this standardized spraying technique was used in eight villages ranging in population from seventy-five to thirty-five hundred, effectively interrupt-

ing the transmission of malaria in these communities and, incidentally, offering freedom from other insect pests. Spraying of adult mosquitoes as a public health measure won immediate and wholehearted acceptance from the native population.

Research Work. One problem that long handicapped the malaria researchers was the lack of a suitable experimental animal. None of the lower animals is susceptible to human malaria, but there are species of malaria parasite which afflict monkeys, others which infect birds, and until 1941 practically all the experimental work made use of monkeys and canaries. But monkeys are expensive and difficult on other counts; canaries are so small and fragile that any studies with them must be extremely delicate and limited, and as a consequence the workers have been for years on the lookout for a new experimental animal.

Ever since Dr. Émile Brumpt of the Pasteur Institute found a malaria plasmodium in Ceylon which was infectious for chickens, the American research workers have been on the lookout for an opportunity to exploit this discovery. There are strict quarantine regulations against importation into the United States of America of parasites that might be a menace to poultry. A substitute plasmodium was therefore sought in this country.

An investigation of birds in the New York Zoological Park some time ago revealed a hitherto unknown parasite, *Plasmodium lophurae*, in the Borneo pheasant. Attempts to infect chickens, ducks, and geese with this new-found germ produced only feeble results until, early this year, success in infecting ducks was obtained in a parasitological laboratory at Johns Hopkins. A strain of ducks from Baltimore proved to be susceptible to this kind of malaria. Moreover, with the increased threat of malaria on account of the war, special permission was granted under the quarantine regulations to introduce *Plasmodium gallinaceum* for research purposes, under rigid precautions. Since then, chickens have become the principal experimental animal for malaria research in the Laboratories of the International Health Division. Ducks may be used additionally, but chickens are so susceptible to the Ceylon parasite that they are proving to be very suitable subjects on which to test new chemicals.

During the last year and a half the New York Laboratories of the International Health Division have tested eighty drugs for therapeutic action against malaria, and of those potent against malaria in animals, two were found somewhat effective in treating the disease in man.

One is sulfadiazine, a recently synthesized

derivative of sulfanilamide. In tests on a group of thirteen patients ill with malaria in the Gorgas Hospital at Ancon, Panama Canal Zone, sulfadiazine produced a beneficial effect in ten cases, but showed no effect in the remaining three. Sulfanilamide, sulfapyridine, and sulfathiazole, which have wrought such remarkable cures in various streptococcal, meningococcal, and other bacterial infections, have been tested in turn on human malaria, but sulfadiazine is the only one of the sulfa drugs that has shown any power to destroy the parasite of this disease.

The second of the new antimalarials is even more effective than sulfadiazine. It is called promin, and although it resembles the sulfa drugs in some particulars, it is of another chemical family. Promin was administered to a group of seventeen patients in the Gorgas Hospital, and after three days of treatment, thirteen of the group became free of fever, their blood became free of the parasites, and after a month the hospital discharged them as cured. It is of interest that some of the thirteen who recovered had the highly virulent tropical infection with *Plasmodium falciparum*, whereas the four in whom the promin had little or no influence were victims of the comparatively mild malaria caused by *Plasmodium vivax*.

Sulfadiazine and promin do not take the place

of quinine and atabrin, but are regarded as possible substitutes if a shortage of quinine should develop. An inconvenience in the use of promin is the fact that it cannot be taken by mouth, but must be administered intravenously. It is most successful when the injection is timed to coincide with or immediately precede the sporulation of the parasite in the blood stream of its victim.

The Foundation is supporting work in malaria chemotherapy at the Johns Hopkins Medical School, where Dr. E. K. Marshall, professor of pharmacology and experimental therapeutics, is working chiefly on the problem of whether certain drugs can be tested safely in human hosts; at the Department of Chemistry of Harvard University, where Dr. L. T. Fieser and a group of scientists are synthesizing new variants of compounds which have shown activity against malaria, and are thus attempting to increase their potency; at the University of Chicago, where Professor W. H. Taliaferro has for many years conducted important work on bird malaria; and at the University of Cambridge, England, where Colonel S. P. James of the Molteno Institute of Parasitology is likewise working on special problems connected with bird malaria parasites.

Control. Some account has been given above of cooperative malaria work in Brazil, China, Eng-

land, Trinidad, India, and the United States. Control work in malaria has also been aided in Florida in the United States; in British Guiana, El Salvador, Cuba, and Haiti, in the Caribbean; as well as in Peru and Portugal.

Malaria investigations have been going on in Portugal since 1933. The Malaria Institute at Aguas de Moura maintains a dispensary which secures data on the amount of malaria in the area, the effect of drugs on local strains and species of the parasite, and the best methods for administration of drugs. This building was damaged by a hurricane in February 1941. The International Health Division is helping to replace this dispensary, and is adding to the plant of the Malaria Institute.

Among the more than fifty different mosquito species encountered in a survey of El Salvador eight were anophelines, of which the most widely distributed was *Anopheles pseudopunctipennis*. There has been emphasis on antimalaria drainage work, chiefly in the region of San Miguel, where some special and difficult problems were successfully solved. In British Guiana a drought which began in September 1938 and ended in May 1941 has resulted in a change in the mosquito picture. *Anopheles darlingi*, which disappeared during 1940, began to reappear slowly in 1941. There has been no flare-up of malaria in

1941, but one is looked for when this mosquito again becomes prevalent. Malaria is common in Haiti. A reconnaissance, with emphasis on spleen palpation and blood smears, to determine the actual amount of malaria, has been continued through 1941. In Cuba the Malaria Commission, a dependency of the National Department of Health, is continuing the job of making a malaria survey of the entire island. It is expected that this survey will be completed by the end of 1942. Control work in malaria is under way in Mari-anao County and Oriente Province.

The International Health Division has cooperated in malaria control in Florida since 1937. Up to the middle of 1941 aid was given to a demonstration of malaria control in Escambia County. On July 1, 1941, a separate division of the State Board of Health was organized to take care of malaria work throughout the state. This new Bureau of Malaria Research and Control is receiving cooperation from the Foundation. Precedence will be given to mosquito control activities at military bases in the state.

In Peru, where malaria is a serious public health problem, the International Health Division is cooperating in a malaria control program. *Anopheles pseudopunctipennis*, the only anophe-line species known on the Pacific Coast of Peru, finds ideal breeding places in the irrigated valleys.

TUBERCULOSIS

A program for the study of certain aspects of the tuberculosis problem, in which The Rockefeller Foundation has cooperated with the Government of Jamaica since 1928, with Dr. Eugene L. Opie, professor of pathology, Cornell Medical College, as consultant, is now drawing to a close. In 1928 a dispensary was established in Kingston, Jamaica, to study the extent of tuberculosis in that city. A roentgenological laboratory and mobile x-ray unit were added to the facilities of the study group in 1930. From 1931 to 1934 four field surveys were made to determine the prevalence of tuberculosis throughout Jamaica. At the end of these surveys, the Government of Jamaica assumed the responsibility of operating and supporting the tuberculosis dispensary and laboratory, and the Foundation cooperated with the Jamaican Government in the formulation of an island-wide program of control. The International Health Division of The Rockefeller Foundation continued to contribute through 1937 to the cost of field studies, training programs, and demonstrations of control methods, withdrawing from this aspect of the work in 1938.

Meanwhile, tuberculosis vaccination studies were begun in 1932 in the Mental Hospital at Kingston. Half the inmates with negative reactions to 0.01 mg. and 0.1 mg. of old tuberculin

at admission were inoculated with a heat-killed tubercle bacillus vaccine; the other half formed a control group. During a period of at least eighteen months after admission the tuberculosis morbidity and mortality rates were appreciably lower among the persons vaccinated than among those in the control group. The results suggested further studies among the general population.

In 1939 and 1940 two groups, of 8,617 vaccinated persons and 8,538 controls, were formed from the population in Kingston, Spanish Town, and several other towns in representative parts of the island. There were also separate groups in private schools, dispensaries, and other institutions. The last vaccinations in the general population took place in December 1940; in certain special groups the vaccination was continued until June 28, 1941. The follow-up of the vaccinated and control groups originally consisted of questioning for previous illnesses suggestive of tuberculosis infection, with a physical examination and chest x-ray where indicated. After October 1940 chest examination by fluoroscopy was given to persons in the vaccinated and control groups with x-ray photographs if necessary. A mobile fluoroscopic unit was purchased and placed in operation in July 1941. More time must elapse before an opinion can be expressed as to the effect of the vaccine.

The Rockefeller Foundation has cooperated in a tuberculosis case-finding demonstration in San José, Costa Rica, the purpose of which was to demonstrate a practical method for the early finding of active cases. Thirteen stations were established near the homes of the people in a section with a population of 20,000. Over eighteen thousand people were examined, thus proving that it is practical to examine a high percentage of the population when the diagnostic service is, so to speak, brought to the door. Everywhere, as far as possible, the time and convenience of the population were taken into account. In this work 112 cases of active tuberculosis were diagnosed, 60 per cent of which had not been previously known.

In the United States, in addition to laboratory research on vaccination at Cornell University Medical College in relation to the field work in Jamaica, The Rockefeller Foundation has supported a study in Williamson County, Tennessee, conducted by the State Department of Public Health. The purpose is to acquire more exact knowledge of the clinical course and bacteriology of tuberculosis, particularly the chronic fibroid type of the disease; to determine the pathological conditions that exist among the immediate contacts of cases of tuberculosis; to ascertain the most effective program of case finding in a com-

munity; to learn more of the relationships between childhood tuberculosis and subsequent breakdown in adult life; and to study more intensively the relation of tuberculosis to social and economic factors. In 1941 tuberculin tests and roentgenological examinations of some fourteen hundred school children were completed. A report was also made on the prevalence of tuberculosis infection in white and colored families. The amount of manifest tuberculosis among white and colored household associates was about the same, but the disease in cases of tuberculosis in the colored families was of greater severity.

RABIES

In November 1936 The Rockefeller Foundation began its cooperation with the Alabama State Health Board in a study of the rabies problem. Because of a widespread and alarming incidence of rabies in Alabama, the State Legislature in October 1936 had passed a Rabies Control Act requiring that all dogs be given one injection of rabies vaccine each year.

It became imperative that studies should be made to determine the degree to which different types of vaccine are effective, and how long they will retain their protective power. To date, it has been shown that a rabies vaccine, inactivated

with chloroform and containing $33\frac{1}{3}$ per cent brain material, has considerable protective effect and will retain its potency for at least one year if stored in an ordinary refrigerator.

As pointed out in this section of The Rockefeller Foundation REPORT last year, any canine vaccination program can only be accessory to a more complete program which involves control of the dog population.

SYPHILIS

Since 1923 the San Joaquin Local Health Department in San Joaquin County, California, has had in operation a venereal disease clinic. At the beginning of 1940 there was undertaken a special syphilis study, financed jointly by the California State Department of Public Health, the San Joaquin Local Health Department, and the International Health Division, with emphasis on investigation of the sources of infection as a means of developing an effective control program. The advent of the selective service system, the establishment of a United States Army aviation training center and a motor supply depot in San Joaquin County, as well as the acceleration of military and industrial activities with the declaration of war, have afforded new opportunities for research and new problems in control. The fact that a large section of the population

in this district is migratory has a considerable effect on the syphilis picture.

A study of syphilis by the North Carolina State Board of Health in the Tri-County Health District and Durham has been aided since 1940. In addition to this epidemiological work in the field, provision is made by the University of North Carolina for research with respect to treatment and diagnosis. The purposes are (1) to study the prevalence of syphilis in a rural community of a southern state in order to obtain a base line for the measurement of future trends; (2) to investigate the sources of infection; and (3) to evaluate the effectiveness of control measures.

For a number of years support has been given to a laboratory and epidemiological study of syphilis at the Johns Hopkins School of Hygiene and Public Health. During 1941 laboratory studies were carried out on the immunological and other technical aspects of syphilis. There was completed during the year a study of the prevalence of syphilis among colored residents of certain age groups in the Eastern Health District of Baltimore. Of the colored residents twenty to twenty-four years of age, 22.7 per cent of the males and 35 per cent of the females had been infected with the disease. In the thirty-five to thirty-nine age group, 42.7 per cent of the males and 47.8 per cent of the females had been

infected. The study of syphilis at the Johns Hopkins School of Hygiene and Public Health involves (1) laboratory investigations, (2) epidemiological studies designed to measure the incidence of syphilis in a representative urban community and the effectiveness of control measures, and (3) the training of better qualified public health personnel for programs in syphilis control.

HOOKWORM

Since 1921 Dr. W. W. Cort, professor of helminthology at the Johns Hopkins School of Hygiene and Public Health, has conducted hookworm investigations both in the field and at the School. International Health Division aid, totaling approximately one hundred thousand dollars has been given to this work. The field work, occurring mostly from 1921 to 1926, dealt with epidemiological aspects of hookworm disease. A series of laboratory studies was undertaken on the host-parasite relations of the dog hookworm. International Health Division aid to these studies terminated in 1939, but the studies have been continued since then.

It has been shown that repeated small doses of infective hookworm larvae will produce in dogs an almost complete immunity. A study of the mechanism of this immunity has shown that serum antibodies are produced which act directly

on the worms, and that a deficient diet in certain animals interferes with the production of this immunity. Direct evidence of specific acquired immunity against hookworm infection in human beings is scanty, but it seems probable that what is true in the dog is also true for man.

At present support is given to a new type of field investigation to determine the reactions of the human host to hookworm infection and disease. The purpose is to determine the role of immunity in human hookworm infection and to delineate, if possible, the factors which interfere with the normal development and persistence of immunity. Dietary deficiencies need special study and the part played by malaria needs investigation.

This research was begun late in 1941 by the Department of Helminthology of the Johns Hopkins School of Hygiene and Public Health, and will be carried out both in the laboratories in Baltimore and in the field in southeastern Georgia. The Georgia State Division of Malaria and Hookworm Service is cooperating. The work is under the direction of Dr. Cort and Dr. G. F. Otto.

DIPHTHERIA

In a study of diphtheria, which the Johns Hopkins School of Hygiene and Public Health is

undertaking, the International Health Division has given support for personnel and supplies. The work is under the supervision of Dr. Martin Frobisher of the Department of Bacteriology, who has made previous studies on diphtheria with the support of the American Public Health Association. One purpose is to determine the usefulness of the chick as a laboratory animal for testing the virulence of the diphtheria organism. It is well known that some strains of diphtheria organisms produce disease in man, while others seem to be harmless. Differentiation of these virulent and avirulent strains has heretofore been made in the rabbit or guinea pig. The chick was found to be very satisfactory as a test animal. It is relatively inexpensive, and the virulence test in the chick is easy to perform and easy to interpret.

MENTAL HEALTH

With the object of disclosing the status of mental hygiene conditions in a representative urban and rural community in the United States and, if possible, to aid in applying suitable remedial and preventive measures, The Rockefeller Foundation has been cooperating in an investigation in the Eastern Health District of Baltimore, and in another in Williamson County, Tennessee.

The mental hygiene study in Baltimore has two objectives. The first of these, and the one on which the study group has been working for a long time, is the collection and presentation of data concerning the mental hygiene problems in a population. The second objective is the development and application of mental hygiene methods that will meet the remedial and preventive needs of the community at low cost.

The Eastern Health District of Baltimore is largely residential. It is an area of comparatively low economic status. It contains 55,129 people, 23 per cent of whom are Negroes. By searching the files of all agencies concerned with mental hygiene problems 3,337 cases active in 1936 were discovered. Since the field of mental hygiene is a comparatively new one to be included in public health work, the principles of classification of data and the technique of statistical analysis required careful examination. A general classification of the chief mental disorders, together with numerous subdivisions, has now been drawn up. The types of difficulty related to these disorders have also been worked out and come under such headings as drug addiction; alcoholism; sex problems; family, marital, or work adjustment difficulties; school maladjustment; delinquent behavior.

In the study of a rural community in Tennes-

see, the work in 1941 was largely devoted to the application of remedial and preventive methods suitable for a local health department. A demonstration clinic and educational program which was started in October 1940 was continued throughout the year. In January 1941 a liaison program for the education of all public health personnel operating in the county was begun. General educational work was supplemented by weekly staff conferences on clinic cases, with emphasis on clinical teaching, as well as on diagnosis and treatment formulations. First steps were also taken toward the extension of the educational program to school teachers and practicing physicians of the community. The number of persons presenting conditions of psychiatric interest in the county was 69.4 per thousand. Of these, 53 per cent presented active problems of personal and social adjustment. Most of the remaining cases represented potential problems.

NUTRITION

In addition to the nutrition research done in Europe by The Rockefeller Foundation Health Commission, of which some account has been given in preceding pages, work was continued on three projects in the United States. The principal objectives of all these efforts are to appraise the status of nutrition among selected popula-

tion groups, to develop procedures and techniques for measuring human nutritional deficiencies, to determine efficient corrective measures, and to train personnel in the field of nutrition.

Since April 1939 support has been given to work in nutrition in Tennessee, directed by Dr. John B. Youmans, associate professor of medicine in Vanderbilt Medical School. During 1941 diet studies and examination of subjects in the survey of nutrition in Wilson County were completed. A similar survey was made at Crossville, Tennessee. Further studies were made on technical procedures and techniques, with special reference to the metabolism of thiamin.

In a study conducted by the Duke University Medical School and the North Carolina State Health Department, in which the Foundation cooperated, it was shown that during the spring-time, people living in a rural cotton mill community have a low blood content of vitamin C. The same applies to selected groups of children in other areas. Marked improvement occurred in the vitamin C content in the blood of children following a low cost, three meals a day, feeding program.

A third project which has received support, beginning July 1, 1941, was under the supervision of Dr. E. W. McHenry, associate professor of physiological hygiene, Toronto School of



Photograph Excised Here

X-ray traveling unit for tuberculosis work, Kingston,
Jamaica.



Photograph Excised Here

Mental hygiene study, the Johns Hopkins School of Hy-
giene and Public Health. The social worker and mother
become acquainted.

Hygiene. The work is done in the East York Health District, Ontario, Canada. Eight hundred high school students were submitted to special tests.

Confronted with the necessity of incorporating programs of nutrition in public health practice, administrators of public health services have felt the need of assistance and advice from those who have had special experience in this field. Thirteen investigators, including seven connected with International Health Division projects or its staff, convened in Atlantic City on October 18 and 19, 1941, for the purpose of discussing the various tests and procedures used in assessing the nutrition of a population and selecting those on which general agreement could be reached. Results of these discussions have been condensed in the general form of opinions and recommendations and published in the February 6 issue of the United States Public Health Service Bulletin.

AID TO STATE AND LOCAL HEALTH SERVICES

One of the major objectives in the preparedness program of a nation is the welfare of the civilian population from a public health point of view. The high percentage of rejections for physical unfitness among draftees of the last war,



Photograph Excised Here

Top: National Institute of Hygiene, Guayaquil, Ecuador.
Center: Laboratories of the International Health Division,
New York City. *Below:* National School of Nursing, Car-
acas, Venezuela.

and among the selectees of the present world conflict, has accented the urgent need for further improvement of public health services. The increased prevalence of influenza, syphilis, and tuberculosis, during and after periods of warfare, and the potential danger of serious epidemics, constitute another call for keeping the public health system at a high level of efficiency.

During wartime, with encampments in new locations and large bodies of troops invading unaccustomed territory, there is a renewed interest in health conditions of different terrains. The Rockefeller Foundation, through its International Health Division, has for many years been active in investigating public health conditions in many parts of the world and in conducting demonstrations to initiate and keep alive local effort toward bettering public health conditions. Always the emphasis has been on new and improved methods and better organization that could be employed in promoting public health. It is recognized that the only agency that can properly protect the public health is the government. Hence there has been a policy, in all cases, of cooperation with government and official bodies.

In 1941 The Rockefeller Foundation cooperated in promoting local or central public health work with six countries in the Western Hemi-

sphere. A certain amount of work, was also still carried on in Portugal, Finland, and India.

Broad objectives have been (1) the establishment or reorganization of basic central health services, (2) organization of local health demonstrations, and (3) conducting field studies to provide information needed in the formulation of control measures or for the critical evaluation of existing activities. A cardinal policy followed in the development of government health services is the employment of trained whole-time personnel.

In North America fifteen central and local health service projects received support from the International Health Division in 1941. The total sum budgeted for this work was \$236,593, toward which the Division contributed \$38,326, or 15 per cent. Eleven of these cooperative projects were in Canada, three in Mexico, and one in the United States. In addition, aid was given to the Marianao County Health Unit in Cuba.

In Canada the International Health Division cooperated with Manitoba in the reorganization of its Provincial Division of Vital Statistics, with Nova Scotia in establishing a Provincial Statistical and Epidemiological Service, and with Quebec in organizing a Provincial Division of Tuberculosis. Local health demonstrations supported were (1) Greater Vancouver Metropolitan Health

District, British Columbia, (2) Fraser Valley Health District, British Columbia, (3) Cape Breton District Health Department, Nova Scotia, (4) Three Rivers City Health Department, Quebec, and (5) a Demonstration Health Unit in Mexico. The Division also aided a Regional Health Service in Mexico.

Field investigations supported were (1) morbidity studies in Manitoba to evaluate the amount of medical care required in rural communities, (2) studies of pregnancies in Manitoba to serve as a basis for the development of a maternal hygiene program, and (3) epidemiological studies of sylvatic plague and Rocky Mountain spotted fever in Alberta and British Columbia to serve as a basis for the application of control measures. In addition, the Division gave assistance to a nursing staff education project in New York City to improve the value of the City's nursing service through advanced education and the critical evaluation of existing nursing practices. In Mexico a central office was provided to assist in coordinating and supervising cooperative projects, and in Ontario a cooperative budget was supported to fill as effectively as possible the more serious gaps in the personnel structure of the Province caused by war conditions.

In the morbidity surveys and the maternal welfare studies conducted in Manitoba by the

Provincial Division of Vital Statistics the objectives were (1) a study of the type and amount of illness among a group of rural people in order to evaluate the total amount of medical care necessary in a rural population, and the approximate cost of providing complete medical care rather than the partial medical care supplied by the Municipal Doctors' Districts system; and (2) a study of pregnancies to supply basic concrete data for the development of an effective maternal hygiene program, including an investigation of every fatal confinement case in a selected area.

Data for the morbidity survey were collected during a two-year period beginning May 1, 1938, in seven municipal doctor areas in Manitoba, having a total population of 15,058 persons. The results of the survey were summarized by Dr. F. W. Jackson, deputy minister of health before the Canadian Public Health Association in June 1941. In the municipal doctor areas the ratio of office calls to house calls was nearly three to one. A discussion with municipal physicians revealed that people go to see their doctor earlier in an illness when there are no direct individual monetary considerations. As a result, it is believed serious illness, requiring confinement in bed or in hospital, occurs less frequently. The survey indicated also that the mileage traveled by the municipal doctor is not as great as that traveled

by the regular country practitioner. The survey furnished statistical data regarding services rendered by doctors other than municipal physicians, special services given in the home and in the hospital, principal causes of illness, as well as illnesses by age group and sex. As is to be expected in a farming community, most of the medical care went for accidents and minor injuries. Sickness was about evenly divided between male and female, and outside the group of those under four years of age, most of the illness was in the working age groups. The survey revealed that families with five or more illnesses during the two-year period, representing 19 per cent of the total families, accounted for 44 per cent of the total illness. In addition to the ordinary medical care given by the municipal physicians; immunization programs were stimulated so that during the two-year period there were 3,767 smallpox vaccinations, 3,136 diphtheria immunizations, and 973 scarlet fever immunizations. Over 30 per cent of diphtheria and smallpox immunizations were among the preschool group.

The data for the maternal welfare survey were collected during the two-year period beginning May 1, 1938. Over twenty-two thousand completed records of births were received. During 1941 the coding of all returns was completed. Dur-

ing the year 1939 a total of 13,980 births were reported within the Province. Of these, 11,657, or 84 per cent, were attended by physicians, and 10,600 completed returns were received from the physicians. Seventy-three per cent of all confinements attended by a physician, whether city or rural, took place in a hospital or maternity home. Judged by the number of visits, 25 per cent, or 2,626 of the 10,600 cases reported received adequate prenatal care, but judged by the minimum items of service which constitute adequate prenatal care, only 17 per cent of the mothers obtained a minimum standard of prenatal care. In the group of 1,639 cases in which one visit was made by the prospective mother to her physician, only seventy-seven mothers consulted a physician before the fifth month.

The following conclusions were drawn: (1) The general opinion that adequate prenatal care is a requisite for the improvement of maternal welfare can be confirmed by statistics; (2) too low a percentage of expectant mothers in Manitoba seek and obtain adequate supervision during pregnancy; (3) the type of prenatal care given varies to quite a wide extent; and (4) as the maternal mortality rate is approximately the same in the several provinces of Canada, these conclusions probably apply to all of Canada.

In South America The Rockefeller Foundation

has cooperated with the Government of Ecuador in providing operating expenses for the new National Institute of Hygiene. Recognizing that health work was handicapped by the lack of a public health laboratory, the Ministry of Health, under the direction of Dr. Izquieta Perez, in conjunction with the National Government, has recently erected a building to house a National Institute of Hygiene. This Institute was designed to fulfill a fourfold function:

Diagnosis: bacteriology, serology, pathology, parasitology

Epidemiology: control of endemic diseases

Food and drug control: chemical analysis

Production of important vaccines

The Institute of Hygiene brings together the health laboratories now functioning in Guayaquil and provides space for new ones. Grants totaling \$73,000 were made for equipment, stipends, and running expenses on a decreasing scale over a period of five years, after which time it is expected the Ecuadorian Government will assume responsibility for the support of the institution. In the early part of 1941 support was still given to a health center operating in Finland in a district near Helsinki, and throughout the year to the Lisbon Health Center in Portugal, where nutrition studies were carried on.

PUBLIC HEALTH EDUCATION

During 1941 The Rockefeller Foundation gave support to institutes of hygiene in eight different countries, schools of nursing in four different countries, and awarded fellowships to students of public health in twenty-three different countries. Emphasis in 1941 was on the aid given to a number of prominent public health schools in the United States and Canada, but other efforts in the domain of public health instruction ranged as far afield as China and the Philippines.

The Harvard School of Public Health received support in making a study of public health administrative practices. This work begun in 1940 was under the direction of Dr. Harold D. Chope, former health officer of the city of Newton. Work on the first phase of the project, education for public health administration, has been completed, and a report submitted. This study also embraced an investigation of the practice of public health administration, and of the possibilities of correlating and improving teaching and administration. This school has also received \$100,000 for a five-year program in nutrition work. The Department of Nutrition, which is being organized, will collaborate closely with the Department of Biochemistry.

The Department of Sanitary Engineering in the Harvard University Graduate School of

Engineering is receiving aid, for a four-year period which began July 1, 1940, for salaries and the purchase of equipment connected with instruction and research in sanitary engineering.

As previously reported continued aid was also given to laboratory and epidemiological studies in syphilis, under the direction of Dr. Thomas B. Turner at the Johns Hopkins School of Hygiene and Public Health. The Johns Hopkins School of Hygiene and Public Health received also two grants totaling \$82,500 to provide additional teaching personnel. Under this grant, personnel has been appointed in the Departments of Sanitary Engineering, Venereal Diseases, Bacteriology, Biostatistics, and Public Health Administration.

The School of Hygiene of the University of Toronto has received support for the teaching programs of the Departments of Physiological Hygiene and Epidemiological Biostatistics, as well as for field training activities. The latter comprise the development of an area as a model district health organization and a field for training students in public health and public health nursing. Toward this work the Province of Ontario contributes an equal amount, in return for which the School of Hygiene provides graduate instruction for Ontario health officers and public health nurses. The demonstration and

training unit has been developed in East York Township, in the Toronto area, and the training program has been adapted to circumstances imposed by the war.

In view of the rapid development of state health services and the great demand for trained personnel in China, a Public Health Training Institute under the National Health Administration was established in Nanking in 1935. The Institute was well organized and had impressive buildings, constructed by the government, when hostilities forced evacuation at the end of 1937. After a temporary location in Changsha, the Training Institute was reestablished in September 1938 in Kweiyang, Kweichow Province, in Southwest China. In 1941 the Institute was combined with the Central Field Health Station and reorganized as the National Institute of Health, with headquarters in Chungking. Most of its facilities were to have been moved to Chungking by December 1941, where only senior health personnel is to be trained, although the training of junior public health staff workers is to continue in Kweiyang.

There has been an overwhelming demand for health personnel. The Army and the Red Cross have their own training facilities, but the anti-epidemic units and the highway health stations of the National Health Administration, and the

provincial and county health organizations have all required trained workers. These demands led to some emergency and intensive courses of training. Since the middle of 1939, however, an able director, Dr. C. K. Chu, has been in charge and has made a serious effort to establish satisfactory standards of public health education. Attention is now given to quality work as well as to quantitative production of graduates. The Institute emphasizes the three major courses for medical health officers, combined nursing and midwifery groups, and sanitary inspectors or overseers. Training is provided also for laboratory technicians, pharmacists, and maternity and child health workers. The staff includes 15 doctors, 4 engineers, and 4 nurses. Among these are 5 medical and 2 nursing graduates of Peiping Union Medical College, and 6 former fellows.

There are attached to the training institute and administered by its staff three field training stations. The urban station is the health department of the city of Kweiyang (population 100,000), and includes a complete urban health service. The two rural stations are at Tingfan and Tsingchen, 45 and 25 kilometers respectively from Kweiyang. In each of the rural districts there is a population of about 135,000. These three training areas serve the two medical schools in Kweiyang as well as the training institute

in that city. The Rockefeller Foundation in 1941 made a grant providing for certain current expenses of the Institute, such as purchases abroad of books, equipment, gasoline, and other material which could not be obtained with local currency.

Since 1915 the International Health Division has cooperated in various projects for the promotion of public health education in the Philippines. The Division of Medical Sciences of The Rockefeller Foundation, as early as 1928, 1929, and 1930, gave a total of almost two hundred thousand dollars to the Institute of Hygiene in Manila by building and equipping the School of Hygiene and Public Health, and by providing salaries for visiting professors.

A sanitary engineer on the staff of the International Health Division was assigned to Manila in 1940 to act as adviser on sanitation projects to the Institute of Hygiene and official health organizations in Manila. A second staff member went to Manila in 1941. One project was the development of an urban training station in Manila, which was to function in close cooperation with the Institute of Hygiene. A grant of \$12,000 was made specifically to provide opportunity for field practice for the Institute of Hygiene, by means of an urban health demonstration and training station in the Paco District.

This district has a population of approximately forty-five thousand living in an area embracing an industrial section, a residential section, and a slum section. The Institute of Hygiene was to be responsible for the teaching activities, and the city and commonwealth authorities for health administration.

With the fall of Manila the work of the International Health Division in the Philippines came to an end. As stated on page 6, one member of the staff was still in Manila when it was taken.

NURSING EDUCATION

One of the aspects in which modern public health technique has undergone considerable change has to do with the problem of linking the health department with the home. The chief agents in bringing public health directly to the people are the public health nurses. The role they play is to a large extent one of education. Often they are the sole intermediaries between the family and the public health service. They enlighten and instruct young mothers. They advocate prompt attention to ills, and frequently bring about early diagnosis. To use a military figure, the public health nurse is not merely a defender of health: she and her coworkers constitute the counterattackers against the army of disease.

In its public health work, the International Health Division of The Rockefeller Foundation has emphasized the role played by the public health nurse, and wherever health campaigns have been started, attempts have been made to enlist the services of the public health nurse. This program implies also a more than passing interest in public health nursing education. A number of centers where such training can be given have received support.

In the United States, the Department of Nursing at Skidmore College, Saratoga, New York, has been aided since 1934. This school is particularly interested in the preparation of nurses for the public health nursing field. The New York State Department of Health cooperates with Skidmore College by providing facilities for training the students in community nursing in three counties near the College. In 1941 arrangements were completed for affiliation with the New York Post-Graduate Medical School and Hospital in New York City to provide clinical instruction and experience. In addition to the work in the Post-Graduate Hospital and the two and a half years of academic instruction at Skidmore College, the student has theoretical and practical work at other institutions in psychiatry, communicable disease and tuberculosis nursing, and in urban family health service.

In Canada the University of Toronto School of Nursing received assistance as an example of a school where public health nursing is well integrated with all other subjects of the curriculum and nurses are prepared so that they can enter public health work immediately upon graduation from the basic professional course. The successful development of this School as a leader in the field of nursing education is definitely established.

A school of nursing of somewhat the same model is the one at Lisbon, Portugal, which received support during 1941, and which remained normally active during that year.

The Santo Tomás Hospital and School of Nursing in Panama has been aided since 1937. A modern curriculum which includes the preventive and social aspects of medicine and nursing has been adopted for the basic professional course. Public health field experience is given in the urban and rural health centers in the city of Panama and the village of La Chorrera.

In connection with the school of nursing which is to be established as part of the University of São Paulo in Brazil, a small grant was made for salaries and minor expenses while plans for more substantial cooperation are maturing.

The National School of Nursing, which was established in Caracas, Venezuela, under the Ministry of Health and Social Welfare in July

1940, officially opened its doors in November 1940. The present school is an outgrowth of the School of Nursing organized under the Ministry of Education in 1936. There is an urban practice area in which students obtain practical experience in public health. In 1941 a grant was made by The Rockefeller Foundation to assist in the development of the educational program of this school and particularly for the purchase of teaching equipment. The objectives of the school are: (1) to train professional nurses, (2) to serve as a model in the country for the organization of nursing instruction, (3) to raise the standards of the profession in Venezuela, and (4) to coordinate the efforts of all agencies interested in providing better nursing services.

FELLOWSHIPS

It has been the policy of the International Health Division to aid the development of public health, both in the United States and in foreign countries, by extending an opportunity for advanced study to various promising physicians, nurses, and other specialists. These young men and women return to their respective countries and, in the application of their special training, become leaders in public health and related research. To mention an example, over seventy Brazilian doctors have, up to the present, com-

pleted their studies and observation in the United States on fellowships from the International Health Division, and have returned to work in Brazil.

In spite of conditions imposed by the war, the fellowship program of the International Health Division gave opportunity for advanced study in the field of public health to a slightly larger number of fellows than in the previous year. During 1941 the Division arranged programs for 129 men and women, representing twenty-three different countries, in the following fields:

<i>Classification</i>	<i>Number</i>
Public Health Administration	75
Public Health Nursing	20
Public Health Laboratory	8
Sanitary Engineering	12
Vital Statistics	2
Industrial Hygiene	4
Miscellaneous	8
	—
	129

Seventy-three of these fellows began their studies in 1941.

Thirty-one of the 129 fellows came from the United States; 24 from Canada; 11 from the Philippines; 10 from Brazil; 7 from Peru; 6 each from Mexico, China, and Venezuela; 4 from Japan; 3 each from Colombia, the British West Indies, and Ecuador; 2 each from Chile, India,

Turkey, and Panama; and 1 each from Costa Rica, Cuba, Greece, Haiti, Norway, Portugal, and Uruguay.

One hundred and nineteen were assigned to 13 educational institutions in this country and Canada, 3 others spent their entire period of fellowship study abroad, and 7 were assigned to field studies or to nonacademic institutions. Eighty-six fellowships were held by physicians, 22 by nurses, 14 by sanitary engineers, and the remaining 7 were held by 2 vital statisticians, 2 dentists (United States Public Health Service), an entomologist, a nutritionist, and a man studying drug control and analysis.

In addition to the above-mentioned fellowships, forty-four travel and training grants were approved for persons representing fifteen countries. These travel and training grants differ from the fellowships in that they are usually made to advanced workers, already established in their chosen field, who desire to study some particular aspect of their work. Twenty-one of these were from the United States; 6 from Canada; 3 from the British West Indies; 2 each from India, Venezuela, and Costa Rica; and 1 each from Panama, Peru, El Salvador, British Guiana, Ceylon, China, Dominican Republic, and Nicaragua. Five of the grants went to nurses. Also included in these travel grant figures are twelve

small grants made to undergraduate medical students to enable them to do practical work in the field of public health during the summer. Six of these students were from Harvard, five from the University of Georgia, and one from New York University. The estimated cost of these forty-four grants was \$22,388.

Following the Atlantic City meeting of the American Public Health Association in October 1941 invitations were extended to help officials of four Latin American countries to make visits in the United States and Canada. Of these, the three who found it possible to accept were the Director of Health of El Salvador (a former International Health Division fellow) and the new Directors of Health of Venezuela and Peru.

THE MEDICAL SCIENCES

THE MEDICAL SCIENCES STAFF

During 1941

Director

ALAN GREGG, M.D.

Associate Director

ROBERT A. LAMBERT, M.D.

Assistant Director

DANIEL P. O'BRIEN, M.D.

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THE MEDICAL SCIENCES

THE war has reduced the number of countries in which aid to medical research can be given. In many countries it is no longer possible to transfer funds for scholarly work or to find scientists able and free to do research of high quality. After the eighth of December it was increasingly clear that very large financial resources of the Federal Government would be placed behind research projects bearing upon national defense, and that a large proportion of research men would discontinue any other research in favor of that directed toward the winning of the war. The range of appropriate Foundation action was extended to activities which required attention because of the conditions created by the war, or needed special support in order to maintain or increase their usefulness to the war effort.

Grants in the medical sciences during the year 1941 amounted to a total of \$2,120,700, and were for the following general purposes: teaching and research in psychiatry and neurology, \$356,700; teaching and research in public health and preventive medicine, \$609,000; research in endocrinology, \$175,000; teaching and research in other medical subjects, including tropical medicine, physiology, physiological optics, legal medicine,

and cancer, \$532,000; a special study of voluntary health agencies, \$75,000; fellowships, \$248,000; and grants in aid, \$125,000.

The major part of these grants were for teaching and research activities begun in previous years and renewed or extended in 1941. These have been described in previous reports, or are programs which have been maintained for several years (e.g., fellowships and grants in aid). The new projects aided for the first time in 1941 merit consideration first.

The Foundation established in 1941 the Welch Fellowships in Internal Medicine, which offer a three-year appointment renewable to a maximum of six years, with an adequate stipend and provision for laboratory expenses, to mature medical workers who wish to devote themselves to an academic career in medicine. There are no other fellowships of this type in the United States. A satisfactory fellowship system should provide besides numerous beginning posts a few advanced positions. In America we lack the advanced group of fellowships. The need of such a provision is particularly acute at this time. Medical schools which have been hampered considerably by reduction in income from endowment during the past years of depression are faced with the prospect of further loss in income, which will tend to diminish the

number of opportunities for postgraduate training and experience.

Among the other grants which were made in 1941 for the first time were: an appropriation of \$200,000 for the development of tropical medicine at Tulane University; a grant in aid of teaching, nursing training, and research at the Memorial Hospital in New York City; and a special study of voluntary health agencies throughout the United States. Each of these appropriations is described more fully later in this REPORT.

TEACHING AND RESEARCH IN PSYCHIATRY AND NEUROLOGY

WASHINGTON UNIVERSITY

DEPARTMENT OF NEUROPSYCHIATRY

Under a new Department of Neuropsychiatry, established in Washington University School of Medicine in 1938 with the aid of Foundation funds, a reorganized program of teaching in psychiatry and neurology for undergraduate medical students has been put into operation. Courses are given in all of the four years, and teaching services have been organized in the neurological service of the City Hospital and in the Bliss Psychiatric Institute and the neurological service. A method of teaching psychiatry by individual interviews and in small group discussions

with students and junior members of the staff has proved very successful and is being developed further.

While all of the objectives naturally have not been attained in this comparatively brief period, steps have been taken in each of the directions planned. Research is being conducted in laboratories provided by the Medical School and in special laboratories at the Bliss Institute, and collaboration with other departments is developing. Postgraduate courses for physicians in the state hospitals of Missouri and southern Illinois have been established. As a step toward service to the community a survey of private institutions and agencies in St. Louis which offer psychiatric aid to children has been made in anticipation of the possibility of cooperation in a program for therapy.

To encourage the development of this Department along the progressive lines which have been planned for it, the Foundation in 1941 appropriated \$150,000 for support over a further period of three years beginning July 1, 1941.

UNIVERSITY OF CHICAGO MEDICAL SCHOOL
DIVISION OF PSYCHIATRY

Since it was organized in 1935, the Psychiatric Division of the Department of Medicine of the University of Chicago, with a staff of about twelve full-time members, has developed as a

teaching unit, has worked out plans for cooperation with a number of state and other governmental institutions, and has been active as a clinical service, and in research. The Division is housed on one floor of Billings Hospital, the University teaching hospital, where the staff is readily available for consultation by other clinicians who have become interested in the service which can be rendered. Advice as to the psychological and psychiatric aspects of disease in certain instances is being sought increasingly.

The Foundation has aided this Division since its beginning, and in 1941 appropriated \$150,000 to continue aid at the rate of \$50,000 a year for another period of three years beginning July 1, 1941.

UNIVERSITY OF EDINBURGH RESEARCH IN BRAIN INJURIES

Aid to combined laboratory and clinical research on the psychiatric, psychological, and neurological aspects of brain injuries at Edinburgh University, Scotland, initiated in 1940, was continued in 1941 by a grant of \$20,700 (£5,125) for a period of fifteen months beginning July 1, 1941. The research unit uses the regular facilities of the University, and cooperates besides with the medical services of the Army, Navy, and Air Force, and the Department of Health for Scotland, at an emergency hospital in

the vicinity of Edinburgh for military and civilian war injuries. The University and military fusion of the service is expressed by the appointment of the medical directors of the research unit, Professor D. K. Henderson, psychiatry, and Mr. Norman M. Dott, neurosurgery, as consultants to the troops in Scotland.

The emergency hospital is used for all major surgery, and for investigation on the majority of the cases connected with the military forces, while the resources in Edinburgh are used for civilian cases, and for special investigations and treatments, such as biochemical studies and x-ray therapy. The patients are freely transported between the two sections so as to have the benefits of the special advantages developed at each place, and equipment also is transferred, if required.

The united attack upon the problem of brain injuries has stimulated great interest in all of the participating services. New fields for research have been opened up, exploration of which would not have been likely if the personnel of neurosurgery and psychiatry had been working along their former separate courses.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE
DEPARTMENT OF NEUROLOGY AND NEUROSURGERY

The Department of Neurology and Neurosurgery of the University of Illinois began an expansion in 1941 made possible by the opening of the

Neuropsychiatric Institute built by the Illinois State Department of Public Welfare on the campus of the College of Medicine in Chicago. For the two-year period beginning October 1, 1941, the amount which the University is able to contribute to the budget for neurology and neurosurgery is not sufficient for operating the expanded Department. To assist the neurological unit with equipment and supplies, salaries of two assistants, one nurse, and some technical workers, the Foundation in 1941 made a grant of \$15,000 to cover this period. Previously a short-term grant had been made to help the Department to operate the new quarters before the University budget could be adjusted to the increased expenditure.

The Institute provides a greatly increased number of beds for patients in neurology and neurosurgery and in psychiatry, and a large laboratory for research in neurophysiology for use by both the Departments of Neurology and Psychiatry. As soon as the excellently equipped laboratory was opened, every working space was filled. Many graduate students, some of them from foreign countries, were attracted.

DALHOUSIE UNIVERSITY: DEVELOPMENT OF TEACHING IN PSYCHIATRY

For some time Dalhousie University has been seeking a teacher with the training and qualifica-

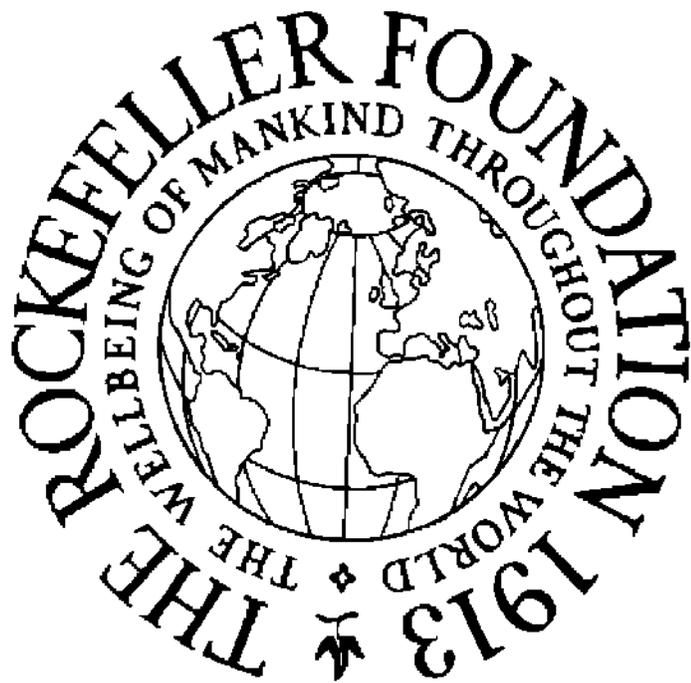
tions necessary to build up an active department of psychiatry. A man has now been found, a graduate of Dalhousie Medical Faculty, who studied neurology and psychological medicine in London, and who later received a fellowship from the Foundation for study at the Johns Hopkins University School of Medicine.

The psychiatrist will be associated with the Provincial Ministry of Health as consultant, and with the Canadian Department of National Health in connection with a hospital for returned soldiers at Halifax. It is hoped that cooperation with these agencies, particularly with the provincial department of health, will become of considerable importance as the work develops. An outpatient psychiatric clinic will be opened in the Public Health Clinic, which, besides its function as a health center for the city, contains the outpatient services for the clinical departments.

To assist Dalhousie University in building up its teaching in psychiatry the Foundation appropriated in 1941, \$15,000 to cover a three-year period beginning September 1, 1941, the amount available in any one year not to exceed Canadian \$5,000.

CORNELL UNIVERSITY: RESEARCH IN REFLEX BEHAVIOR

Although the studies of Professor H. S. Liddell and his associates at Cornell University are con-



Photograph Excised Here

Psychiatric conference at Washington University clinics.

cerned with reflex behavior and are carried out on animals, their purpose from the beginning has been to throw light on underlying factors in human personality. Using the technique of the conditioned reflex Dr. Liddell's group seeks to discover the elements of the conditioning procedure which cause the most dangerous stress. The causes of the greatest strain may then be compared with analogous situations in the human environment. The neurosis brought about by the conditioning process is analyzed in physiological detail, and with the basis of this information all possible means, including the use of therapeutic drugs, are explored for restoring the disturbed animal to its normal state. This technique and information obtained from its use have been applied to actual problems of human personality by one of Dr. Liddell's assistants at the Massachusetts General Hospital, where his work has aroused much interest in the psychiatric service. Some of the studies have been applied to the problem of the selection of aviators.

The research unit at Cornell, which has a well-equipped building located on a small farm for its work, is not isolated from the life of the University, but has a special classroom with adjoining demonstration unit for use in teaching this psychobiological concept of personality to both graduate and undergraduate students.



Photograph Excised Here

Recording equipment, reflex behavior research, Cornell University.



Photograph Excised Here

Ophthalmo-eikonometer and projected target, Dartmouth Eye Institute.

The Foundation has aided this work since 1935, but has reduced its annual contribution toward budgetary expenses. In 1941 a further grant of \$6,000 was made for the two-year period beginning August 1, 1941.

TEACHING AND RESEARCH IN PUBLIC HEALTH AND PREVENTIVE MEDICINE

CORNELL UNIVERSITY MEDICAL COLLEGE

PUBLIC HEALTH AND PREVENTIVE MEDICINE

The Kips Bay-Yorkville Health Center operated by the City of New York Department of Health in a district of about two hundred thousand population serves as a demonstration of the use of a health center to coordinate the health activities of a medical school, hospital, and other social agencies in a health district, with the service in public health rendered by the city. The Department of Public Health and Preventive Medicine of Cornell University Medical College uses the center for the demonstration of the principles of its public health teaching and the practical training of its undergraduate and graduate medical students and student and graduate nurses; and on the other hand conducts theoretical and practical training for various types of professional and technical personnel of the City Department of Health. The successful fusion of

service, teaching, and research has been particularly well exemplified in some of the clinics.

Actual operation in the modern building constructed by the city began in the fall of 1937. The two upper floors were assigned to the College for teaching and research. Among other studies, the College Department of Public Health is conducting research in pneumonia, tuberculosis, and nutrition. Based on data collected in a survey of the district, a study of the influence of physical and social environment on illness is being made. Several of these studies have received assistance from other foundations.

Because of the success of this venture in teaching, service, and research, and the importance of the development of this kind of cooperation in public health, the Foundation appropriated in 1941, \$600,000, which represents capitalization of the annual contribution over the past four years.

THE AMERICAN FILM CENTER: FILMS FOR TEACHING MEDICINE AND PUBLIC HEALTH

Toward the expenses of exploring the possibilities in the use of films for the teaching of medicine and public health, the Foundation in 1941 gave to the American Film Center \$9,000 to be used during a period of three years beginning July 1, 1941.

The American Film Center is preparing to act

as a clearinghouse and information center for medical and public health films. A catalogue of such films now available is being completed by Dr. Alfred Nichtenhauser, and the films will be evaluated, described, and classified so that the special film suitable to the particular audience in technical treatment, exact subject matter, etc., may be chosen correctly and easily. The film needs of medical schools and health agencies are being studied, and on the basis of the resultant information arrangements will be made for the distribution, and later probably the production, of films which will be suited in method of treatment and subject matter to the special requirements of medical and public health education.

RESEARCH IN ENDOCRINOLOGY

NATIONAL RESEARCH COUNCIL: COMMITTEE FOR RESEARCH IN PROBLEMS OF SEX

The Committee for Research in Problems of Sex of the National Research Council was organized January 1, 1922, at a time when taboo and aversion were associated with the study of sex phenomena and reproduction, and research in these subjects was usually neglected. The Committee has used its funds to support studies at university and other research centers, and has sought out able investigators for aid. The prog-

ress of knowledge in this field during the past twenty years has been exceptional.

A broad attack on the problem was intended from the beginning, as the experts on the original committee represented the sciences of biology, physiology, psychology, psychopathology, and sociology, but at first emphasis was placed on endocrinology, especially studies of the hormones. The primary emphasis of the Committee has shifted from time to time as the studies developed. Research in endocrinology made rapid progress and became so well established in many centers that in 1937 a separate committee was formed to administer grants in this particular field, with the exception of those for work directly concerned with sex and reproduction. In 1929 anthropological and psychological phases of the problem began to receive more attention, and in recent years the trend has been increasingly toward the neurological, psychobiological, and behavioral problems of sex and reproduction.

The Committee was supported by the former Bureau of Social Hygiene until July 1, 1931, when support was taken over directly by the Foundation. Partly because some of the former interests of the Committee, for example endocrinology, are receiving support from other sources, and partly because the present world crisis will undoubtedly reduce the total amount of research

possible for a time, the Foundation has reduced its yearly contribution somewhat. In 1941 a grant of \$150,000 was made for the three-year period beginning July 1, 1941.

McGILL UNIVERSITY FACULTY OF MEDICINE
RESEARCH IN ENDOCRINOLOGY

Research in endocrinology, chiefly on the sex hormones and the hormone of the adrenal cortex, which was introduced into the Department of Medicine at McGill University seven or eight years ago, has made a number of contributions to knowledge in this field. New and sensitive methods have been devised for measuring these hormones. Studies of the hormone of the adrenal cortex have suggested that an increased output of this secretion is one of the mechanisms of the body for combating damage, and have led to timely investigations of its use in shock after operations and injury. Recently studies have been made of histamine metabolism in connection with traumatic shock and burns. The research unit not only makes fundamental studies on animals, but carries on parallel clinical observations, and is able to make immediate clinical application of important laboratory results.

After giving temporary assistance for two years with small grants in aid, the Foundation in 1941 granted \$25,000 for this research over the five-year period beginning July 1, 1941.

TEACHING AND RESEARCH IN OTHER MEDICAL SUBJECTS

TULANE UNIVERSITY: DEPARTMENT OF TROPICAL MEDICINE

At Tulane University in New Orleans, a small but active Department of Tropical Medicine has been giving graduate and undergraduate teaching and conducting research under the handicap of extremely limited funds. Tulane has exceptional advantages in its location in the southern states where certain so-called tropical or semi-tropical diseases are more or less common, and in a seaport where ships bring in cases of tropical disease, many of which are available for demonstrations and hospital practice in the clinics and hospitals associated with the University. Further, New Orleans is on the border of the Caribbean region where many tropical diseases are rife, and is easily accessible to physicians of tropical America as a place for study.

While instruction in tropical medicine is given in a number of medical schools in the United States, and institutions for teaching and research in these diseases exist in the Philippines, in Puerto Rico, and Panama, continental United States does not have a well-developed center for the study of tropical diseases. The development of tropical medicine is of great importance to this country because of the close geographical rela-

tionship of the southern United States to the tropical regions of Central and South America. It is of especial importance at the present time, when military and naval personnel are moving from country to country into climates and regions to which they are entirely unaccustomed, and measures are needed not only to protect this personnel, but to prevent them from carrying infection from one country to another.

These circumstances are pressing the Department at Tulane University to expand. At the request of organizations interested in tropical medicine the Department gave in the fall of 1941, in addition to its regular postgraduate instruction, a course especially adapted to physicians who planned to practice in warm climates. Sixteen physicians attended, nine of whom were from various countries of South and Central America.

In 1941 the Foundation gave \$200,000 outright for development of the Department of Tropical Medicine, with the provision only that not more than \$25,000 should be used in any one year. A larger budget enables Tulane University to appoint additional clinical staff in tropical medicine, and makes it possible for the Department to plan field trips to study the tropical diseases which are indigenous in many places in the Caribbean region.

UNIVERSITY OF ROCHESTER
FLUID RESEARCH FUND IN MEDICINE

One of the simplest and most efficient ways of encouraging research activity in a medical school is through the fluid research fund, from which sums can be assigned to aid energetic and productive workers within the school in whatever field their investigations may be. A fluid fund which the Foundation made available to the University of Rochester School of Medicine during the serious depression years of 1930-34, was used to aid a number of valuable projects, among them research in endocrinology, neuropathology, metabolism, orthopedic surgery, and other studies.

To help the University to keep research active in its School of Medicine, the Foundation granted in 1941 a fluid fund of \$90,000, to be available for three years beginning July 1, 1941.

DARTMOUTH COLLEGE
DARTMOUTH EYE INSTITUTE

Until fairly recently the correction of visual imperfections and eyestrain has been directed chiefly toward improving by refractive lenses the image formed on the retina. The work of the Dartmouth Eye Institute has gone behind the retinal image, and deals chiefly with the phenomena of the part of the visual process which takes place between the retina and brain. The

step between the retina and the brain apparently affords an opportunity for the occurrence of irregularities which the Eye Institute calls ocular incongruities. The study and correction of the difficulty known as aniseikonia, a condition in which the two images recorded by the brain are different in size, has led to the discovery of a host of related problems of binocular vision, among them errors in space perception. Besides the study of the anomalous ocular incongruities themselves, the Institute investigates the effects on the individual, such as fatigue, and what he does in response to his inaccurate idea of the position, size, or contour of an object. These studies have particular relevance at this time, since correct visual impression and its proper coordination with action is of great importance in defense activities, especially in piloting airplanes, in anti-aircraft observation, and range finding.

The staff members of the Eye Clinic (where treatment is given to patients referred to the Clinic by other physicians) and the Eye Institute work together very closely as one research staff. The fields represented by the combined personnel include physics, optics, physiology, and medicine.

The Foundation having aided this research since 1934, gave in 1941 an outright grant of \$80,000, payable September 1, 1941, without condition.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF
MEDICINE: RESEARCH IN PHYSIOLOGY

In 1941 the Foundation gave \$20,000 for research in the Department of Physiological Chemistry of the School of Medicine of the University of Pennsylvania under the direction of Dr. Otto Meyerhof, research professor of physiological chemistry. Professor Meyerhof was formerly professor at the University and director of the Kaiser Wilhelm Institut for Medical Research in Heidelberg. He has been interested chiefly in the physiology of muscular activity, and in 1922 for discoveries in this field he shared the Nobel Prize in medicine with Professor A. V. Hill of University College, London, who also was studying the metabolism of muscular activity.

HARVARD UNIVERSITY
MEDICOLEGAL RESEARCH

Harvard University, with the aid of funds given by Mrs. Frances G. Lee, put into operation in its Medical School during the academic year 1939-40 a Department of Legal Medicine under the leadership of Professor Alan R. Moritz. Undergraduate students of Tufts Medical College and Boston University School of Medicine also receive their instruction in legal medicine at the Harvard Medical School. Relations of mutual advantage have been established with the De-

partment of Public Safety of Massachusetts and local medical examiners, through which the Department of Legal Medicine receives selected clinical material and opportunity to demonstrate the purposes and teach the technique of legal medicine; and the state and local authorities receive the benefit of the services of the Department of Legal Medicine, of which the general result has been a great strengthening of scientific evidence.

For an effective application of medical knowledge to the administration of justice the revision of certain articles of existing laws and the establishment of new or the modification of present agencies of government, will be required in many places in the United States. Before these changes can wisely be made, research in medicolegal problems is needed, and the scientific development in the medical school must be supplemented by a study of medicolegal problems from the viewpoint of schools of law.

A graduate of the Harvard Law School with six years of experience in law practice, who has recently completed the regular four-year medical course, has been given appointments to the staff of the Law School and the staff of the Department of Legal Medicine. He has the responsibility of conducting research in medicolegal problems in collaboration with the medical de-

partments, and of teaching certain phases of legal medicine to law students.

The Foundation assisted in this expansion of the work in legal medicine by a grant in 1941 of \$12,000 for the three-year period beginning July 1, 1941. This is in addition to a former grant for two assistants in training, which expires June 30, 1943.

MEMORIAL HOSPITAL: RESEARCH, TEACHING, AND PROFESSIONAL CARE

Memorial Hospital for the Treatment of Cancer and Allied Diseases in New York City is unique as a cancer hospital. It carries on active and productive research, conducts training for physicians in the diagnosis and therapy of cancer, and provides special training for nurses in the care of cancer patients, all in close association with the clinical care of patients. Toward the three functions of research, teaching, and professional care of patients the Foundation in 1941 granted \$120,000 to provide \$60,000 a year for the two-year period beginning July 1, 1941.

The research at Memorial Hospital is at present concerned with the chemical aspects of cancer, particularly with the delicate chemical adjustments which appear to affect or control the formation in the animal of a certain type of cancer caused by substances containing the benzol ring.

**WEST CHINA UNION UNIVERSITY
EQUIPMENT FOR NEW HOSPITAL**

Following aid given in 1938 for an urgently needed outpatient clinic building and its equipment the Foundation in 1941 granted \$10,000 toward equipment for the new Hospital of West China Union University. Construction of the 300-bed hospital was practically completed in 1941 after much delay and increased expense caused by difficulties in the securing and transportation of materials, scarcity of labor, inflation, and the failure of some sources of funds. The Hospital, under present circumstances in western China, is urgently needed. It will be used for teaching under the direction of West China Union University medical staff, and will be available for interne training to the Cheeloo University School of Medicine still operating on the West China campus.

SPECIAL STUDY**NATIONAL HEALTH COUNCIL: STUDY OF
VOLUNTARY PUBLIC HEALTH AGENCIES**

A study of national, state, and local private organizations in the United States in or closely related to the field of public health, supported chiefly by private funds and operated by private individuals, has been initiated by the National

Health Council. These agencies include such national organizations as the American Society for the Control of Cancer, the National Tuberculosis Association, and the American Red Cross; such state organizations as the State Charities Aid Association of New York; and such local organizations as private visiting nurse and child health services.

At a time of national stress when public attention is likely to be directed away from local concerns, and when contributions to private charities are likely to be reduced, it is especially valuable that a critical study of the work, the policies, and the opportunities of the voluntary health agencies be made as a basis for more effective, more economical, and more intelligent use of their assets, and as a guide to possible further coordination of their work, and any other action which might appear advisable in the future. It is hoped that the information secured will answer such questions as: how the cost of operation is related to the amount and quality of services rendered; what methods and degrees of cooperation with governmental health agencies have been established; and what kinds of organizations stimulate the largest number of citizens to active participation and support.

To finance this study the Foundation appropriated in 1941, \$75,000 to be available for three

years beginning October 1, 1941. It is expected that the study, which is directed by Mr. Selskar M. Gunn, will be concluded by the end of the three-year period.

SCHOLARSHIPS FOR BRITISH MEDICAL STUDENTS

The plan reported in 1940 to provide a certain number of selected undergraduate British medical students with thorough and adequate clinical training in an environment free from the strain of present circumstances in Great Britain met with much enthusiasm and appreciation in Britain, and with equal enthusiasm and interest in the medical schools of this country and Canada. Authorities in medical education in both Great Britain and the United States believe that this experiment, besides the assistance which it gives in the present emergency, will bring great advantages to medicine on both sides of the Atlantic.

A committee representing English medical education selected from a large number of applications twenty-five students who arrived in America in time to start their work at the beginning of the academic year 1941-42. Sixteen different universities (in seven instances two students went to one university) in the United States and two in Canada have welcomed these

students, and have reported that they have fitted in to both the work of the medical schools and the university life most satisfactorily. In practically all instances these students are entering the clinical years of their medical education, and nearly all will be ready to return to Britain before 1945. With many of the hospitals in London and other cities already damaged by bombs or in dangerous areas, with the patients being cared for in many instances in outlying hospitals at some distance from the medical schools, and with many of the clinical instructors called for duty elsewhere, the clinical years of training in Great Britain suffer serious limitations and interruptions.

FELLOWSHIPS

Although the practical impossibility of granting fellowships to Europeans or to Americans for study in Europe reduced the number of fellowships in the medical sciences active during the year 1940 to 37, from 60 in 1939, the number rose again to 53 in 1941. This rise was occasioned by a nearly 200 per cent increase in fellowships granted to Latin American doctors.

The fund of \$50,000 appropriated in December 1940 for fellowships during 1941 proved not to be sufficient, and an additional \$30,000 appropriated during the year brought the total to \$80,000. In

December 1941, \$50,000 was provided as a minimal estimate for the year 1942.

The 53 fellowships which were active during all or part of the year were divided among 14 different countries as follows: Argentina, 12; Brazil, 5; Canada and Chile, 4 each; Colombia, 3; Peru, 2; Haiti, Iceland, Mexico, Netherlands, Philippines, Switzerland, and Venezuela, 1 each; and the United States, 16. The 2 European fellows began their studies in 1939. All of the fellows studied in the United States. Thirty of the fellowships were granted in 1941; 17 were continued from 1940, 5 from 1939, and 1 from 1938.

The subjects studied covered a wider range than usual in order to meet the varying needs of the Latin American countries. Most of the eighteen fellowships in psychiatry and neurology were granted in the United States. Some of the other subjects studied were pharmacology, internal and preventive medicine, physiology, biochemistry, experimental and thoracic surgery, experimental pathology, parasitology, anatomy, endocrinology, hematology, and nutrition.

NATIONAL RESEARCH COUNCIL: THE WELCH FELLOWSHIPS AND REGULAR PROGRAM

To establish a special fellowship program to be known as the Welch Fellowships in Internal Medicine, in memory of a genial and scholarly

leader in American medicine, Dr. William Henry Welch, the Foundation in 1941 appropriated \$168,000 to the National Research Council, to be available over a period of ten years beginning September 1, 1941. Appointments will be for a period of three years, and may be subsequently extended to a maximum of six years. Stipends will be adjusted to special circumstances, but will be not more than \$6,000 annually, and additional allowances not to exceed \$1,000 a year may be made for laboratory expenses. The fellowship holders will have clinical and teaching experience as well as experience in research, and will thus receive the broad training necessary for a responsible post in a medical school of high quality. The fellowships will be administered by the Medical Fellowship Board of the National Research Council, which has been enlarged by three professors of medicine especially for this purpose.

The need for fellowships to provide able men with adequate and secure income over a sufficient time to permit their devotion to the experience and training needed to fit them for future professorships in internal medicine is particularly acute at this time. In the decade from 1948 to 1958 a large number of important chairs in medicine will become vacant because of the retirement of men in the same age group who were active in the vigorous reorganization and progress in American

medicine which took place in the second decade of this century. Men to replace them should now be receiving experience and training, but under present circumstances the necessary opportunities may be lacking unless special efforts are made.

In the United States medical schools have suffered seriously from loss of income from endowment, and are facing still further losses. Reductions in salaries and in the number of junior teaching posts will tend to discourage able men from academic careers in medicine, and severe reductions in funds for research may threaten the high standards of medical schools and retard medical advancement. However, if the department of medicine, which is the most important and influential single department of any medical school, is kept at a high level, a school is more likely to weather successfully the storms of a period of crippling retrenchment.

The National Research Council through its Medical Fellowship Board has administered since 1922 fellowships of the more usual type which provide graduate training in research for one year, seldom for more than two years. From funds provided by the Foundation in 1937 and 1940 for the regular fellowship program the Council administered twenty-two fellowships in the medical sciences during the year 1941. Eleven

fellows began their work in 1941, eight continued their work into 1941 from 1940, and three from 1939. All of the work undertaken was carried out in institutions in the United States. The awards of the National Research Council are made only to citizens of the United States and Canada.

GRANTS IN AID

The total of allocations for grants in aid during the year 1941 amounted to \$124,987, which almost completely absorbed the amount of \$125,000 provided for this purpose in December 1940. A minimal fund of \$125,000 was provided for the year 1942 with the understanding that an additional amount might be required.

Forty-one separate grants in aid were allotted by the officers, 3 of which provided supplementary funds and 1 of which renewed grants made earlier in the year. Two grants covered a period of a little over 2 years, 11 were for 2 years, 13 for 1 year, and the others for periods from 3 to 10 months. The unusually large number of grants for short periods included the expenses of the visit of a newly appointed professor of preventive medicine to other centers in this country, and of visits of medical scientists from Canada, England, Portugal, and Peru to the United States in the interests of medical education and research; grants for equip-

ment and supplies which were expected to be purchased in a comparatively short time; and grants to meet emergency situations.

The 41 grants were distributed among 10 different countries, as follows: England, 5; Argentina, 4; Canada, 3; Peru and Sweden, 2 each; China, Colombia, Mexico, and Portugal, 1 each; and the United States, 21.

Eight grants were made toward the salaries of refugee scholars in seven institutions. Other purposes for which grants were made included research in psychiatry, neuropathology, neurophysiology, animal psychology, brain injuries, and a method of stimulating wound healing; teaching and research in public health; equipment and apparatus for teaching and research in a clinical laboratory in Colombia; provision of a safe place for the medical library of the Royal Society of Medicine, London; and the cataloguing of historical and biographical material concerned with the life of Dr. William Henry Welch.

THE NATURAL SCIENCES

THE NATURAL SCIENCES STAFF

During 1941

Director

WARREN WEAVER

Associate Director

FRANK BLAIR HANSON

Assistant Director

H. M. MILLER, JR.

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THE NATURAL SCIENCES

IN 1941 The Rockefeller Foundation appropriated \$1,271,535 for the support of its program in the natural sciences. A large part of this amount was contributed for work in experimental biology, for the Foundation believes that in this time of emergency it can render greatest service in the field of the natural sciences by assisting investigations whereby man acquires that basic knowledge of his physical constitution and needs essential for optimum bodily and mental health.

But while the objective of the program in the natural sciences has been the advancement of basic research, much of the work that has received support has resulted in discoveries of practical value, which are finding adaptation to war needs. For example, results of research on vitamins and other basic nutritional factors are revolutionizing the science of nutrition at a time when the proper feeding of vast multitudes must be accomplished with diminishing supplies. Another instance is that of pure research on molds by two English investigators which may, in the not distant future, place in the hands of military and public health authorities a powerful non-toxic germ killer, penicillin.

Every application of science to a useful pur-

pose is, so to speak, a dividend paid out of surplus. In lean times and to meet emergencies it is possible to continue, at least for a time, to declare dividends from surplus. But in the long run the surplus will not be there unless basic earnings are steadily accumulated. And the basic earnings of science come from pure research.

EXPERIMENTAL BIOLOGY

CORNELL UNIVERSITY: RESEARCH ON THE SULPHUR-CONTAINING COMPOUNDS OF THE BODY

Recent developments of a research program at Cornell University, under the direction of Professor Vincent du Vigneaud, exemplify the gradual emergence of practical results from long-term basic research. For a number of years, first at the George Washington University and then at Cornell, The Rockefeller Foundation has contributed toward studies by Professor du Vigneaud and his associates on the structure and action of sulphur compounds of the body. Their work has involved extensive research on cystine and methionine, the two sulphur-containing amino acids (building blocks of body protein) known to be present in the diet of man and animals, and believed to be the body's source of sulphur and the precursors of its sulphur compounds. Since without sulphur the body is unable

to grow, it is of utmost importance from the standpoint of nutrition to have as complete information as possible on the chemistry and the physiological relationship of methionine and cystine. A question around which interest has centered is whether an organism requires both these substances for growth, or whether it can itself manufacture either one if it is supplied with the other.

Some time ago, in studying the decomposition of methionine with sulphuric acid, Professor du Vigneaud and his associates isolated a crystalline compound, which they designated homocystine and which they were able to show was the next higher symmetrical homologue of cystine. The reduced form of homocystine (homocysteine) was found to be methionine from which a group of atoms known as the methyl group had been detached. In other words, it proved to be a demethylated methionine. These findings suggested that homocystine and methionine are related metabolically and that homocystine is actively involved in the metabolism of the body as an intermediary step in the breakdown of methionine.

The question was then raised as to whether the body could form methionine out of homocystine; that is, does it have the power of adding a methyl group to homocysteine. To determine this the

investigators fed homocystine to rats on a diet containing no methionine or cystine. If the rats grew, this would be evidence that homocystine can be transformed into methionine in the animal body. They found, however, that growth took place only when the diet was supplemented by a substance, such as choline, containing the methyl group of atoms, CH_3 . This was indirect proof that the body can form methionine out of homocystine only in the presence of a third substance which can supply the methyl group. To obtain direct proof, they turned to the tagged atom technique.

Here choline was built up in such a way that its methyl groups of atoms were labeled with heavy hydrogen. After feeding this to rats on a diet free of methionine but containing homocystine they were able to demonstrate, in the animals' tissues, methionine containing the labeled methyl group. This experiment, an example of the power of the tagged atom to furnish evidence that could not be obtained by any other experimental approach, has contributed a new concept to the theory of nutrition, namely, that the body is incapable of generating the simple CH_3 group for purposes of methylation, but that methyl groups required for this process must be present in the diet in certain utilizable form.

In 1941 the Foundation appropriated \$75,000

to Cornell University toward the support of further studies by Professor du Vigneaud.

THE JOHNS HOPKINS UNIVERSITY
RESEARCH IN NUTRITION

The Foundation's program in the natural sciences has for a number of years included support of basic studies in nutrition. During the past year two grants were made to the Johns Hopkins University for the furtherance of investigations of this kind. One of these (\$30,000) was for work in the School of Medicine under the direction of Dr. L. Emmett Holt, Jr., associate professor of pediatrics, and Dr. Maxwell M. Wintrobe, associate in medicine; the other (\$18,500) was for the work of Professor E. V. McCollum, of the Department of Biochemistry of the School of Hygiene and Public Health. The programs of Drs. Holt and Wintrobe are concerned with the effects on nutrition of vitamin B and amino acid deficiencies. Professor McCollum is investigating the importance of various inorganic elements in the diet.

Dr. Holt and a coworker, Dr. Victor Najjar, have developed new chemical procedures for the detection of deficiencies of two vitamin B factors — riboflavin and nicotinic acid. They have employed these procedures and a thiamine (vitamin B₁) excretion test in the study of

human patients. For the past few months they have been engaged in the detection, identification, and quantitative measurement of a fluorescent substance in the urine of human pellagra patients and of dogs made deficient in nicotinic acid. In these subjects a fluorescent substance present in the normal urine is greatly reduced or absent, and in its place there appears a second substance, which has a fluorescence (as measured by an instrument known as a fluorophotometer) and a fluorescent spectrum differing significantly from those of the substance occurring in normal urine. They have found that with adequate intake of nicotinic acid this second substance disappears, coincident with the reappearance of the normal fluorescent substance.

Dr. Wintrobe and coworkers have produced in pigs a deficiency syndrome associated with spinal cord degeneration in man, and they are in process of elucidating the particular B factor deficiencies which produce this syndrome.

Dr. Holt and Dr. Wintrobe are collaborating on amino acid studies. This work includes the production of experimental deficiencies of amino acids in animals for the purpose of obtaining more accurate clinical, hematological, pathological, and biochemical data; the production of experimental deficiencies of these substances in man in order to learn which of them are essential for the human species; and the development of

laboratory criteria which can be used for the detection of early subclinical deficiencies. In the past the amino acids were regarded only as building blocks of a body protein of fixed composition. It was believed that lack of any one essential acid would merely impair the formation of tissue proteins and serum proteins. Now it is known that deficiencies of particular amino acids can produce specific pathological pictures.

Professor McCollum has made possible the control of a number of deficiency diseases by his contributions to our knowledge of the role of certain vitamins and certain metallic elements in health and disease. 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. He discovered the necessity for magnesium in the diet, and he has for some time been studying the effects of deficiency of this substance and of potassium, phosphorus, sodium, and zinc. He is now adding to his program investigations to determine whether such elements as bromine, fluorine, vanadium, and boron play physiological roles in the rat and other animals.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
RESEARCH ON CONCENTRATED FOODS

One of the practical results of recent research in nutrition has been the development of concen-

trated food rations for use in wartime by parachute troops and forces stationed in remote areas, and for the emergency feeding at any time of populations which become the victims of famine, flood, earthquake, or other destructive forces.

At the Massachusetts Institute of Technology Professor Robert S. Harris of the Department of Biology and Public Health has worked out formulas for inexpensive, precooked, dehydrated, nutritionally complete, and palatable food mixtures of this kind. He has prepared and used several mixtures, which differ slightly from one another. These are compact, light in weight, and can be transported by air. They can be made at a cost of 7 cents a pound; and 12 ounces are sufficient for a day's ration. As nutrition adviser to the last Byrd Antarctic Expedition, Professor Harris provided concentrated complete foods which were used by the Expedition with entire success from the standpoint of both nutrition and satisfaction of basic hunger.

Before manufacturing condensed foods in quantity, Professor Harris deemed it necessary to do further research to determine the amino acid content of the less common foodstuffs contained in the rations, which had not been analyzed for this purpose; to test the stability of the vitamins employed; and to find out what

effect the various steps in processing have on the nutritional value of the foods. To assist Professor Harris in carrying out these important investigations the Foundation made a grant of \$14,000 to the Massachusetts Institute of Technology to cover the cost of the equipment, supplies, and research assistance needed for the work.

CORNELL UNIVERSITY: STUDIES IN NUTRITION AS RELATED TO AGING AND LONGEVITY

The great majority of the experiments upon which current nutrition practices are based have dealt with the young and growing organism. It has to a large extent been assumed that rapid increase in weight and size during the growing period is ideal for maximum health both at that time and in adult life, and that the diet giving the best results during the growth period may serve as a guide for optimum nutrition throughout life. The results of investigations by Professor C. M. McCay and his associates in the Laboratory of Animal Nutrition of Cornell University suggest, however, that there is need for a long-time study of the relation of nutrition to the physiology and pathology of middle life and of old age.

There was recently completed at the Laboratory of Animal Nutrition an experiment of ten years' duration in which groups of rats, made to grow slowly by restricting their calorie intake,

were compared with groups growing at a normal rate. It was found that the retarded rats retained their capacity to grow long after the normal period of growth. Animals that were kept under-sized to an age corresponding to ninety years in the life of man were still able to grow when given sufficient calories. They preserved their youthful characteristics much longer than the rats growing normally, and they were less subject to certain diseases of later life. The limited calorie feeding also resulted in the production of a much longer life span in the experimental animals than reported by other investigators for similar animals.

As a whole these studies suggest that optimum growth is not necessarily the most rapid increase in weight and size, that various internal factors such as organ development and function must be taken into consideration also, and that the postponement of senility and the lengthening of life may be favored by a diet which does not produce the most rapid gain in weight. The experiment thus raises many important questions concerning the relation of dietary constituents to health and the life span. These can be answered only by investigations over a long period with many generations of animals.

The Rockefeller Foundation has contributed to the studies of aging and longevity at Cornell University since 1936. During the past year it ap-

propriated \$60,000 toward continued research in this field over a period of fifteen to twenty years. The problems which Professor McCay proposes to investigate during this time include: (1) The relation of diet to fertility. It has been shown that on diets rich in milk and meat male rats retain their reproductive powers later in life than on diets which are adequate, but rich in carbohydrates. (2) The effect of the amount of water consumed upon the life span. High consumption of water seems favorable to a greater life span. (3) The effect of tea, coffee, and alcohol upon the life span. (4) The relation of body fatness and of exercise to longevity. Thin rats live longer than fat ones, and calcification of the heart occurs more frequently in animals that are not exercised. (5) The effect of common salt and calcium phosphate upon aging. Individual men differ as much as five times in their daily intake of salt. (6) Optimum adult consumption of vitamins. It is not known, for example, whether adults need vitamin D, yet they are consuming large amounts of vitamin concentrates in the form of pills. (7) The relation of exercise at different periods of life to the development of senility. (8) Psychological studies of aging rats, an entirely new field of research to be developed in cooperation with Professor G. L. Kreezer of the Psychology Department of the University.

CALIFORNIA INSTITUTE OF TECHNOLOGY
STUDIES OF THE CHEMISTRY OF BIOLOGICAL
SUBSTANCES

The California Institute of Technology is an important center of pure research on the structure and processes of living matter. To further its work in this field the Foundation made two grants to the Institute during the past year. One of these (\$40,000) was to support during the year beginning July 1, 1941, a broad program of research in the chemistry of biologically important substances, under the general direction of Professor Linus Pauling, continuing assistance which has been given since 1938; the other (\$33,000) was for a special study by Professor Pauling, over a three-year period, of the process by which the disease-fighting substances — antibodies — are formed in human and animal blood when germs or virus particles invade the body.

Proteins, such as milk, egg white, or beef, if injected directly into body tissues are as unwelcome to the body as disease organisms, and they too cause it to form protective antibodies. An invading substance which gives rise to the production of antibodies is called an antigen.

Professor Pauling and two of his associates — Professor Dan Campbell and David Pressman — have developed a new theory that antibodies are formed from certain proteins in the blood.

Recently they appear to have accomplished the remarkable feat of producing antibodies artificially in a laboratory flask. These investigators conducted experiments in which they heated serum globulins or treated them with an alkali, thus denaturing them and causing them to unfold or flatten out. Then they removed the denaturing force in the presence of an antigen, and the globulins folded up again; but their structure was modified by the presence of the antigen. It was found that a protein solution treated in this way behaved much like a natural blood serum subjected to the same antigen. In this manner the investigators have apparently prepared synthetic antibodies against several simple chemical antigens.

Space permits only brief mention of a few of the other projects which form part of the program in biological chemistry at the California Institute of Technology. Professor Pauling is heading a group of workers which has been making x-ray studies of the structure of protein constituents — the amino acids. During the past year two of these investigators, Robert B. Corey and Henri A. Lévy, determined the crystal structure of the amino acid, alanine. This achievement has provided the basis for an attack on the structure of the proteins themselves, and the group has begun work on the fibrinous protein, silk fibroin.

Under the direction of Professor László Zechmeister studies are being made on the carotenoids, pigments which occur in plants, particularly in the leaves, and in certain animal tissues. They include the important hydrocarbon, carotene, which is the forerunner of vitamin A and which constitutes the chief yellow coloring matter of carrots, butter, and egg yolk. By means of chromatographic analyses, the carotenoids of California plants and their possible relation to plant genes are being investigated.

Professor Carl Niemann and his assistants are investigating the structure of the cerebrosides and phosphatides — groups of nitrogenous fatty substances occurring in cellular tissue, the former in the white matter of the brain. They are also studying the active iodine compound normally existing in the thyroid gland — thyroxine — in order to determine the necessary structural requirements for thyroxine-like activity. They have synthesized a number of fluorine analogues of thyroxine for the purpose of investigating their physiological behavior.

Professor A. J. Haagen-Smit is investigating plant growth substances and growth inhibitors; the relation between the chemical constitution of the pigments of corn and its genetics; the alkaloids of mescal buttons, which are used as a cardiac tonic and as a narcotic; the active

substance of Indian hemp, also a narcotic; and a substance present in the brain which has a marked action on the heart.

UNIVERSITIES OF ROCHESTER, MINNESOTA, AND COPENHAGEN: TAGGED ATOMS FOR BIOLOGICAL AND MEDICAL RESEARCH

A considerable part of the assistance which The Rockefeller Foundation has given in recent years in the field of the natural sciences has taken the form of contributions to further the adaptation of the tools and techniques of the physical and chemical laboratories to the needs of the experimental biologist. Tools which enable biologists and medical scientists to penetrate into the submicroscopic regions of the living cell and study the hitherto hidden details of cell structure and function have become available through the development of powerful atom-smashing machines, such as the cyclotron and the Van de Graaff generator, and by the discovery of heavy forms of certain chemical elements.

The cyclotron and the Van de Graaff generator furnish artificially radioactive atoms. These are produced by bombarding the common chemical elements with atomic particles which have acquired enormous velocities through the action of powerful electric and magnetic forces within the machines. These radioactive atoms are isotopes

of the natural elements; they have all the chemical properties of the common elements, but they differ in one way: they give off rays similar to those from naturally radioactive substances. This activity can be detected by an instrument known as a Geiger counter and such artificially labeled atoms, when introduced into an organism, can be followed throughout their course in the body. Artificially induced radioactivity is of short duration and harmless to living organisms, yet it lasts long enough for conclusive studies to be made.

Heavy (stable) isotopes of an element, like radioactive isotopes, have the same chemical properties as the common atoms of the element; they differ from the ordinary atoms only in the heavier weight of the atomic nucleus. They are obtained by a chemical separation method which dissociates them from the ordinary element. They can be traced through an organism and identified in its products by spectrum analysis.

Either radioactive or heavy isotopes of an element will combine with any atoms with which the ordinary atoms of the element will unite. Therefore by building into a compound atoms of an element tagged in either of these ways, and feeding this compound to plants or animals, an investigator may determine how the element is utilized in the body and when discarded.

Since 1935 the Foundation has made a number of contributions to extend the use of radioactive and heavy isotopes in biological and medical research. During the past year, in continuance of previous aid, it appropriated \$76,000 to the University of Rochester and \$52,000 to the University of Minnesota for work of this kind, and \$8,000 to the University of Copenhagen for cooperative studies with radioactive elements in the Institute of Theoretical Physics and the Institute of Physiology. No payment was made on the latter grant, however, due to currency restrictions.

At the University of Rochester, under a previous three-year Foundation grant, the natural science and medical departments carried on cooperative programs in which radioactive isotopes were used to trace the course of the simpler inorganic compounds in the body. These departments are now extending their investigations to cover the formation and disposition of the more complex amino acids and various organic compounds. In the newer work both radioactive and stable isotopes are being used as tracers. Included in the program are studies in nuclear physics which will contribute materially to the usefulness of the isotope program in medicine and biology.

At the University of Minnesota and the affli-

ated Mayo Foundation, biological and medical scientists have received Rockefeller Foundation support for cooperative studies with artificial radioactive isotopes since 1937. During the period of the grant the scope of the studies steadily widened until there were sixteen research projects under way and a large number of new investigations planned. In 1941 the Foundation made a second contribution to enable the University to expand this program.

The University of Copenhagen has had Foundation aid since 1935 in a closely integrated program concerned with the physics of artificial radioactive elements, the chemical techniques involved in building these elements into the molecules of various compounds, and the use of compounds labeled in this way for the study of physiological processes. This aid has included contributions toward the building of a cyclotron.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY AND STANFORD UNIVERSITY: DEVELOPMENT OF THE ELECTRON MICROSCOPE

Physics research has recently provided an instrument — the electron microscope — which is bringing within the range of direct visual examination minute structures of matter hitherto inaccessible to the investigator. In the field of biology these include colloidal particles, bacteria,

viruses, and even some large molecules, such as the protein molecules. This microscope uses electron rays to magnify objects, and extends the observation range by a factor of about 50 to 100.

Because of the potentialities of the electron microscope for the advancement of biological and medical research, The Rockefeller Foundation included in its 1941 appropriations two grants for the further development of the instrument. One of these (\$70,000) went to the Massachusetts Institute of Technology for experimental work with the microscope in the Division of Biological Engineering under the direction of Professor F. O. Schmitt, and the other (\$65,000) went to Stanford University for the adaptation of the instrument to various research projects of the natural science departments and the School of Medicine.

UNIVERSITY OF UPPSALA: RESEARCH ON THE PHYSICOCHEMICAL PROPERTIES OF PROTEINS

Knowledge of the properties and behavior of the proteins is fundamental to an understanding of the living organism. Since 1935 The Rockefeller Foundation has contributed toward studies of the physicochemical properties of proteins at the Institute of Physical Chemistry of the University of Uppsala under the direction of Professor The Svedberg. Further aid for this work

during the year 1942 has been provided through a recent grant of \$11,250.

Professor Svedberg began his protein studies in the late 1920's in conjunction with his work on a high-speed centrifuge (the ultracentrifuge) which he was developing for the purpose of separating colloidal particles out of solution and determining their size and weight. The efficiency of a centrifuge in sedimenting the particles in a solution depends in part on the speed of the instrument and the weight of the particles. The heavier the particles the more easily they can be sedimented. If particles of different weights are present each settles at its own rate. Since the proteins were the heaviest molecules that were easily available to Professor Svedberg for use in his centrifuge, it was with these substances that he perfected his techniques. Observing, by means of photographs taken during centrifugation, the rate of settling of molecules of various kinds he was able to determine their weights and dimensions. With these measurements established, he turned to the investigation of other characteristics of the proteins, such as their molecular structure, their chemical reactions, and their behavior under the action of light, heat, magnetic fields, and electrical forces.

The recent work of Professor Svedberg and his associates has included studies of the serum pro-

teins, with detailed analyses of normal serum and immune serum; insulin studies, with a view to finding a relationship between potency and molecular constants; fractionation and study of the protein, carbohydrate, and nucleic acid components of the tubercle bacillus by physicochemical methods and biological tests; investigations of the action of enzymes on antibodies; and virus research. A major result of the virus studies was the isolation, by Dr. Sven Gard and Professors Svedberg and Arne Tiselius, of the virus of a mouse paralysis.

HARVARD UNIVERSITY: CALORIMETRIC STUDIES OF PROTEINS

The proteins are made up of groups of simpler substances, the amino acids, of which more than twenty are known. In the laboratory, investigators have broken down many of the proteins into the amino acids of which they are composed, but they have not been able to reconstruct the proteins again from these particles, for they have not found out just how nature pieces the amino acids together to build up protein molecules. Several theories have been advanced with regard to protein structure, but none of these is definitely established.

One method of learning something about the structure of molecules is to measure the amount

of energy which accompanies the transformation of one chemical into another, for when this is known a great deal can be determined as to the arrangement of the constituent parts of the molecules which make up the original substance and of those composing the substance produced by the change. Energy in the form of heat is associated with all chemical change. In some reactions, such as the union of oxygen and hydrogen to form water, heat is released; in others, such as the breakdown of water to form oxygen and hydrogen, heat is absorbed. Since the amount of heat liberated or absorbed can be accurately measured by a calorimeter, it is possible to determine the quantity and direction of the heat change accompanying a chemical reaction and in this way obtain information on the structure of the molecules of the interacting substances.

At Harvard University Professor George B. Kistiakowsky and his associates in the Department of Chemistry have for many years been studying the heats of organic reactions. Recently they have undertaken the difficult task of measuring the heat changes associated with various protein reactions, for example those occurring in decomposition through hydrolysis. By this work they hope to establish the facts necessary to solve the mystery of protein structure. The Rockefeller Foundation has contributed toward

Professor Kistiakowsky's studies since 1933. Through a grant of \$14,000 during the past year this support will be continued until June 30, 1943.

UNIVERSITY OF CHICAGO: RESEARCH
ON MOLECULAR SPECTRA

A promising method of approach to the better understanding of molecular structure is through the analysis of the spectra of molecules of various substances. Each chemical element gives off or absorbs light in a unique pattern, which is called its spectrum; and no two elements have the same spectrum. With the aid of an instrument known as a spectrograph the spectrum of a substance can be formed and photographed; and on the basis of the data thus made available and other evidence, conclusions can be drawn regarding the composition and structure of its molecules.

The detailed study of the light emitted or absorbed by molecules is so complicated that only with the recent advances in the application of quantum mechanics has it become feasible to infer important facts about molecular structure from molecular spectra, at least in the case of substances of biological interest.

For somewhat over two years a group of physicists at the University of Chicago, headed by Professor Robert S. Mulliken, has had as one of

its projects the experimental investigation of the spectra of a number of simple molecules, and the theoretical interpretation of these spectra. Through this work the investigators hope to establish a basis for the more thorough understanding of the complex molecules which occur in biological systems. The Foundation has given assistance to these studies since 1939. During the past year \$25,500 was appropriated for further support of the work until June 30, 1945.

KAROLINSKA INSTITUTE: STUDIES OF NUCLEIC ACID — PROTEIN RELATIONSHIPS

Valuable contributions to the understanding of the proteins have been made through the study of the nucleic acids. These are complex phosphorus-containing substances, built up of units called nucleotides. They commonly occur joined with proteins in combinations known as nucleoproteins, which are important constituents of cell nuclei.

For several years Professor Einar Hammarsten and his colleagues at the Karolinska Institute in Stockholm have been investigating the structure of the nucleic acids, the nature and amount of nucleotides present in living cells and their affinity for protein, the relation between virus nucleoprotein and the cell's own nucleoproteins, and the method of synthesis of the proteins of cell

cytoplasm, that is, the protoplasm of the cell body, exclusive of the nucleus. Their observations on the production of cytoplasm proteins indicate that these are elaborated through the interaction of nucleic acids of a special type, originating in the membrane of the cell nucleus, and basic proteins produced by a certain part of the chromatin of the nucleus.

The Rockefeller Foundation has contributed toward research on nucleic acid — protein relationships and allied work at the Karolinska Institute for ten years. During the past year it made two appropriations, totaling \$11,125.

UNIVERSITY OF OXFORD: RESEARCH ON HORMONE STRUCTURE

In the Dyson Perrins Laboratory at the University of Oxford a program of research in organic chemistry as applied to biological problems is being continued, under the direction of Sir Robert Robinson, despite the difficulties imposed by the war. During 1941 fifteen papers dealing with research on hormone structure were submitted for publication.

The Foundation's cooperation in Professor Robinson's work goes back to 1933, when a small grant was made to the University of Oxford for equipment and special supplies for research on

the chemistry of organic coloring substances of plants and the chemistry of vitamins related to these substances. In 1936 the Foundation made a second grant, available over a five-year period, to enable Professor Robinson to study protein and hormone structure. In 1939, \$115,000 was provided to assist the University in building and equipping a new wing for the Laboratory to be devoted to special work in connection with biochemical research, such as microanalysis, spectrographic analysis, and centrifuge studies. In 1941, \$3,240 was appropriated for continued support of studies on hormone structure at the Laboratory during 1942.

WASHINGTON UNIVERSITY: STUDIES OF CARBOHYDRATE METABOLISM

Carbohydrates are stored in the body tissues, chiefly in the liver and the muscles, in the form of glycogen, or body starch. Through the agency of substances known as enzymes, glycogen is broken down in the body into simpler substances, and these are in turn built up into other carbohydrates necessary to body function. In the liver the breakdown of glycogen results in the formation of blood sugar; in the muscles it leads to the formation of lactic acid.

Studies of the formation of lactic acid or blood sugar, carried out on intact animals or organs,

show the effect of a series of enzymatic reactions, but they do not reveal the intermediate steps involved. Much has been learned of these separate steps in the past few years, however, through experiments which Professor Carl F. Cori and his associates in the Department of Pharmacology at Washington University have carried out with extracts of muscle and liver tissue. These investigators isolated two of the enzymes concerned with the formation of lactic acid from glycogen and studied their properties and kinetics. They obtained evidence that these enzymes are active as well in the formation of blood sugar in the liver; and they showed that in spite of the different end products of glycogen breakdown in liver and muscle, the initial stages of this process are the same in these two tissues and in other tissues.

The Rockefeller Foundation has contributed toward Professor Cori's work since 1938. During the past year it appropriated \$15,000 for further support over the three-year period ending June 30, 1944.

UNIVERSITY OF MINNESOTA: RESEARCH ON NERVE AND MUSCLE EXCITATION

Gross nervous and muscular function and malfunction are comparatively well understood at the present time; but little is known, in terms of molecular behavior, as to why a nerve carries

messages or why a muscle contracts. Until recently, investigation of the minute intracellular mechanisms and activities upon which nerve or muscle excitation depends presented baffling difficulties; but now, through the availability of new tools and methods perfected in the physical laboratories, accurate measurements of these structures and processes and new interpretations of the findings have become possible.

At the University of Minnesota there has been established a laboratory of physiological biophysics, under the direction of Professor Otto H. Schmitt, where groups representing the fields of physics, chemistry, physiology, and physical chemistry have joined forces for comprehensive research on the physical bases of nerve and muscle excitation. A considerable amount of special equipment has been constructed for this project and new experimental methods have been developed.

Most of the work will be done on nerve tissue, since here the phenomena of excitation are more easily traceable. Measurements will be made of resting and action potentials, action currents, and electrical energy turnover, especially in single fiber nerve preparations. These measurements, carried out under the influence of varied physiological conditions, will help to indicate the location and chemical nature of the impulse.

Electrical impedance measurements will be made to determine the physicochemical nature and location of the reactants involved in excitation. There also will be combined electrophysiological and chemical measurements, the latter involving the use of radioactive and stable isotopes.

The Rockefeller Foundation has appropriated \$17,000 to the University of Minnesota toward the support of this project over a three-year period beginning July 1, 1941.

COLUMBIA UNIVERSITY: STUDIES OF ELECTRICAL PROPERTIES OF CELLS AND TISSUES

Program under the direction of Professor Kenneth S. Cole of the Department of Physiology of Columbia University has as its ultimate aim the determination of the molecular composition and structure of the cell membrane, and the relation of the membrane to cell function.

Professor Cole finds that the measurement and analysis of the electric current flow through the cell membrane provide the most valuable criterion for a study of this kind, and that the nerve fiber of the squid is the most suitable material with which to work. He has developed three techniques for measuring the electrical properties of this fiber. These are transverse impedance, longitudinal impedance, and capillary electrode potential. He uses alternating currents whose

frequencies vary over the wide range from 35 cycles a second to 16,000,000 cycles. He has measured the ion permeability of the nerve fiber, that is, the ease with which ions may be forced through it, and he has found this to be closely correlated with the life and activity of the fiber. Also, he has obtained considerable evidence as to the nature of the inert passive structure of this membrane.

The work on nerve fiber has indicated that the techniques developed can be used to detect and measure changes in the ion permeability of the membranes of other cells and tissues. Therefore, in addition to continuing his work on the squid nerve fiber, Professor Cole plans to investigate the ion permeability of muscle cell membrane in anesthetized animals and observe the effects of alterations in salt and water balance. For this enlarged program additional research personnel and equipment will be required. To assist the University in furnishing these services and apparatus the Foundation will provide \$15,400 during the three-year period ending October 31, 1944.

CARNEGIE INSTITUTION OF WASHINGTON
DROSOPHILA STOCK CENTER

During the past seven years the Foundation has assisted the American Society of Naturalists

and the Carnegie Institution of Washington in the development of a *Drosophila* (fruit fly) Stock Center and Information Service at Cold Spring Harbor, New York. In 1941 it made an appropriation of \$9,000 to the Carnegie Institution for use over a period of five years for the salary of the curator of the Stock Center and to cover the cost of a *Drosophila* Information Service Bulletin.

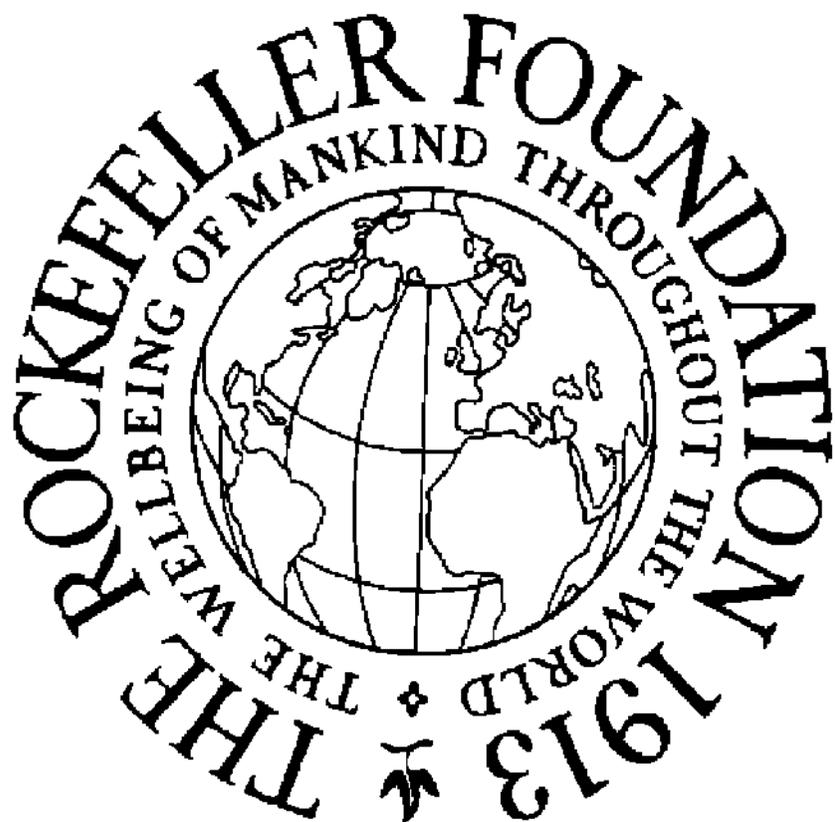
Many of the fundamental discoveries in experimental evolution and heredity have resulted from work with the fruit fly. Geneticists have discovered and preserved over five hundred different genes and combinations of genes in their *Drosophila* breeding stocks; and these stocks, together with maize stocks, constitute the most valuable material known to science for the study of the mechanism of heredity. The *Drosophila* Stock Center at Cold Spring Harbor and a similar center at the California Institute of Technology were established for the purpose of preserving all known stocks of fruit flies at two important research centers and supplying these stocks and information about them, free of charge, to geneticists in various parts of the world who require such material, thus obviating the need for duplication of stocks in numerous laboratories. By acting as clearinghouses for new information the stock centers help to keep

a unified system of *Drosophila* nomenclature, disseminate information on research techniques, and facilitate the exchange of stock cultures for research purposes by publishing a list of stocks kept at various laboratories.

UNIVERSITY OF TEXAS: RESEARCH IN THE GENETICS OF *DROSOPHILA*

At the University of Texas Professor J. T. Patterson and his associates in the Department of Zoology are using *Drosophila* of many varieties and species in a study dealing with the basic question of how new forms of life originate in nature.

More is known about the genetics of *Drosophila* than of any other living form. The investigator is therefore able to check and analyze against known varieties and species of this genus any strain which he may capture in nature, and thus determine whether the strain represents a new variety or species. Professor Patterson and his group are collecting and analyzing in this way as many varieties and species of *Drosophila* as can be found in Texas and the surrounding area. Already they have collected over a million flies of this genus, which fall into some twenty natural groups and include over forty new species and numerous new varieties. In their research on the



Photograph Excised Here

General view of genetics laboratory, and truck for collecting *Drosophila*, University of Texas.

origin of species they are using the most efficient modern techniques of cytology and genetics.

To assist the University of Texas in the support of this project during the three-year period beginning June 1, 1941, the Foundation made an appropriation of \$34,520, to be used for the salaries of research assistants, the purchase of equipment and supplies, and for publication.

LONG ISLAND BIOLOGICAL ASSOCIATION

SUMMER SYMPOSIUM

A symposium bringing together investigators actively interested in selected fields of quantitative biology is held each summer at the Biological Laboratory in Cold Spring Harbor, under the auspices of the Long Island Biological Association. About thirty persons, acknowledged experts in the field which is to be the subject of discussion, are invited to each summer symposium. In accordance with a program prepared in advance, one or two papers are read each day, followed by a general discussion. The papers and abstracts of the discussions are published in an annual volume.

The Foundation has contributed toward the support of the symposia since 1934. During the past year \$6,500 was appropriated toward the cost of the 1941 session, which covered a period of



Photograph Excised Here

Commission of American specialists surveying agriculture in Mexico during the summer of 1941.

two weeks and was devoted to the consideration of the structure and organization of the genes and chromosomes.

GRANTS IN AID

In addition to the support of research in fields of the natural sciences discussed in the preceding pages, the Foundation made thirty-nine grants in aid during the year, ranging in amount from \$410 to \$7,500 and totaling \$134,490. Thirty-one of these grants were for research and were distributed according to subject as follows: biochemistry, 7; general physiology, 6; genetics, 6; embryology, 4; molecular and mathematical biology, 3; biophysics, 2; organic chemistry, 1; physics, 1; and astrophysics, 1. Of the 8 remaining grants, 1 went to the National Research Council's Committee on Scientific Aids to Learning for the purchase of microfilm reading machines for use in connection with an educational program of the *Journal of Mathematical Reviews*, 5 were for the traveling expenses of European scholars coming to the United States to fill academic posts, and for the traveling expenses of their families, and 2 were for the expenses of scholars from England and from Canada coming to the United States on scientific missions. The grants for the support of research were distrib-

uted by country as follows: the United States, 13; England, 9; Mexico, 2; Sweden, 2; and Argentina, Canada, Peru, Scotland, and Switzerland, 1 each.

FELLOWSHIPS

Because of the war the Foundation has been obliged to curtail its fellowship program. In the natural sciences 18 fellowships were supported and administered in 1941, 4 of them new grants and 14 continued from previous years. Eight fellowships were in physiology, 2 in genetics, 2 in mathematics, and 1 each in biochemistry, organic chemistry, physical chemistry, biophysics, embryology, and zoology. The fellows represented 7 countries: 7 citizens of the United States, 5 from Great Britain, 2 from Denmark, and 1 each from Mexico, the Netherlands, Norway, and Peru. Fifteen of them spent their entire fellowship period in the United States, 1 studied in both the United States and the Canal Zone, 1 in Sweden, and 1 in Switzerland.

In addition to granting fellowships to individual workers the Foundation contributes funds to the National Research Council for a fellowship program in the natural sciences. During 1941 the Council supported 44 fellowships under this arrangement. Twenty-one of these were awarded in 1941, and 23 had been granted in previous

years. The following fields of study were represented: chemistry, 11; zoology, 10; botany, 6; physics, 5; geology and mathematics, 4 each; astronomy, 2; geography and psychology, 1 each.

OTHER GRANTS

NATIONAL RESEARCH COUNCIL

GENERAL PROGRAM AND FELLOWSHIPS

The Rockefeller Foundation included among its 1941 appropriations a few grants for the assistance of projects outside the scope of its program in experimental biology. Two of these went to the National Research Council: \$180,000 for the support of fellowships in the natural sciences during the three years beginning July 1, 1943; and \$100,000 for administration expenses, for the support of conferences, special studies, and committees organized by the council, and for contributions to international scientific projects. Of this latter sum, \$75,000 is payable at the rate of \$25,000 during the three years beginning July 1, 1942, and \$25,000 as an emergency fund available upon request during the same period.

THE ROYAL SOCIETY, LONDON

AID FOR SCIENTIFIC JOURNALS

British scientific journals have been faced with serious financial problems due to the war. These

difficulties have resulted chiefly from loss of foreign subscriptions and the increase in printing costs.

The British scientific periodicals are of world-wide importance, since in addition to English papers, articles from the continent of Europe, from Canada, and from the United States are published. The Royal Society agreed to administer a fund to be apportioned among a number of these journals. The Foundation accordingly made a grant of \$12,500 to the Society for this purpose.

UNION OF AMERICAN BIOLOGICAL SOCIETIES SUPPORT OF BIOLOGICAL ABSTRACTS

In 1925 eighteen American biological societies united to publish a journal of biological abstracts. The cooperation of organizations in foreign countries was obtained in the development of the project; the services of American and foreign correspondents and librarians were secured to scan 5,000 or more scientific journals; a staff of editors was selected to prepare abstracts; the University of Pennsylvania provided headquarters for the publication of the journal; and The Rockefeller Foundation appropriated \$350,000 to aid the project for a period of ten years. The first number of *Biological Abstracts* appeared in December 1926.

There are now some thirty-five biological societies organized into the Union of American Biological Societies, which has as its primary purpose the support of the *Abstracts*. The war practically eliminated income from foreign subscriptions, and despite rigid retrenchments there was a deficit of \$3,000 a year. In order that the important services of the *Abstracts* might not be curtailed, the Foundation made a grant of \$15,000 to the Union of American Biological Societies in 1941 to aid in meeting publication costs during the period of the war emergency.

COMMISSION TO SURVEY AGRICULTURE IN MEXICO

The Rockefeller Foundation has for many years cooperated with the Mexican Government in public health work. In May of the past year \$10,000 was appropriated for the expenses of a commission of American specialists to make a survey of Mexican agriculture.

Members of the commission were Elvin C. Stakman, professor of plant pathology at the University of Minnesota; Paul C. Mangelsdorf, professor of plant genetics and economic botany, Harvard University; and Richard Bradfield, professor of agronomy, New York State College of Agriculture, Cornell University. After spending the months of July and August in Mexico this

group submitted a report of its findings and made recommendations which are now under study by the Foundation.

CHINA MEDICAL BOARD, INC.

HUMAN PALEONTOLOGICAL RESEARCH

Since 1926 The Rockefeller Foundation has given support to human paleontological research in Asia, carried on under the auspices of the Peiping Union Medical College and the Geological Survey of China, and directed first by Professor Davidson Black, and since Dr. Black's death, by Professor Franz Weidenreich. In 1941 the Foundation made an appropriation of \$30,000 to the China Medical Board, Inc., available during the period ending December 31, 1943, to complete the preparation and study of the fossil materials now above ground, and to publish reports.

THE SOCIAL SCIENCES

THE SOCIAL SCIENCES STAFF

During 1941

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Associate Director

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TRACY B. KITTREDGE

STACY MAY¹

ROGER EVANS²

Consultant

ANNE BEZANSON

¹On leave since June 13, 1940.
²From September 1941.

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THE SOCIAL SCIENCES

DURING 1941 the Foundation appropriated \$1,130,800 for support of its program in the social sciences. Seven grants totaling \$347,530 were made in the field of international relations to the following institutions: the Council on Foreign Relations, the Foreign Policy Association, the Institute of International Studies at Yale, the New School for Social Research, and the University of Denver.

Seven grants totaling \$230,450 were made for studies concerned with the functioning of economic, political, and social processes. These studies were being carried on at the University of Minnesota, the Massachusetts Institute of Technology, the National Bureau of Economic Research, Dalhousie University, and the State Charities Aid Association of New York. A grant of \$45,000 to the University of Pennsylvania was rescinded because the director of the proposed research was called to government service.

In 1941 the Social Science Division provided \$50,000 with the object of giving our own scholars an opportunity to enrich their research by pursuing studies in Latin America.

During 1941 grants carrying general support and totaling \$224,300 were made to the Social

Science Research Council, the University of Chicago, and the University of Oxford.

For the conservation and development of scientific personnel, three items totaling \$375,000 were granted. These include the fellowship and grant in aid program of the Social Science Research Council and the Foundation administered fellowship and grant in aid programs.

INSTITUTIONAL GRANTS

COUNCIL ON FOREIGN RELATIONS

The continuance on an expanded basis of the Council's program of study groups and research in problems of the future peace settlement was indicated. A grant of \$42,000 for the year 1941 was supplemented in November 1941 by one of \$61,700, for the balance of that year and for 1942. A number of study groups have been examining intensively some of the problems that will confront the peace conference at the conclusion of the present war. With the United States now an active war participant, the contribution which such study by an unofficial agency can make to the government becomes increasingly important and helpful, in addition to the obvious need of such information in future peace negotiations.

Each study group consists of specialists in

designated areas in the various problems to be dealt with. The program permits the continuous examination of events related to problems of special interest to this country, and the assembly and interpretation of research material. Each group works under the leadership of a rapporteur. A steering committee composed of the rapporteurs and the leading officers of the Council is responsible for the general planning, the coordination of the activities of the groups, and the interchange of material and points of view.

More than 250 memoranda on special subjects had been prepared before the end of 1941. These had been furnished to the government services charged with handling the various questions discussed. Many representatives of these services had also participated in the discussion of the study groups.

FOREIGN POLICY ASSOCIATION

In addition to a one-year grant of \$25,000 for its Department of Popular Education, the Foreign Policy Association was given \$110,000 over a two-year period ending December 31, 1943, toward its general budget.

The former project is concerned primarily with the organization of educational work in relation to world problems, collaboration with colleges, schools, forums, women's clubs, youth groups, labor programs, agricultural clubs, etc.

Its purpose is the preparation and distribution of educational material in the field of international affairs and the encouragement of discussion of such material. A special series of "Headline Books," published since 1935, is one aspect of the publication program. At least fifteen titles have been added to the list over the past three years. Study materials which supplement these books are used by various groups throughout the country. Several of the "Headline Books" have been translated into Spanish and distributed in South America.

It is hoped to establish effective bases of cooperation with leading national organizations serving the cause of public education in the United States, and with government agencies actively concerned with increasing general knowledge and understanding of problems of American foreign policy.

In view of the current world situation, the Foreign Policy Association will concentrate its research during the coming year in three main fields: (1) developments in the occupied countries of Europe; (2) political and economic trends in Latin America; and (3) problems of postwar reconstruction.

In addition to its research activities, the Association furnishes speakers to educational and public policy organizations, arranges luncheon

discussions, and conducts a series of broadcasts now distributed through seventy stations. Its Washington Bureau collects first-hand information on current issues of American foreign policy. The Association also maintains a Latin American Information Service, which published until the end of 1941 its bi-weekly *Pan American News*, furnishing background material on political and economic trends in Latin American countries.

**YALE UNIVERSITY: INSTITUTE OF
INTERNATIONAL STUDIES**

For the period beginning July 1, 1941, and extending to June 30, 1944, the Foundation appropriated the sum of \$51,500 toward the research program of Yale's Institute of International Studies, under the Department of International Relations.

The Institute, founded in 1935, had the following objectives: to promote basic research in international relations with particular attention to studies designed to clarify American foreign policy; to develop a broad and well-rounded program of education and training in international relations on both the undergraduate and graduate levels; to evolve procedures of coordination and integration among the various social sciences in the analysis of international problems; and to aid in the postdoctoral training of younger

scholars in the general field of international relations.

The research program of the Institute included many projects centering around problems of American foreign policy, but designed also to interpret the role of power in international affairs, and the relation of national policies to military policies and principles of grand strategy.

Four major studies have been published and several others are nearing completion. Certain of the projects are being carried on in conjunction with government departments. Among the specific subjects proposed for study are: problems of national defense; United States and the future order of Europe; hemispheric unity; the geographic basis of foreign policy; and inter-American trade relations.

The program of education has been closely coordinated with the research program. The projected program for the next few years will not represent any substantial change in policy. A combined social science approach will stress analytical rather than historical methods.

NEW SCHOOL FOR SOCIAL RESEARCH: GRADUATE FACULTY OF POLITICAL AND SOCIAL SCIENCE

The need has been felt for some time, by scholars and public officials, for increased knowledge and an adequate interpretation of the revolu-

tionary developments which have taken place in Germany and Russia, and which are constantly altering the structure of those countries. Materials coming from the totalitarian countries are limited in various ways so that it appears almost impossible to clarify the issues without previous experience and contact with people from these areas.

The Graduate Faculty of the New School has on its staff scholars of reputation from both Germany and Russia who have the scientific competence to undertake the study, for which there has been appropriated the sum of \$40,000. The study of economic and social controls, especially as related to the position of labor in totalitarian countries, will be the main subject of research over a two-year period. It is believed that the labor policies of Germany and Russia can be better understood if presented in the context of the all-embracing state control of the two countries. Original German and Russian sources will be used to a large extent.

A grant of \$13,000 has also been made available for general research assistance to members of the Graduate Faculty who are engaged in independent projects.

UNIVERSITY OF DENVER

The sum of \$17,650 was voted to the University of Denver for a systematic study of the

economic methods of National Socialist Germany. This study was to have been made by Mr. Douglas Miller, who had been commercial attaché of the American Embassy in Berlin for fifteen years, and more recently a member of the staff of the School of Commerce of the University of Denver. The study was planned to include such subjects as labor, agriculture, industry, domestic and foreign trade, transportation, and finance.

Because of his former experience, Mr. Miller was regarded as being in an exceptional position to undertake this study. He also had personal knowledge of official and unofficial sources of pertinent information in this country. However, as he was called into government service the grant was subsequently canceled. A payment of \$4,329 had been made for preliminary work.

UNIVERSITY OF MINNESOTA

Family and Individual Income Study. The sum of \$35,000 was appropriated for an analysis of the distribution of family and individual income in Minnesota. This study is expected to be completed in slightly less than two years.

Analyses of income derive their significance from the strategic part played by income in our economic and social system as a measure of the social product, and also because of the relation-



Photograph Excised Here

Discussion group, Yale Institute of International Studies.



Photograph Excised Here

Staff working on the St. Paul employment and unemployment study, University of Minnesota.

ship of the distribution of income to expenditure and saving.

The University of Minnesota had access to some unusual basic data, and under an earlier grant from the Foundation had explored their potentialities and planned a research program involving seven interrelated studies. Cooperating are a local advisory committee and several outstanding scholars in the field of income research serving as a national technical advisory committee.

The proposed study is one in a general pattern which The Rockefeller Foundation has been supporting in this field in states where unusual bodies of income data are available. Minnesota is fortunate in having at its disposal field survey data, state income tax returns, and covered earnings data from state unemployment compensation records.

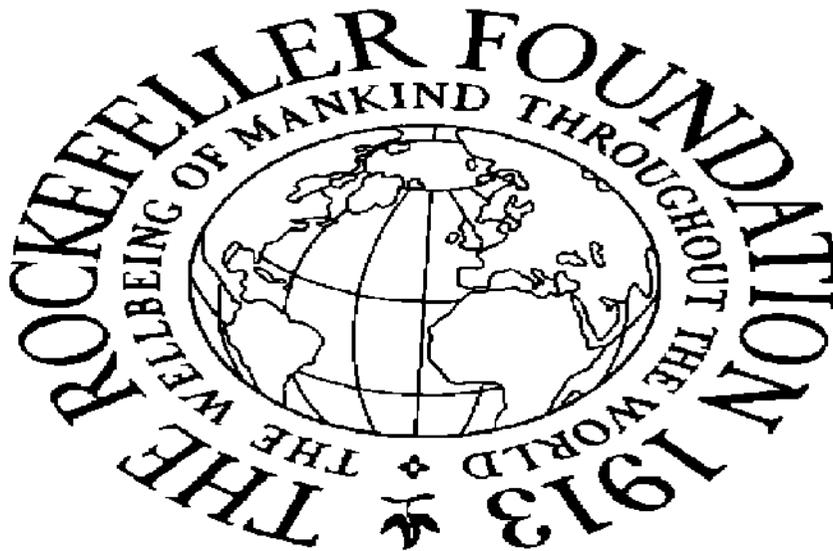
This type of study may have national as well as local significance.

Study of Employment and Unemployment in St. Paul. In June 1940 a so-called pilot study was made to discover possible sources of relevant information on the problem of the vastly greater apparent unemployment and relief load in 1939, when a larger percentage of the population of the city was employed than in 1930. It was believed that the results in St. Paul might have significance for many other cities.



Photograph Excised Here

National Bureau of Economic Research. Section of quarters at "Hillside," New York City.



Photograph Excised Here

Quizzing local citizenry of Tepames, Colima, Mexico, in connection with research in the agricultural geography and culture history of western South America.

To evaluate the explanations which were arrived at in this preliminary study, five major projects were outlined, as follows:

1. Development of continuing indexes of employment, hours, wage rates, and real earnings.
2. Maintenance of a periodic sampling survey of the labor supply and population.
3. Measurement of functions in the labor marketing process.
4. Study of the demand for labor; shifting demands; and the influence of industrial transition.
5. Study of relief policies, local, state, and national, as they affect St. Paul.

Even though employment has risen throughout the country as the result of the defense program, the postwar world may see the return of vast unemployment and huge expenditures for relief. In that event such an analysis as proposed should prove of value to persons and communities concerned with the formulation of relief policy.

For this study, there was appropriated the sum of \$50,450 for one year beginning September 16, 1941.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
INDUSTRIAL RELATIONS SECTION

Funds to the amount of \$30,000 have been granted toward the support of research of the

Industrial Relations Section in the economics of technological change, over a three-year period beginning July 1, 1941. The Foundation funds will be used for research and secretarial assistance, and travel.

With the development of the Industrial Relations Section and the initiation of a program of statistical research, many of the engineering faculty at the Massachusetts Institute of Technology have become interested in undertaking a research program concerned with the economic problems of the industries with which they have technical acquaintance.

Three projects have been proposed for immediate study: (1) Factors in the individual firm influencing technological change involving substantial capital investment. Emphasis will be placed on the character and timing of technological change under war conditions compared with peacetime procedures in one or two companies in the paper industry as well as in some industries whose production is important to the defense program. (2) Overall statistical studies of innovations. An effort will be made to clarify the role of invention in the business cycle. (3) Case studies of union management (or employee management). Relations and regulations concerning the introduction of technological change.

There has been little work done on the economics of technological change. These proposals are timely and will permit the two disciplines, economics and engineering, which have tended to work in independent channels, to develop a series of joint preliminary studies. The results of such studies should aid economists in interpreting the processes of technological change and their economic and social implications.

NATIONAL BUREAU OF ECONOMIC RESEARCH FINANCIAL RESEARCH

The program of financial research of the Bureau has been in active operation for approximately three years. It was initiated as an experiment in continuous research into basic problems of banking and finance and undertaken through the efforts of the Association of Reserve City Bankers, and with the cooperation of federal agencies.

Three major studies have been undertaken: (1) Consumer credit and installment financing. (2) The functioning and behavior of the corporate bond market, 1900-1939. (3) Changes in capital requirements of business, the future of the commercial loan, and the demand for short-term capital loans.

Men experienced in the field of finance and credit are cooperating with the Bureau, as well as

assisting the staff in the planning of new research problems. Through the cooperation of the government and private financial interests, there has been made available a richness of material that is invaluable. Besides the basic importance of this work it is also influential as offering training opportunities by furthering the advanced scientific development of a group of younger men.

Toward the support of this program in financial research, the Foundation appropriated \$70,000 for use during 1941 and 1942.

UNIVERSITY OF PENNSYLVANIA

The sum of \$45,000 was appropriated for an exploratory program of research in distribution, over a three-year period, under the direction of Professor Reavis Cox of the Wharton School of Finance and Commerce. The broad problem to be explored was that of efficiency and waste in distribution. An intensive study of the processes of a single market would open up the area and provide the groundwork for an analysis of what goes on among distributive agencies.

It was hoped to evolve scientific criteria of efficiency in distribution and apply them to specific areas or aspects of marketing. Initial emphasis was to be placed upon techniques. But as Professor Cox was called into government service the grant was rescinded.

DALHOUSIE UNIVERSITY

Twenty thousand dollars were granted for a program of training and research in the field of public administration, over a two-year period from September 1, 1941.

This grant is to permit the continuation of the program in public administration, which had its beginning in 1936, and which was intended to provide an experiment in teaching and research with an exchange of information between the University and government agencies in the Maritime Provinces of Canada. Dalhousie at the present time is the only university in Canada offering a special course of training for civil servants. Honors courses of five years are intended to give a background of history, economics, commerce, political science, and law rather than administrative techniques. A special knowledge of forms of Canadian government is also offered. Prior to the outbreak of the war, some experimental training for in-service employees was given.

The research program, at first largely informational, has resulted in four formal studies. Among the projects in preparation are (1) a study of the redistribution of functions between the provincial and municipal governments in the Maritime Provinces; and (2) a study to discover the effects of the war on the Maritime economy.

STATE CHARITIES AID ASSOCIATION

The State Charities Aid Association is an unofficial, nonpartisan, and nonsectarian organization of citizens devoted to the purpose of improving the quality and efficiency of governmental services for health and welfare.

In 1941 the sum of \$25,000 was appropriated to this organization toward the expenses of local citizens' public welfare committees established in New York State, — in particular for the salaries and expenses of the regional secretaries.

In 1938 an effort was made to stimulate public interest in the need for informed public opinion in the welfare field. Citizens' committees were set up through which it was designed to follow the administration of welfare laws, to inform the public of the operation of welfare activities in the respective counties, to seek for the promotion of higher standards in local administration, and to cooperate with the central association in the formulation and sponsorship of social legislation. To date, committees have been appointed in twelve counties in up-state New York, and more than five hundred citizens have participated in the committees' activities.

A Committee on Child Welfare has now been established in New York City as the first unit of a citizens' committee on public welfare, to assist the Children's Division of the Department of

Public Welfare in interpreting its problems to the community.

UNIVERSITY OF CHICAGO
DIVISION OF THE SOCIAL SCIENCES

The Division of the Social Sciences was granted \$150,000 for research use over a three-year period. Of this amount, \$5,000 a year was given on the basis that an equal amount be obtained from other sources.

Three major undertakings in the fields of sociology, social anthropology, and psychology are being carried out under this grant. One is a project to study the basic characteristics of industrial metropolitan society with Chicago as the laboratory. An attempt will be made to set in opposition to each other the basic characteristics of primitive society and of the modern metropolitan society. Such comparative studies will provide a framework for bringing together the findings of independent investigations. There will also be brought into focus many of the situations which differentiate the form of modern urban living from the way of life of agricultural and peasant societies. It is hoped to use and further perfect the techniques already developed for analyzing the characteristics of communities.

The second project involves the continuation of the work in the field of scientific prediction of

human behavior. The earlier experimentation with studies of prisoners on parole led to the techniques of indices which, refined and supplemented, will now be applied to the study of one particular form of social adjustment — i.e., the prediction as to the continuance and breaking up of marriages and the degree of happiness obtained in marriage.

In the field of psychology, there will be continued the analysis of human abilities by the multiple factor methods. By means of new batteries of tests and the statistical technique of factor analysis, further contributions are anticipated in the breaking down of fundamental human abilities into constituent elements.

Selected independent research enterprises will also be furthered under this grant.

UNIVERSITY OF OXFORD

SOCIAL STUDIES RESEARCH COMMITTEE

The Foundation has contributed to a research center in the social sciences at Oxford since 1934. During 1941 an allocation of \$24,300 was made for one year to Oxford's Social Studies Research Committee for the continuation of its program.

Since 1934 this Committee had sought to supplement theoretical teaching and research by programs of inductive and factual research. Many of the projects originally initiated with

allocations from the Foundation's appropriations have since been incorporated into continuing programs supported by University or College budgets. This has been true notably of programs of colonial and anthropological studies; of British Commonwealth governmental problems; and in national and local administrations in England.

The plans for the activities of Nuffield College would have insured the continuation on a permanent basis of nearly all projects originally initiated by the Social Studies Committee. The formal inauguration of Nuffield College has been postponed until after the war but part of the income from the endowment funds of the College are already being used for new projects related to problems resulting from the war.

The most significant new development sponsored for some years by the Social Studies Committee has been the Oxford Institute of Statistics working under the direction of a committee of economists. Three-fourths of the current appropriation for social studies at Oxford is being used for the support of this Institute or for economic research projects for which the Institute provides the necessary facilities. Many of the projects initiated by the National Institute of Economic and Social Research and many members of its staff have now been transferred to the Oxford Institute of Statistics. This has made Oxford an

important center in England for research on wartime and postwar economic problems. The Institute has been designated as the national center to constitute a war archive of economic and statistical data.

SPECIAL GRANT IN AID FUND IN THE SOCIAL SCIENCES FOR STUDY IN LATIN AMERICA

A special grant of \$50,000 available until September 30, 1942, was provided in 1941 to aid the Foundation in exploring the needs and possibilities for social science research in Latin America. The plan contemplated arrangements whereby several competent social scientists would go to Latin America and spend a semester or a year upon some problem in which the particular scholar had a scientific interest. The scholars would travel independently, making any necessary arrangements themselves with Latin American institutions.

Such a plan would strengthen the interchange of interests between the scientists and the institutions, and increase the understanding between scholars in Latin America and the United States.

The program is regarded as a trial method of securing needed research data rather than as the beginning of a developed program.

To date, four grants have been made from this

fund, as follows: to Duke University, to enable Professor Earl J. Hamilton to spend eight months in South America studying the economic background of the Monroe Doctrine; to Northwestern University, to enable Professor Melville Herskovits to study the Negro populations of Brazil; to the University of Michigan, to enable Professor Robert Hall to study Oriental settlement in the Western Hemisphere; and to Professor Carl O. Sauer of the University of California, for research in the fields of agricultural geography and culture history in the countries of western South America.

FELLOWSHIPS

In 1941 the Foundation appropriated \$50,000 for the support of fellowships in the social sciences during 1942. It administered twenty-six fellowships from funds which had been allocated previously. Of these, ten (one a technical reappointment) were new appointments in 1941, and sixteen were carried over from previous years.

The war situation continues to affect the fellowship program, and it is now almost impossible to provide awards for Europeans. The tabulation at the end of this section shows the downward trend since 1939.

Summarized below are the countries represented by the persons receiving fellowships, their

fields of research, and the countries in which they studied:

<i>Field of Interest</i>	<i>No. of Fellows</i>	<i>Country of Origin</i>	<i>No. of Fellows</i>	<i>Country of Study</i>	<i>No. of Fellows</i>
Economics.....	8	Australia.....	1	Australia and	
Industrial Relations.....	1	Denmark.....	1	New Zealand.	1
International Relations..	8	France.....	3	South America.	3
Political Science.....	3	Great Britain.	2	United States..	22
Public Opinion Research.	1	Mexico.....	3		
Social Psychology.....	1	Norway.....	2		
Sociology, including Social		Sweden.....	1		
Work.....	4	Turkey.....	1		
		United States.	12		
	—		—		—
	26		26		26

In addition to these fellowships which are directly administered by the Foundation, the Social Science Research Council administered 48 awards in 1941, — 18 postdoctoral and 30 predoctoral. Of these, 20 were new awards; 2 were to citizens of Canada. Funds for these fellowships were allotted previously, and in 1941, a continuing grant, of \$75,000, was made to cover appointments from April 1, 1942, to March 31, 1943.

Formerly most postdoctoral fellows studied in Europe, and the predoctoral in American institutions or centers. In view of the war, the present policy of the Council is to appoint an increased proportion of predoctoral fellows. The following tabulation indicates the fields of study in which these persons have received research training in the United States and other countries:

<i>Fields of Study</i>	<i>No. of Fellows</i>	<i>Countries of Study</i>	<i>No. of Fellows</i>
Anthropology.....	7	Alaska.....	1
Economic Geography.....	1	Argentina.....	3
Economics.....	22	Brazil.....	3
History.....	2	Bolivia.....	1
Political Science.....	5	Canada.....	1
Psychology.....	4	Chile.....	2
Sociology.....	6	Ecuador.....	1
Statistics.....	1	Guatemala.....	1
		Mexico.....	1
		Peru.....	2
		Puerto Rico.....	1
		United States (continental)	39
		Uruguay.....	1
	—		—
	48		57*

The number of persons who have received fellowships in the social sciences from The Rockefeller Foundation and the Social Science Research Council since 1924 is given below. The new appointments are listed in the years shown:

	1924	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	Total
Rockefeller Foundation	246	69	78	48	47	40	22	24	29	21	11	9		644
Social Science Research Council...	178	44	54	15	14	13	19	12	21	29	29	20		448†

GRANTS IN AID

The fund of \$125,000 provided for grants in aid in the social sciences for 1941 was insufficient to meet the needs of the program occasioned by emergencies and was subsequently increased by

*Fellows studying in more than one country account for the discrepancy.
† Includes 107 fellowships in agricultural economics and rural sociology.

\$50,000. In December 1941, \$125,000 was appropriated for use in 1942.

An appropriation continued the Foundation's support of the Social Science Research Council's grant in aid program in the amount of \$75,000 for three years.

The distribution by countries of the 58 separate grants made by the Foundation was as follows: England, 3; Switzerland, 2; Brazil, 2; Canada, Argentina, and Colombia, 1 each; and the United States, 48.

The emergency has required the continuance of assistance for some of the refugee scholars. Of the total grants, thirty were made to nine different institutions to aid in financing the salaries of these scholars and in some cases to provide transportation for recent arrivals.

Interest in Latin America, in addition to the special grant in aid fund described elsewhere, is indicated in three grants to universities in Argentina, Brazil, and Colombia toward the salaries of European scholars who have secured posts there; in aid for books, journals, and to graduate and undergraduate students working on small projects in the social sciences at the School of Sociology and Political Science of São Paulo; and in a trip to South America by the editor of the Foreign Policy Association.

Some of the studies which were aided under

the grant in aid program in the United States include: Austrian price control during the first World War; recent changes in the relations between governments in war and peace and the effect of such changes on traditional concepts and rules of international law still applied by governments; issues involved in the present conflict and postwar problems; labor, socialist, and revolutionary movements of the nineteenth century; claims and aspirations of different European nations, and their relationship to our current foreign policy and the postwar settlement; political and economic origins of the world dilemma; economic transition and adaptation; economic aspects of production for war; price control and planning in Germany; problems of policing a future world order; determinants of occupational choice and adjustment; changes in the agricultural structure which affect laborers and farmers; and civil rights.

Funds were given to the Institute of Advanced Study at Princeton for expenses incurred in housing the Economics Section of the League of Nations.

The grants ranged from \$50 to \$7,500, and totaled \$158,690. As was the case last year, the purposes served by grants in aid continue to be influenced by the war.

THE HUMANITIES

THE HUMANITIES STAFF

During 1941

Director

DAVID H. STEVENS

Associate Director

JOHN MARSHALL

THE HUMANITIES

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THE HUMANITIES

GRANTS of 1941 in humanities went to protect records essential for our understanding of human history, and to supply men and materials needed in time of war. It was a year of opportunity for such conservation and such production. Emergencies due to world disturbances drove more humanists to this country. Over one third of the smaller grants of the year were to bring these scholars back into effective service. Books and film copies of documents came from Great Britain in increasing amount. Our libraries continued to develop as the world's primary storehouses of knowledge. Opportunity for service of specialists in language and in uses of language for war purposes was greater than the supply of men. Direction of drama in Army camps enlisted trained supervisors from universities. These extraordinary demands for personnel were partly met through programs of the Foundation extending back over a period of seven years.

A large total of the year's expenditure was for new work in languages. For ten years the Foundation has been helping younger American scholars to acquire command of Chinese, Japanese, and Russian, in order that they might enter universities as teachers and research workers on

all matters related to the Far East. These men became teachers of history, economics, philosophy, literature, and language. In addition to studies in their special fields, some taught the languages, others made noteworthy contributions to methodology of language learning by producing modern texts. All of this original group is now engaged in government services or in teaching intensive courses in these languages of the Far East.

Such steps toward improvement of language abilities are signs of the oncoming demands of war and of time after the war. Today our country needs persons competent to deal with the issues raised by our developing relationships with Latin American countries. Not only for war, but for peace we shall be called on to clear away obscurities in our relations with all countries of Asia. This is impossible without command of the appropriate languages for communication. Likewise in Western Europe we shall be called upon to handle ideas in all modern languages, including the Scandinavian. In no other way can we surely participate in the rehabilitation of those darkened countries.

Several small grants for library and language work in South and Central America similarly illustrate this influence of events upon action.

Interest in entering upon work in all parts

of this hemisphere has been strengthened by war conditions. The culture of regions that cross state or national boundaries calls for careful inquiry. Such obliteration of political lines is a help for our appreciation of the forces that unite groups and nations because they grow from the same root sources. Such inquiry and turning to meet events hold considerable promise for the future.

What may be the future of American studies after the war is not distinguishable today. It is only clear that the humanities will have new resources in men from other countries and a wealth of opportunities for work at home and abroad. Unquestionably our institutions and our writers are to meet new demands on their time. With continuing appearance of new opportunities in American studies, the interests of social scientists and humanists are drawn closer together. Without doubt the specialized research of today is to have greater effect on ways of living and on teaching, and more likewise is to be done to make the meanings of American life understood and cherished by all.

One term that deserves fresh scrutiny in order to gain right recognition in our universities, colleges, and secondary schools is "the American tradition." This worn expression can be revita-

lized so as to call to mind the diverse qualities of men and regions of this continent now scantily appreciated by the people of the United States. Regionalism, in humanistic context, implies good sources of artistic works, in words and in materials, that make men understand the nature and quality of their origins. This attachment of meaning to a particular background through literature or art has no relation to a "nationalism" or "Americanism." In fact it may have much to do with internationalism by making men of every race realize the special possessions of individuals and groups by virtue of their regional origins.

DRAMA, FILM, AND RADIO

WESTERN RESERVE UNIVERSITY
DEPARTMENT OF DRAMA AND THEATRE

Western Reserve University was one of the pioneers in a movement to encourage the growth of native American drama through the establishment of work in drama as a major university activity. Since 1935 The Rockefeller Foundation has assisted this University in developing a Department of Drama and Theatre in its Graduate School, under the direction of Professor Barclay S. Leathem. The Department has become a lead-

ing center for advanced study as well as an important regional influence upon teaching and production practices through its advisory services to colleges and secondary schools in Ohio and neighboring states. Additional obligations are placed upon the Department because of its association with the National Theatre Conference, an organization of twenty university theatres and fifty community theatres. Professor Leathem is secretary of the Conference. Through the courtesy of the University it has its central office in the Department's building. This organization assists noncommercial theatre groups by arranging for reductions in royalties on plays and through library and placement services. During the past year it has carried a large program of advisory work to the morale officers in the nine Army corps areas.

To aid the University during a period of budget readjustment necessary to meet the growing demands on the Department of Drama and Theatre, the Foundation made a final grant of \$35,000 in 1941.

MUSEUM OF MODERN ART

The Foundation continued help by two minor grants to the Film Library of the Museum of Modern Art, which has had support of the Foundation since 1935. One grant for general

purposes was in the sum of \$15,000, available for the year ending in June 1942. The second was for an analysis of the part of film in wartime communication. Siegfried Kracauer, formerly the film critic of the *Frankfurter Zeitung*, is conducting an analysis of film materials on lines developed in the field of broadcasting at the New School for Social Research. This study is expected to give results of value to the film makers in the United States under wartime assignments.

AMERICAN FILM CENTER

DIVISION OF PROGRAM AND EXHIBITION

Since 1938 the Foundation has supported the work of the American Film Center, a nonprofit organization concerned with production, distribution, and use of motion pictures of educational and cultural value. Until 1940 the Center gave its attention chiefly to production. But it then became increasingly concerned with the general problem of distribution of educational films for adult groups. To meet the lack of one essential service, namely the supply of disinterested advice as to available films, it organized early in 1941 a Division of Program and Exhibition. Foundation support for this service was first in the form of a grant in aid over an initial period, and later the sum of \$11,000 was appro-

priated for support of the Division during the period ending December 31, 1942. The Division has prepared lists of films suitable for various purposes and organizations such as clubs, churches, library groups, and business associations; and arrangements have been made to provide for their projection in the New York area, with the plan, if demand warrants, to extend this projection service to other areas.

NATIONAL FILM SOCIETY OF CANADA

The National Film Society of Canada was chartered by the government in 1935 to encourage the appreciation and use of motion pictures as educational and cultural factors. Its work has received Foundation support since 1938, and during the past year \$17,600 was appropriated toward its expenses during the period ending August 31, 1943. Members of the Society include departments of education of three Canadian provinces, school boards of principal Canadian cities, several universities, and the co-operative societies of Nova Scotia. The Society assists its members and other educational groups in locating new sources of films, reviews them to determine their suitability, and assists in procuring them. Special attention has been given to securing films from other parts of the British Empire, from the United States, and elsewhere.

The present grant will aid the Society to continue its services, especially in relation to films from the United States, during the emergency period, when it is particularly important that educational and cultural films continue to be shown but when revenues are decreased by the war and the difficulties of procuring films are greatly increased.

STANFORD UNIVERSITY
RADIO LISTENING CENTER

Two Foundation grants in aid in 1940 and 1941 enabled the Hoover War Library to test the feasibility of a listening center to record and analyze short-wave broadcasts from the Far East about the war. In 1941 a grant of \$5,000 was made to cover the expenses of the post during the year. The purposes and methods were similar to those of the Listening Center at Princeton University, also supported by the Foundation.

At the Stanford post it was possible to hear with relative clarity transmissions from Japan, China, Indo-China, and Australia. At the time that the post was established no other systematic recording and analysis of these transmissions was being attempted. During the spring of 1941 work of the Foreign Broadcasts Monitoring Service of the Federal Communications Commis-

sion led to the establishment of a listening post on the Pacific Coast. The work at Stanford was, therefore, discontinued on June 1, 1941. It had made possible the maintenance of continuous records of short-wave transmissions from the Far East until such time as the work was taken up by the Federal Communications Commission. The results of its work will shortly be embodied in a book to be published by the Stanford University Press.

COLUMBIA UNIVERSITY
OFFICE OF RADIO RESEARCH

The Office of Radio Research at Columbia University grew out of the work begun by the Radio Research Project at Princeton University. Both projects have received Foundation support in past years, and in 1941 a grant of \$60,000 was made toward the support of the Office over a three-year period.

During this period the principal concern of the Office will be the study of radio's role as a medium of communication in American society. It will study such questions as how broadcasting can convey to listeners information which they need as citizens, how it can explain to various sections of the population those changes which the country will face in the emergency and during reconstruction, and what the role of local stations

is as contrasted with national chain programs. The aim of such study is to make increasingly possible useful and intelligent democratic discussion and decision on the problems of the day.

LIBRARIES AND MUSEUMS

NATIONAL CENTRAL LIBRARY, LONDON SERVICE TO LOCAL LIBRARIES

As the central unit of the British library system, the National Central Library in London is giving extensive wartime service. Its holdings and its information services have at all times been available on call to British libraries. These now include the libraries serving the armed forces, the internment camps, the mercantile marine, and all government departments, research stations, and industrial firms concerned with Great Britain's war effort. The maintenance of its stock of books is especially important to the functioning of the Library, since increasingly it is called upon to supply loan books which before the bombardments would have been furnished by local libraries.

In 1940 The Rockefeller Foundation made a grant of \$8,500 to the National Central Library to be used during the year beginning March 1, 1941, to meet emergency needs caused by a reduction in the government's appropriation to

the Library, and to cover the expenses of transferring the Library's bibliographical services and other of its activities from its exposed position in London to a safer location. In 1941 the Library received a second emergency grant from the Foundation (\$8,910) for its general expenses and for the purchase of books during another one-year period.

AMERICAN COUNCIL OF LEARNED SOCIETIES: MICROFILMING

The Foundation has had a continuing interest for several years in the development of micro-filming in order to make scholarly materials more easily and economically available. This copying technique has proved of special value under war conditions, making possible the preservation of many valuable and irreplaceable materials. During 1941 three grants, totaling \$130,000, were made to the American Council of Learned Societies for microfilming materials in Great Britain. Supervision of the work is delegated to a special Committee on Microcopying Materials for Research, on which the appropriate scholarly groups are represented. Selection of material to be copied is made by a subcommittee, which is canvassing the needs of American scholars. The Library of Congress is cooperating in this project and the film copies will be deposited there for

safekeeping. The broad range of scholarly interests covered includes American and English history, legal history, history of science and medicine, literature, philology, medieval, classical, Slavic, and Oriental studies, and fine arts.

The trustees of the Foundation have appropriated further funds for microfilming, in the amount of \$40,000, to be allocated on the recommendation of officers of the Foundation. By working in cooperation with the Council, they will care for such opportunities as can best be met directly.

THE NATIONAL BUILDINGS RECORD, LONDON DOCUMENTATION OF ARCHITECTURAL RECORDS

There has recently been established in London a wartime service known as the National Buildings Record, which has as its purpose the complete graphic documentation of the significant buildings of England. Bombing attacks have destroyed some of the country's historic buildings. Inasmuch as documentation of these structures and of other great examples of English architecture has been only partial, it is important that adequate recordings of essential data be made without delay. The work to be done includes the listing of all buildings of interest, with brief note of the individual character of each; the compiling of a central index of particulars on all existing



Photograph Excised Here

Bureau of American Bibliography, National Central Library, London. With Foundation aid the bibliographical services and other activities were removed to a safer location.

records; the completion of all records of buildings that have been insufficiently documented; the examination of injured buildings for evidences of growth of the structures, and the recording of information of interest to students.

The Rockefeller Foundation has contributed \$20,000 toward the expense of this project.

MUSEUM OF MODERN ART GENERAL PROGRAM

The Museum of Modern Art was founded in 1929 to encourage interest in the visual arts of our time and in all ways of developing esthetic values in American life. Its organization now comprises departments dealing with such fields as painting, sculpture, architecture, industrial design, photography, motion pictures, and the dance. An educational department arranges exhibits for young people and circulates these in the schools of the New York area. Publications and exhibits circulated among other museums, colleges, and universities carry the influence of the Museum across the country.

One of the Museum's important services is cooperation with the Coordinator of Inter-American Affairs. It is providing office space and services for eighteen members of the Coordinator's staff; and thirteen members of its own staff are devoting a major portion of their



Photograph Excised Here

Hispanic Foundation, Library of Congress.

time to work for the Coordinator's office. Recent exhibits at the Museum have given special prominence to North American and Latin American art, music, and architecture. The Museum likewise conducts activities particularly serviceable to the country in time of war.

The Rockefeller Foundation has provided \$15,000 toward the general expenses of the Museum during the year ending June 30, 1942. This aid continues support given to the work of the Museum since 1935.

LANGUAGE

AMERICAN COUNCIL OF LEARNED SOCIETIES INTENSIVE COURSES IN CHINESE, JAPANESE AND RUSSIAN

For ten years The Rockefeller Foundation has contributed funds to the American Council of Learned Societies to be used by its Committee on Far Eastern Studies for the development of personnel for teaching and research in the Chinese, Japanese, and Russian languages. In 1941 the Foundation made a grant of \$50,000 to the Council to stimulate intensive and specialized instruction in these languages in institutions where personnel and resources for such work

now exist and to encourage the opening of other centers for intensive teaching of the three languages.

This grant reflects the need for American personnel competent in reading and speaking these languages that has been created by all phases of increased American participation in international affairs.

AMERICAN COUNCIL OF LEARNED SOCIETIES
DEVELOPMENT OF INSTRUCTION IN UNUSUAL
LANGUAGES

Prior to the present war most of the important European countries maintained national schools for the study of living Oriental and African languages and cultures. These institutions combined the practical teaching of the languages and civilizations of the Orient to diplomats, business men, and scholars with the specialized study of the cultures themselves.

There is now need for the establishment in the United States of an institution which will serve the same purposes as the foreign schools in order to aid departments of the government in the development of communications and intelligence services. The American Council of Learned Societies has appointed a Committee on a National School of Modern Oriental Languages and Civilizations, which will undertake to lay the

basis for such an institution, and during the past year the Foundation appropriated \$50,000 to further the work of this Committee.

The implementation of the study of Oriental languages and civilizations, not only in English but in Western European languages as well, is exceedingly incomplete. New instruments — primers, grammars, dictionaries, texts, and manuals — are needed along with more investigation and experiment in the methods of intensive teaching of languages. Word-counts, vocabularies, glossaries of technical terms are essential, as are also speech recordings and all the helps that modern techniques of communication provide.

The Foundation's appropriation is being used to develop personnel and resources for the teaching of Siamese, Tibetan, Malayan, Hindustani, Arabic, and Turkish — languages which are now little if at all taught in this country — at a time when there is urgent need both within and outside government departments for persons competent in these tongues.

UNITED ENGINEERING TRUSTEES, INC.

DICTIONARY OF JAPANESE TECHNICAL TERMS

Specialists in engineering vocabularies in Far Eastern languages and officers of the armed forces are in agreement as to the need for a dictionary of Japanese technical terms. No adequate

wordbook of this kind now exists. The Rockefeller Foundation provided \$20,000 during the past year to finance the preparation of such a dictionary, and the United Engineering Trustees, Inc., who administer the Engineering Societies Library in behalf of the national organizations of civil, mining and metallurgical, mechanical, and electrical engineers, have made the facilities of the Library available for the project.

It is proposed during the next eighteen months to complete a card file of approximately 60,000 entries of Japanese and English technical terms and to publish the dictionary in an edition of 200 copies. The work will be directed by Stanley Gerr and will be supervised by an advisory committee consisting of Harrison W. Craver, director of the Library; Hugh Borton, assistant professor of Japanese at Columbia University; and George A. Kennedy, assistant professor of Chinese at Yale University.

AMERICAN COUNCIL OF LEARNED SOCIETIES
SUMMER INSTITUTE FOR STUDY OF SPANISH
AND PORTUGUESE

Another language project of the American Council of Learned Societies to which the Foundation gave support during the past year, was a summer institute for the intensive study of Spanish and Portuguese. This was held at the

University of Wyoming from June 23 to August 22 for the benefit of mature specialists in various fields wishing to acquire a working knowledge of these languages for the investigation in their fields or for communication with fellow workers in Latin American countries. Needs of this kind have arisen in connection with the program of the State Department's Division of Cultural Relations to supply exchange specialists under agreements with a number of countries of South and Central America, and in connection with plans of the governments of the United States and Latin American countries to develop closer cultural relations. Demands for work in Portuguese were created also by the decision of several universities to establish departments of instruction in that language.

The institute comprised two nine-week courses, one in Spanish and one in Portuguese, each limited to thirty selected students and each covering the equivalent of eleven units of college work. The daily routine was three or four hours of classwork supplemented by extensive reading by the students in their respective fields of interest; by lectures, tutorials, and conversation; and by a use of phonograph, radio, and moving picture programs in the language under study. Materials assembled and tested as a part of a program will be used to create a series of

texts for other intensive courses and for college classes generally.

The Foundation contributed \$25,000 for the support of the institute.

UNIVERSITY OF MICHIGAN
TEACHING OF ENGLISH TO STUDENTS OF
LATIN AMERICAN BACKGROUND

For several years the Foundation has contributed funds for the teaching of English as a second language in foreign countries, and for the training of Western students in the use of modern languages of the Far East and of Latin America. In 1941 it made a grant of \$15,000 to the University of Michigan for use over a three-year period toward the development of methods and materials for teaching English to students of Latin American background and for the support of summer courses in which these methods and materials will be tested. The purposes of instruction will be to provide intensive training in English for students wishing to gain a command of the language for general purposes and to acquire special vocabularies as a preparation for advanced study in various fields in North American universities. At the end of the three-year period the tested lessons and the guides for teachers which have been worked out will be published for general distribution.

The extent of the demand for assistance in learning English as a second language is great and is increasing. The University of Michigan is only one of many institutions having a large number of students from other countries of the hemisphere, and nearly all of these students require some help in acquiring control of English.

LATIN AMERICAN AND FAR EASTERN STUDIES

LIBRARY OF CONGRESS: DEVELOPMENTAL AID TO SOUTH AMERICAN LIBRARIES

One means by which the Foundation is helping to advance inter-American cultural understanding is by aiding national libraries of various Latin American countries to develop resources and facilities which will enable them to make the literature and the historical source materials of their countries available for study by scholars of the two continents. In 1941 it gave assistance of this kind through a grant of \$10,000 to the Library of Congress in Washington for allocation to South American libraries for improving their organization and facilities.

During the year \$7,800 was allotted from this sum to the National Library of Venezuela for the salary, for three years, of an American libra-

rian who will assist the Library in cataloguing its holdings, training personnel, and reorganizing its services. As a part of the developmental program for this Library the Government of Venezuela has given it the famous Dolge Collection of about twenty thousand volumes of Venezuelan works and other writings on the country, many of them the only existing copies of important works.

BUFFALO MUSEUM OF SCIENCE: ADVISORY SERVICE TO THE NATIONAL MUSEUM, RIO DE JANEIRO

The museum is an important source of material to the student of the life, history, and culture of any country. In connection with its program in Latin American studies, the Foundation has assisted several museums having notable collections of Latin American materials to reorganize these collections for greater usefulness in education and research. During the past year it provided help of this kind for the National Museum in Rio de Janeiro, Brazil, which requested advisory assistance in making its large collections in the fields of geology, biology, botany, and ethnology more readily available for study. The Buffalo Museum of Science, which has had Foundation aid for several years in a program of training personnel in museum administration and display techniques, has a staff qualified to

give advisory services of this kind. Arrangements were accordingly made for the Buffalo institution to send specialists to the National Museum to assist in the reorganization project and the Foundation appropriated \$12,500 toward the expense of their participation.

This temporary collaboration on some features of the program of the National Museum of Brazil developed from plans of the Brazilian Government to rehabilitate the old palace, now housing its extensive collections and library. For many continuing plans of interchange of materials between institutions in Brazil and in the United States, Director H. A. Torres has had cordial support from the Brazilian Government and cooperation from scientists in both countries.

LIBRARY OF CONGRESS HISPANIC FOUNDATION

Two years ago the Library of Congress, in Washington, opened a new division, the Hispanic Foundation, under special gifts of funds and materials. The Librarian then proposed to bring together in one collection the large amount of like material in books, journals, and other serial issues scattered throughout the Library. At that time The Rockefeller Foundation made an appropriation to the Library to assist it in meeting the costs of cataloguing this material and of

developing bibliographical services in the fields of Spanish and Portuguese cultures in this hemisphere. In 1941 it was found that another year of work would be necessary to bring these projects to a point where they could be maintained on the regular budgets of the Library. The Rockefeller Foundation therefore provided \$11,000 for continued aid to the work during 1942.

The catalogue of the newly assembled collection will bring into use relatively unknown and heretofore inaccessible matter on the Spanish and Portuguese elements in the cultures of the American continents. Considerable bibliographical material which has already been issued makes available to scholars in all countries information on important Hispanic holdings of the Library that can be secured through loans or film copies for use outside of Washington as well as in the new wing of the Library of Congress devoted to Latin American studies.

COLLEGE OF CHINESE STUDIES, PEIPING EMERGENCY AID

Since its establishment in 1910 the College of Chinese Studies in Peiping has been a center for language training widely used by Americans entering service in China under mission boards, in the diplomatic corps, or as employees of business firms. It has had most successful results in

the teaching of spoken Chinese. It has also been an outpost for the teaching of Chinese civilization, culture, and language to Western students during a period when the United States lacked facilities and libraries for preparing men and women for Chinese studies.

In spite of war conditions the student enrollment of the College at the beginning of 1941 was at the usual level, but the institution faced a critical situation because of the uncertainty of continued income from tuition and private gifts. To assist it in carrying on its work during 1941 and the first half of 1942, the Foundation made an emergency grant of \$15,000 for general expenses. But with increasing Japanese encroachment educational work in Peiping was disrupted, and plans were considered for transferring the school to the campus of the University of California. The valuable library of the school was moved there during the year, part of the Foundation's grant being used for this purpose. Because of the temporary suspension of the school's activities the terminal date for the remainder of the grant was changed to June 30, 1943.

UNIVERSITY OF CHICAGO DEVELOPMENT OF CHINESE STUDIES

The Foundation made a grant of \$15,000 to the University of Chicago during the year in con-

tinuance of aid given since 1936 for research, under the direction of Professor H. G. Creel, in methods of teaching the Chinese language and literature and for cataloguing and putting into working form a library for teaching and research that had been purchased with University and Foundation funds.

Professor Creel has completed two texts for teaching the Chinese classics by the inductive method and is now at work on the third volume of the series. The teaching program has developed from single courses in language and literature to a sequence of six courses given regularly. These courses are related to the programs of the University's Oriental Institute and Department of History.

AMERICAN COUNCIL OF LEARNED SOCIETIES COMMITTEES ON FAR EASTERN STUDIES

The American Council of Learned Societies maintains planning committees related to the interests of its various constituent societies. Some of these committees are concerned with the development of fields of study which are new or underworked in the United States. In this category are Committees on Far Eastern Studies, on Latin American Studies, on Arabic and Islamic Studies, and on Slavic Studies. Other committees aim to focus attention on certain areas of study

in order to establish new lines of approach to problems in these fields through the cooperation of scholars trained in various disciplines. Examples of such committees are those on Studies of American Culture and on Negro Studies. Still other committees deal with selected problems of general interest and importance. A committee is discharged when its principal objectives seem to have been accomplished.

The Rockefeller Foundation has given support to the work of the Council's committees since 1935, through general grants to the Council for planning and development and through special grants for the work of certain committees. In 1941 it appropriated \$15,000 for the use of the Committees on Far Eastern Studies over a three-year period. These include the Committee on Chinese Studies and the Committee on Japanese Studies, which are separately organized but with a close coordination of their work. They are chiefly concerned with the advancement of research and the development of teaching personnel.

AMERICAN STUDIES

REGIONAL SURVEYS

The Foundation appropriated \$25,000 in 1941 for allocation by the officers in charge of the

humanities program as a special grant in aid fund to be used for the planning and coordination of regional studies bearing on the cultural tradition of North America. The appropriation was made to enable the officers to explore the desirability of assistance from the Foundation in bringing about a wider appreciation of American tradition. The basis of that appreciation has already been laid by scholars in the humanities and the social sciences, but interpretation is required before materials can be used effectively to widen appreciation through print, radio, and motion picture.

Interpretations of American tradition have tended toward two extremes, the national and the local. On the national scale, a search for common denominators has led to a disregard of vital regional diversities. Local or state interpretations, on the other hand, have seldom been placed in a regional or national context. With North America so distinctly regional in its history, culture, and special interests, a regional interpretation of its traditions may give research and teaching new perspective and exert an enlivening influence on public interest generally.

Canadian interest in participation in studies of regions extending across the border is clearly evident. Internationally the surveys for which this appropriation provides will have the twofold

result of working toward a better appreciation of what the two countries have in common, and of opening up new opportunities for collaboration among scholars in North American universities.

UNIVERSITY OF CHICAGO

DICTIONARY OF AMERICAN ENGLISH

To enable the University of Chicago to complete the publication of a Dictionary of American English, on which work began in 1927, The Rockefeller Foundation made a grant of \$25,000 to the University during the past year. Between the years 1927 and 1939 the Foundation and the General Education Board, in connection with their plan to strengthen humanistic studies at a number of important centers, made substantial grants to the University of Chicago. From these funds the University made regular allotments for the compilation of the Dictionary of American English by a working staff in Chicago under the direction of the former editor of the Oxford English Dictionary, who as an editor of the American work still supervises the project from England.

The Dictionary of American English shows the features by which words of the United States are distinct from those of other English-speaking areas of the world. It traces origins and life histories of American words, and the changing meanings of English words and others of foreign

origin that have become American possessions during three hundred years of new growth. Selection of words for the Dictionary is determined by the attempt to include "every word which has a real connection with the development of the country and the history of the people." Definition of all words is by the use of dated quotations under each word, arranged in proper order for historical illustration. The quotations are chosen from a stock of over a million items gathered during fifteen years by a large number of trained workers.

Printing of the Dictionary began in 1936, and fourteen of the twenty parts have been delivered to subscribers. Under present plans the completed work will be available in 1943.

GRANTS IN AID

Grants in aid in the humanities during the year totaled fifty-nine, ranging in amount from \$150 to \$6,500. These grants may be classified in two groups, those giving assistance through the provision of personnel and materials to studies of particular interest under present program, and those providing emergency assistance to deposed scholars.

In the first category grants for Far Eastern studies permitted the purchase of necessary ma-

terials and the cataloguing of collections in this country. The interest of the division in the improvement of library services to scholars was shown in grants for work in South America, Canada, and China. Grants to promote the film as a tool in education went to organizations in the United States and China. Comparable grants were made for radio studies. The teaching of English to foreign-speaking persons was aided by grants for studies of methods, the provision of advisory services, the training of personnel, and a conference of specialists. Grants in the field of drama supported studies of the place of drama in rural areas and of the use of stage productions in museums.

Grants reflecting more immediate needs were made for studies of the effect of war on the supply of scholarly materials here and abroad and in the field of communications. Assistance went to the recording of short-wave programs to America and to studies of methods in public opinion research.

Nineteen displaced European scholars were aided during the year. Of this number seven now have established places in academic life in this country, and seven are still trying to reach the United States. The others in the group have temporary placement in American institutions and are thus enabled to carry on research and

teaching. Included are students of philosophy and psychology, canon law, philology, art, and music, and specialists in Slavonic, Balkan, Scandinavian, and Arabic studies.

FELLOWSHIPS

Twenty-seven fellowship grants were made during 1941 under the humanities program from a fund of \$50,000 appropriated in 1940. Of the total number of grants, five were renewals of fellowships granted in previous years and three were renewals of short-term fellowships granted during 1941. In addition to these awards, others were made by organizations receiving fellowship funds from the Foundation, namely the American Council of Learned Societies, the National Theatre Conference, and the American School of Classical Studies at Athens.

The majority of the grants were to citizens of the United States. Two awards were made to Chinese, 2 to Guatemalans, 1 to a Puerto Rican, and 1 to a Venezuelan. Three students worked in the field of Far Eastern studies, 13 in communication research, 3 in methods of language teaching, 1 in drama, 1 in library science, and 3 in Latin American studies preparatory to advanced work in other countries. The student of library science, a Venezuelan, will return to work in her own country. Of the three fellows studying methods of

language teaching, one will return to the University of Puerto Rico and two to China, where they will teach English.

There is an increasing need in our universities for persons trained in Far Eastern studies. Of the fellows in this field one is preparing to teach Far Eastern history and language, another will teach musicology with special emphasis on Oriental music, and a third will continue his study of the technical vocabularies of Chinese and Japanese. The present emergency need for persons competent in Chinese and Japanese has drawn five former fellows into government service during the past year, three to the Office of the Coordinator of Information, and two to the Marine Corps Reserve.

The importance of radio in wartime has created an urgent need for persons competent in techniques of communication research. Of the appointees in 1941, four studied with Dr. Paul F. Lazarsfeld at the Columbia University Office of Radio Research and five at the New School for Social Research under Dr. Ernst Kris and Dr. Hans Speier. In addition one short-term appointment was made for the study of methods of planning and producing radio programs. These men are being drawn rapidly into government service. One of the 1941 appointees has already gone to the Federal Communications Commission, and

of former fellows two are working in the Federal Communications Commission, one in the Department of Justice, and another in the Army.

OTHER GRANTS

NEW SCHOOL FOR SOCIAL RESEARCH

STUDY OF TOTALITARIAN COMMUNICATION IN WARTIME

A study of totalitarian communication in wartime at the New School for Social Research was made possible by a Foundation grant of \$15,960, available for one year from April 1, 1941. This study is under the direction of Dr. Hans Speier, formerly docent at the Deutsche Hochschule für Politik in Berlin, and Dr. Ernst Kris, formerly assistant curator of the Kunsthistorisches Museum in Vienna, a member of the faculties of the Institutes of Psychoanalysis in Vienna and London, and from the outbreak of the war to July 1940, senior research officer in the Monitoring Service of the British Broadcasting Corporation.

The study involves the analysis of radio programs from totalitarian countries, chiefly Germany, on the basis of daily digests of foreign broadcasts from these totalitarian countries. The aspects of wartime broadcasting covered include

the purposes aimed at, the methods of presentation utilized, and the relations between broadcasting and other media. The work will culminate in more general studies, such as the totalitarian theory of propaganda, the origin and development of this theory, and the functions of totalitarian propaganda in wartime at home and abroad.

The work is essentially that of writing a history of one phase of the war. A second value is the opportunity provided for training American personnel in the methods of analysis used.

LIBRARY OF CONGRESS: STUDIES OF COMMUNICATION TRENDS IN WARTIME

Support in the amount of \$28,800 over a one-year period went to the Library of Congress for Studies of Communication Trends in wartime. This project, which had received previous Foundation support in 1940, aims at systematic analysis of what is being communicated about the war, particularly in print, broadcasting, and motion pictures. Attention has been centered on communications in Germany, Russia, Great Britain, Canada, Italy, and France. Analysis of newspapers and the preparation of charts have traced such trends as the attention paid to other countries, to political leaders at home and abroad, and to various ideologies. Variations

representative of regional and occupational groups are noted. The applicability of methods developed for newspaper material is being tested for use with visual and broadcast materials.

The value of this undertaking shows in several ways. It is developing methods for tracing the major trends of wartime communication as the war proceeds. In a longer view, it is producing data basic for the history of communication during the war. As a result of its work materials for the study of communication in the Library of Congress have been reorganized and extended. Personnel trained in the project have been called to various government departments for either active or consultative service.

PRINCETON UNIVERSITY. SCHOOL OF
PUBLIC AND INTERNATIONAL AFFAIRS: STUDIES
OF PUBLIC OPINION

Since 1939 the Foundation has supported studies of public opinion in the School of Public and International Affairs at Princeton University. In 1941 a further grant of \$50,000 was made to support this work over a two-year period, ending December 31, 1943.

The Office of Public Opinion Research in the School of Public and International Affairs has assembled what is probably the largest archive of opinion poll material in existence, comprising

findings of private and public polls both in America and Great Britain. The Office utilizes this archive in the first place in an effort to discover to what extent the findings of the polls indicate the determining factors in the formation of attitude, expectation, and taste. Intensive analysis of this kind in turn leads to research on polling procedure, including such factors as the wording of questions, the value of different types of question, the "intensity" of opinion, the reasons reported by respondents as to why opinions are held, and the significance of responses which report no opinion.

During the past two years the work has centered on opinions concerning the war. A number of special studies are aimed particularly at the refinement of present procedures, with a view to discovering to what extent polling can be an instrument for the advancement of knowledge. Findings are being published in technical journals and will eventually be made available in book form.

DELEGATES OF THE PRESS, UNIVERSITY OF OXFORD: AID TO REFUGEE SCHOLARS

Since 1933 British universities have made it possible for many refugee scholars to continue in productive work. This has been accomplished particularly through the assistance of the So-

ciety for the Protection of Science and Learning, the counterpart of the American Emergency Committee for Displaced Scholars. The Oxford Colleges and the Oxford Press also have assisted jointly a number of scholars whose services have been utilized in several of the major projects of the Press, such as the revision of the Liddell and Scott's Greek Lexicon and the Oxford Classical Dictionary.

The Press has other projects on which the services of a limited number of displaced scholars can be used to advantage; but the Colleges cannot any longer contribute to the support of the scholars, and the Society for the Protection of Science and Learning has now very limited funds. To enable the Press to employ a selected number of scholars for work on its own projects the Foundation made a grant of \$10,000 for use in 1941.

AMERICAN COUNCIL OF LEARNED SOCIETIES
GENERAL SUPPORT, PLANNING AND
DEVELOPMENT, FELLOWSHIPS

An appropriation of \$85,000 was made to the American Council of Learned Societies, of which \$5,000 was for general expenses during the year beginning July 1, 1941, \$35,000 for planning and development over a period of three years from that date, and \$45,000 for fellowships during the same three-year period.

Through its program of planning and development, carried on by standing committees, the Council stimulates progress in new or under-worked fields of study. The portion of the Foundation's grant allotted for this phase of work will provide for the activities of all the committees except those on Latin American, Chinese, and Japanese studies, which are supported by separate Foundation appropriations.

The Council has two major classes of fellowship. It awards postdoctoral fellowships for training in language or in new methods of research. It also awards special fellowships whose aim is the development of American personnel in fields of study that are comparatively new in this country, such as Arabic, Slavic, and Turkish studies.

The general usefulness of the Council appears in wartime quite as clearly as under normal circumstances. Its primary function is to supply outlet for ideas from universities, colleges, and other independent institutions of learning. Its officers also originate plans for national service. Particularly in time of emergency the Council has special opportunities for coordinating of effort.

CHINA PROGRAM

CHINA PROGRAM STAFF

During 1941

SELSKAR M. GUNN, *Vice-President of
The Rockefeller Foundation*¹

MARSHALL C. BALFOUR, M.D.²

¹ On leave from October 1, 1941.

² International Health Division staff member cooperating in the China program.

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CHINA PROGRAM

THE China program deals with Chinese institutions engaged in rural reconstruction, and aims to correlate work in rural reconstruction with public health activities. Of the activities supported during 1941, all but one are still functioning. Upon the extension of the war in December, Yenching University was closed, and the American and British staff are reported to be interned in their homes. Other elements in the China program are located in Free China and, although confronted with increasing hardship and difficulty, continue operation.

For the year 1941-42, the Foundation appropriated a total of \$104,000 in United States currency for the China program, which included \$27,000 for five projects, \$40,000 for local and foreign fellowships, and \$37,000 for grants in aid. The Foundation also contributed \$50,000 to the Associated Boards for Christian Colleges in China to be applied toward the emergency needs of nine private foreign colleges in China during 1940-41.

EDUCATION AND RURAL
RECONSTRUCTIONNATIONAL COUNCIL FOR RURAL
RECONSTRUCTION

As the National Council for Rural Reconstruction found that under existing conditions in southwest China it was impossible to carry on its Institute, its activities during the past year were concerned with liquidation of the Rural Institute at Hsieh-Ma-Chang in Szechwan Province and field projects in the county of Pishan.

The central secretariat, however, will maintain a staff in Chungking as a channel for the exchange of ideas and information between the participating institutions, as a coordinating agency for any work in rural reconstruction which the participating institutions may undertake under their own auspices, and as a nucleus for possible revival of the Institute in the future. The secretariat plans to publish a Chinese and English periodical dealing with matters of special interest in rural reconstruction.

The National Council for Rural Reconstruction was formed by institutions interested in conducting research and in promoting the teaching of rural reconstruction to graduate students through an Institute established in a community where service, instruction, and practical ex-

perience could be combined. The institutions composing the Council in 1941 were: the National College for Rural Reconstruction of the Mass Education Movement, Yenching University, Nankai University, the University of Nanking, the Peiping Union Medical College, and the Training Institute of the National Health Administration.

The Foundation's contribution to the Council toward liquidation of the Rural Institute and the general expenses of the secretariat for the year 1941-42 was \$5,000.

CHINESE NATIONAL ASSOCIATION OF THE MASS EDUCATION MOVEMENT

The Mass Education Movement continued with its regular program in 1941, of which an important part was the new National College of Rural Reconstruction. As the library, laboratory apparatus, furniture, and buildings of the National Council's Rural Institute were turned over to the temporary custody of the Mass Education Movement, both the Movement's facilities and responsibilities were increased. The Foundation therefore increased its grant for the year 1941-42 to \$8,000. The funds contributed by the Foundation were for headquarters expenses, field stations, and construction.

YENCHING UNIVERSITY
COLLEGE OF PUBLIC AFFAIRS

The work of the College of Public Affairs of Yenching University, so far as is known, continued as usual until the University was closed the day after war broke out between Japan and the United States.

Social and anthropological studies under Dr. Wu Wen-tsao, who was formerly in charge of Yenching University's field station at Kunming, were combined under Dr. Wu's administration in July 1941 with two similar frontier research projects supported by the Rural Institute of the National Council, one in Szechwan and the other in the northwest under Professor Li An-che, formerly of Yenching.

The Foundation's contribution for the work in rural reconstruction of the College of Public Affairs for the year 1941-42 was \$5,000.

NANKAI UNIVERSITY
INSTITUTE OF ECONOMICS

The graduate teaching and research activities of the Institute of Economics of Nankai University continued at the Institute's headquarters in Shapingpa, Chungking, and undergraduate teaching was carried on by staff members stationed at the National Southwest Associated University in Kunming.

The Institute's library and research is organized around the central theme of the social and economic history of the Sino-Japanese war. About two-thirds of the library as it existed in Tientsin, after much delay and expensive and difficult transportation, has reached Chungking.

The Far Eastern office of the Foundation made a special grant in aid toward the construction of additional dormitories for the necessary staff at Shapingpa, and toward the printing of the English and Chinese quarterlies. The Foundation's contribution toward the regular budget of the Institute for the year 1941-42 was \$3,000.

UNIVERSITY OF NANKING: DEPARTMENT OF AGRICULTURAL ECONOMICS

The Department of Agricultural Economics of the University of Nanking's College of Agriculture and Forestry entered the year 1941-42 with all of its activities progressing satisfactorily and the encouraging prospect of governmental interest and assistance.

The Foundation's assistance to this project for the year 1941-42 was \$6,000.

FELLOWSHIPS

Nine fellows appointed under the China program were studying in the United States during the year 1941. Four began their work in 1941,

and five continued into 1941 from the preceding year. Four studied the following agricultural subjects: farm management and agricultural extension, agricultural entomology, agricultural bacteriology and botany, and agricultural economics. The others studied higher education, economics, sociology, social and public administration, and biochemistry and nutrition. For fellowships abroad for the year 1941-42 the China program provided \$20,000.

From \$20,000 provided for local fellowships, in 1941-42 grants amounting to \$275,000 in Chinese currency were allotted to seven institutions: the Chinese National Association of the Mass Education Movement, the National Health Administration, Yenching University, Nankai University Institute of Economics, the University of Nanking College of Agriculture and Forestry, and the National Agricultural Research Bureau.

GRANTS IN AID

To November 14, 1941, seven grants had been made from the grant in aid fund of \$37,000 provided for the year 1941-42. Among these were grants for investigations on insect control and on the control of plant diseases and the use of fungicides, one under the direction of a former fellow; for the purchase of books and journals on nurs-

ing; for field research in sociology and social administration; and for housing and maintenance of a project for breeding laboratory animals for the Department of Bacteriology of Hsiang Ya Medical College at Kweiyang.

EMERGENCY AID FOR FOREIGN
COLLEGES IN CHINA

ASSOCIATED BOARDS FOR
CHRISTIAN COLLEGES IN CHINA

Although not a part of the Foundation's specific China program in rural reconstruction, emergency aid to the general budgets of foreign colleges is also reported under this section. In 1941 the Foundation continued its emergency aid to a group of nine colleges and universities in China by a grant of \$50,000, to be divided among the nine institutions as follows:

Cheeloo University	\$5,000
Fukien Christian University	5,500
Ginling College	4,000
Hua Chung College	3,000
Lingnan University	8,000
University of Nanking	7,000
University of Shanghai	1,500
West China Union University	6,000
Yenching University	10,000
	<hr/>
	\$50,000

During the year 1940-41 this group of insti-

tutions as a whole met with fewer new difficulties, and conducted their work with greater regularity than in the previous war years, but financial distress caused by the extremely rapid rise in the cost of living became more acute. Enrollment continued to increase, with a total of 5,579 for the nine colleges at the beginning of the academic year 1941-42, the largest for any year.

With the entry of the United States into the war, Yenching University in Peiping, Lingnan University, operating in quarters provided by the University of Hongkong, and the University of Shanghai could no longer continue in occupied territory. The interruption in the work of these and other colleges in similar plight is causing another movement of students and staff to the west. Plans are under way to reestablish Yenching University in some form in Chengtu. Most of the students and staff of Lingnan University left Hongkong, and are working to reestablish the University in western Kwantung Province where the College of Agriculture has been operating for some time. It is likely that students from the universities in Shanghai will be cared for at several centers, some at Fukien University, some in a new refugee university being set up in western Chekiang Province, and some probably in institutions further west.

OTHER APPROPRIATIONS

OTHER APPROPRIATIONS

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OTHER APPROPRIATIONS

AMERICAN LIBRARY ASSOCIATION
COMMITTEE ON AID TO LIBRARIES
IN WAR AREAS

THE Rockefeller Foundation, the Laura Spelman Rockefeller Memorial, and the International Education Board in the 1920's contributed considerable sums to replace missing numbers of scholarly journals in university libraries in Europe, subscriptions to which had been interrupted or canceled during the World War, and to continue subscriptions for impoverished faculties. This assistance, however, was too late to restore complete files in many instances, as some of the numbers had not been printed in sufficient quantity and it was consequently impossible to secure them. Gaps remained in the files of many university libraries which could not be filled, and constituted a disadvantage to the scholarly workers in these places.

Through a plan worked out jointly by the Foundation and the American Library Association, which were simultaneously considering this problem in the early part of 1941, the Association's Committee on Aid to Libraries in War Areas arranges the purchase, or in possibly a few instances the microfilming, of scholarly journals

of the United States, which are to be held if necessary until conditions make it possible to distribute them to institutions in Europe, Asia, and possibly South Africa and Australia. The Foundation granted to the American Library Association \$50,000 to start the work, and later an additional \$60,000 to provide also for 1942 subscriptions. Of the total of \$110,000, \$96,000 is being used for the purchase of the subscriptions, and \$14,000 covers administrative expenses for the period June 30, 1941, to December 31, 1942.

A list was compiled of about four hundred of the most important scholarly journals, including those in the medical, natural, and social sciences and the humanities, with European and Asiatic subscribers. The journals were circulated to find out the number of foreign subscriptions which had been canceled, and other information on which to base the details of the plan. Subscriptions were placed which will approximately offset cancellations in 1941, and a tentative order was given to anticipate cancellations in 1942. The number of subscriptions for each journal so far placed vary from five to fifty. A record is kept of the journal and institution which canceled it, to be used later for decision as to the institutions to which the journals should be distributed. Publishers have cooperated in many

ways, and have agreed to store the accumulations of journals until they are needed. In cases of publications which have a very large circulation, most if not all of the numbers required can probably be secured later by collecting duplicate and unneeded copies. The Committee has had published in such journals a statement of this general plan, to forestall possible destruction of extra copies or their use for other than the scholarly purposes intended.

To assist the flow of scholarly journals to this country, in reverse of the purpose described above, the Foundation gave a small grant in aid in the humanities to enable the American Library Association to arrange for sending, and expediting through international mailing services, scientific and scholarly publications from Europe destined for libraries in the United States.

Grants to aid scientific and other literature and increase its distribution in Great Britain also were made in 1941, one in the natural sciences for the assistance of scientific journals the publication of which is jeopardized by the war, and the following grant to the Royal Society.

ROYAL SOCIETY, LONDON

In 1941 the sum of \$13,000 was granted to the Royal Society to provide six cameras for micro-filming journals, manuscripts, and documents,

and thirty reading machines. The expenses of shipping and installation are included.

The first three cameras are to be installed in the London School of Hygiene for the use of the Medical Research Council, and in Cambridge and Oxford Universities. The thirty reading machines are for use in strategic laboratories and libraries. The Royal Society will arrange for the distribution of the microfilms, probably from a central exchange.

Quicker and wider distribution of important scientific and medical literature will help the defense effort, and it is important also to provide a better distribution of journals and documents in the social sciences and humanities. Provisions of the British copyright law which would have raised difficulties for this program have been waived for the duration of the war.

EMERGENCY COMMITTEE IN AID OF DISPLACED FOREIGN SCHOLARS

Under its program for aid to deposed scholars the Foundation made grants to institutions toward salaries of scholars, usually with the understanding in each case that the scholar would have a permanent place in the institution. Later, when scholars of international reputation were threatened with imminent personal danger by swiftly moving events in Europe, and no time

for negotiation was possible, the Foundation contributed to a program whereby the New School for Social Research, with the assistance of the Foundation's office in Lisbon, helped the scholar make his way from Europe, and gave him a temporary post in the New School.

The Emergency Committee in Aid of Displaced Foreign Scholars has been active in finding regular posts for eminent refugees, including those with temporary positions in the New School. The Foundation gave to the Emergency Committee in 1941 \$10,000 for traveling expenses and stenographic services and to apply toward the salary of an assistant for the year beginning approximately October 1, 1941.

NEW SCHOOL FOR SOCIAL RESEARCH GRANT IN AID FUND

The scholars who came from Europe to temporary positions at the New School for Social Research needed upon their arrival, in many instances, certain apparatus or materials in order to begin work. They also often needed small sums for traveling in the United States in connection with their work, or with securing a permanent position elsewhere. In 1941 the Foundation granted \$2,500 to the New School for a grant in aid fund to be expended as required to

meet modest expenses of this type for which no other funds were provided.

GOVERNMENT OF FINLAND
UNIVERSITY OF HELSINKI

The University of Helsinki is the center of Finland's intellectual and cultural life, and, since its establishment over three hundred years ago, has had an important influence on the history of the country. Following a grant of \$25,000 in 1940 to help sustain this cultural life under stress of difficult readjustment, the Foundation, early in 1941 and before the resumption of Finnish-Russian hostilities, gave \$50,000 toward the general budget of the University for the academic year 1941-42.

The funds given for the academic year 1940-41 were applied toward fellowships for young scientists and other students preparing dissertations and theses, toward the salaries of three assistant professors, for scientific apparatus, and for special courses necessary to help make up time lost during the war.

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, 1941:

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Schedule of Securities on December 31, 1941 . . .	388-395

BALANCE SHEET — DECEMBER 31, 1941

ASSETS

INVESTMENTS

Securities (Ledger value)		\$157,176,201.69
(Market value \$153,196,700.24)		

CURRENT ASSETS

Cash on deposit	\$9,798,968.73	
Sterling on deposit in London		
£18,928-9-9 @ \$3.645	69,004.92	
Advances and deferred charges	939,269.71	
Sundry accounts receivable	46,145.04	10,853,388.40

BUILDING AND EQUIPMENT

In New York	\$56,543.71	
In Paris	63,726.20	120,269.91

\$168,149,860.00

TREASURER'S REPORT

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BALANCE SHEET — DECEMBER 31, 1941

FUNDS AND OBLIGATIONS

PRINCIPAL FUND.....		\$144,970,630.10
RESERVE FOR CONTINGENT PROJECTS.....		1,200,000.00
COMMITMENTS		
Unpaid appropriations.....	\$18,520,400.28	
Unappropriated Authorizations..	1,202,827.72	19,723,228.00
		<hr/>
FUNDS AVAILABLE FOR COMMITMENT.....		2,117,908.16
Accounts payable.....		17,823.83
BUILDING AND EQUIPMENT FUND.....		120,269.91
		<hr/>
		<u>\$168,149,860.00</u>

STATEMENT OF PRINCIPAL FUND

Balance, December 31, 1940.....		\$145,068,365.56
Add		
Portion of unexpended balance of appropriation RF-39050 allowed to lapse.....	\$1,140.00	
Refunds on account of appropriations from principal.....	1,124.54	
Contingent project designated by action of April 15, 1936, transferred from Reserve for Contingent Projects in accordance with action taken at meeting of April 2, 1941.....	500,000.00	502,264.54
		\$145,570,630.10
Deduct		
Amount transferred to Appropriations Account in accordance with action taken at meeting of April 2, 1941, to cover appropriation RF-41022 to Cornell University Medical College.....		600,000.00
		\$144,970,630.10
Balance, December 31, 1941.....		\$144,970,630.10

STATEMENT OF RESERVE FOR CONTINGENT PROJECTS

Balance, December 31, 1940.....		\$1,700,000.00
Deduct		
Contingent project designated by action of April 15, 1936, returned to Principal Fund in accordance with action taken at meeting of April 2, 1941.....		500,000.00
		\$1,200,000.00
Balance, December 31, 1941.....		\$1,200,000.00

SUMMARY OF APPROPRIATIONS AND PAYMENTS

Unpaid appropriations, December 31, 1940.....		\$20,121,772.56
Appropriations during the year 1941 (for details see pages 331 to 363)		
Public Health.....	\$2,450,000.00	
Medical Sciences.....	2,120,700.00	
Natural Sciences.....	1,271,535.00	
Social Sciences.....	1,227,279.20	
Humanities.....	1,020,770.00	
Program in China.....	154,000.00	
Miscellaneous.....	185,500.00	
Administration		
Scientific Divisions.....	541,287.00	
General.....	269,227.79	
	<hr/>	
	\$9,240,298.99	
Unused balances of appropriations allowed to lapse (including \$1,140.00 and \$21,050.16 reverting to Principal Fund and Unappropriated Authorizations, respectively).....	757,624.81	8,482,674.18
	<hr/>	<hr/>
		\$28,604,446.74
Payments on 1941 and prior years' appropriations (for details see pages 331 to 363)		
Public Health.....	\$2,149,398.89	
Medical Sciences.....	2,234,460.07	
Natural Sciences.....	1,650,856.97	
Social Sciences.....	1,988,366.87	
Humanities.....	1,006,276.98	
Program in China.....	117,275.52	
Miscellaneous.....	159,980.81	
Administration		
Scientific Divisions.....	516,589.31	
General.....	260,841.04	10,084,046.46
	<hr/>	<hr/>
Unpaid appropriations, December 31, 1941.....		\$18,520,400.28

TREASURER'S REPORT

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STATEMENT OF FUNDS AVAILABLE FOR COMMITMENT

Funds available for commitment, December 31, 1940.....			\$1,355,491.01
Add			
Income and refunds received during 1941			
Income ..	\$8,734,992.33		
Refunds ..	\$7,078 70		
Less: Amount reverting to Principal Fund.	1,124.54	5,954.16	
Unused balances of appropriations allowed to lapse. . .	\$757,624 81		
Less: \$1,140.00 reverting to Principal Fund and \$21,050.16 reverting to Unap- propriated Authorizations.	22,190.16	735,434.65	
Amount transferred from Principal Fund to cover appropriation RF-41022 to Cornell Univer- sity Medical College.	600,000.00	10,076,381 14	
			\$11,431,872 15
Deduct			
Appropriations during 1941.	\$9,240,298 99		
Less: Sum appropriated from Unappropriated Authorizations.	40,000 00		
	\$9,200,298 99		
Amount authorized during 1941 for later appropriation by the Executive Committee	113,665 00	9,313,963 99	
Funds available for commitment, December 31, 1941.			\$2,117,908 16

SUMMARY OF UNAPPROPRIATED AUTHORIZATIONS

Unappropriated Authorizations, December 31, 1940.....		\$1,108,112.56
Add		
Authorizations during 1941 for later appropriation by the Executive Committee.....	\$113,665.00	
Appropriations lapsed during 1941 which reverted to Unappropriated Authorizations.....	21,050.16	134,715.16
		\$1,242,827.72
Deduct		
Amount appropriated from this account during 1941 and included under appropriations.....		40,000.00
		\$1,202,827.72

STATEMENT OF BUILDING AND EQUIPMENT FUND

	BALANCE DEC. 31, 1940	CHANGES DURING 1941		BALANCE DEC. 31, 1941
		EXPENDITURES	DEPRECIATION	
Library.....	\$18,504.35	\$372.84	\$1,027.19	\$17,850.00
Equipment.....	40,052.37	3,470.84	4,829.50	38,693.71
Paris Office				
Part interest in Paris Office building.....	63,726.20	.....	.....	63,726.20
	\$122,282.92	\$3,843.68	\$5,856.69	\$120,269.91

TREASURER'S REPORT

SUMMARY OF APPROPRIATIONS AND UNAPPROPRIATED AUTHORIZATIONS

Unpaid appropriations and Unappropriated Authorizations, December 31, 1940		
Unpaid appropriations	\$20,121,772.56	
Unappropriated Authorizations	1,108,112.56	\$21,229,885.12
Add		
Net amounts appropriated and authorized during 1941	\$9,313,963.99	
Less: Net lapses during 1941	736,574.65	8,577,389.34
		\$29,807,274.46
Deduct		
Payments on 1941 and prior years' appropriations		10,084,046.46
Unpaid appropriations and Unappropriated Authorizations, December 31, 1941		
Unpaid appropriations	\$18,520,400.28	
Unappropriated Authorizations	1,202,827.72	\$19,723,228.00*
* Probable payments in the following years		
1942	\$12,226,859.00	
1943	4,176,878.00	
1944	1,615,025.00	
1945	454,626.00	
1946	1,069,851.00	
1947	89,300.00	
1948	45,889.00	
1949	16,800.00	
1950	16,800.00	
1951	11,200.00	
	\$19,723,228.00	

APPROPRIATIONS DURING 1941, UNPAID BALANCES AS AT DECEMBER 31, 1940, OF PRIOR YEAR
APPROPRIATIONS, AND PAYMENTS THEREON DURING 1941

	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
PUBLIC HEALTH			
International Health Division of The Rockefeller Foundation *			
Prior years (RF 37113, 38103, 39096).....	\$1,614,649.19	} \$.....	\$1,881,781.98
1941 (RF 40125).....	2,000,000.00		
1942 (RF 41104).....	.....	
Revolving Fund. To provide working capital (RF 29093).....	200,000.00	2,200,000.00	.....
Rockefeller Foundation Health Commission (RF 40080, 41023).....	211,716.10	250,000.00	267,616.91
Schools and Institutes of Hygiene and Public Health			
Rumania. Bucharest			
Construction and equipment (RF 33078).....	16,970.71	.....	.....
Health center (RF 33079).....	15,000.00	.....	.....
Sweden. Stockholm			
Construction and equipment (RF 38099).....	30,807.47	.....	.....
University of Michigan, Ann Arbor			
Site, building, equipment, and operating expenses (RF 40126).....	500,000.00	.....	.....
Schools of Nursing			
State Institute of Public Health, Prague, Czechoslovakia			
School of Nurses in Public Health and Social Welfare. Improvement of teaching services (RF 30082).....	6,700.00	.....	.....
TOTAL—PUBLIC HEALTH	<u>\$4,595,843.47</u>	<u>\$2,450,000.00</u>	<u>\$2,149,398.89</u>
MEDICAL SCIENCES			
Psychiatry, Neurology, and Allied Subjects			
American Psychiatric Association, New York City			
Conferences for professional personnel of state mental hospitals (RF 40012)	\$8,000.00	\$.....	\$4,000.00

TREASURER'S REPORT 331

* A complete financial statement of the work of the International Health Division for 1941 will be found on pages 365 to 382.

	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
MEDICAL SCIENCES — Continued			
Psychiatry, Neurology, and Allied Subjects — Continued			
Catholic University of America, Washington, D. C.			
Teaching and research in psychiatry and child guidance (RF 39026)....	\$55,000.00	\$.....	\$18,408.86
Centre Neurologique de Bruxelles, Belgium			
Research in neuroanatomy and neurophysiology (RF 38007).....	1,843.63	.....	.....
Child Research Council of Denver, Colorado			
Psychological studies (RF 39028).....	15,200.00	.....	2,900.00
Columbia University, New York City			
Study of constitutional aspects of disease (RF 39005).....	21,000.00	.....	12,107.77
Teaching and research in neurology (RF 38080).....	58,510.24	.....	19,699.93
Cornell University, Ithaca, New York			
Research in reflex behavior in relation to neuroses (RF 38018, 41012)....	4,791.78	6,000.00	6,000.00
Dalhousie University, Halifax, Nova Scotia			
Development of teaching in psychiatry (RF 41072).....	.....	15,000.00	2,232.82
Dikemark Mental Hospital, Asker, Norway			
Research on mental disease (RF 39044).....	12,497.16	.....	5.00
Duke University, Durham, North Carolina			
Teaching and research in psychiatry and mental hygiene (RF 40005)...	162,500.00	.....	23,835.45
Emma Pendleton Bradley Home, Providence, Rhode Island			
Research in electroencephalography (RF 38069).....	2,500.00	.....	2,500.00
Forman Schools, Litchfield, Connecticut			
Studies on apraxia and related phenomena in children (RF 39065)....	34,940.00	.....	9,481.11
Harvard Medical School and Massachusetts General Hospital, Boston, Massachusetts			
Teaching and research in psychiatry (RF 40006).....	77,000.00	.....	53,000.00

Harvard University, Cambridge, Massachusetts

Research in epilepsy at Harvard Medical School and Boston City Hospital (RF 40007)	\$47,500.00	\$.....	\$19,000.00
Research in industrial hazards (RF 37055, 40064)	137,438.15	.....	67,622.31
Research in neurophysiology (RF 36125)	24,454.19	.....	15,000.00
Studies at the Psychological Clinic (RF 40102)	60,000.00	.....	6,000.00
Institute of the Pennsylvania Hospital, Philadelphia			
Research and teaching in psychiatry (RF 39043, 40129)	90,000.00	.....	28,054.94
Institute for Psychoanalysis, Chicago, Illinois			
General activities and training analyses (RF 38021)	53,165.59	.....	23,750.00
Johns Hopkins University, Baltimore, Maryland			
Development of neurology (RF 40008)	17,500.00	.....	8,990.60
Neurological research (RF 37080)	2,683.32	.....	2,500.00
Research and teaching in psychiatry (RF 39020, 40103)	55,141.52	.....	36,511.72
London County Council, England			
Research in psychiatry at Maudsley Hospital (RF 38061)	77,424.12	.....	3,725.77
Massachusetts Department of Mental Health, Boston			
Publication of statistical data on mental disease in Massachusetts (RF 35003)	4,407.62	.....	4,400.65
Research in psychiatry at Boston State Hospital (RF 39024)	6,850.00	.....	6,850.00
McGill University, Montreal, Canada			
Research in epilepsy and dementia (RF 38068)	19,301.16	.....	8,858.08
Medical Research Council, London, England			
Research in endocrinology, psychiatry, neurology, and allied subjects (RF 39002)	38,393.98	3,910.67

TREASURER'S REPORT

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
MEDICAL SCIENCES — Continued			
Psychiatry, Neurology, and Allied Subjects — Continued			
Medical Research Council, London, England — Continued			
Research in hereditary mental diseases (RF 37056).....	\$6,724.99	\$.....	\$2,425.60
Studies in human genetics in relation to mental disease at Galton Laboratory, University of London (RF 35057, 36132).....	13,555.12	.....	.....
National Committee on Maternal Health, New York City			
General budget (RF 38084).....	6,175.00	.....	4,115.12
Special studies (RF 39066).....	5,190.00	.....	4,500.00
Northwestern University Medical School, Chicago, Illinois			
Research in neuroanatomy (RF 37010).....	7,607.40	.....	5,000.00
Royal Medico-Psychological Association, London, England			
Teaching and training in psychiatry (RF 37098).....	3,498.43	.....	160.88
Tavistock Clinic, London, England			
Research in field of psychosomatic medicine (RF 39067).....	15,426.24	.....	189.41
Tufts College Medical School, Boston, Massachusetts			
Research in brain chemistry (RF 40027).....	24,000.00	.....	5,999.91
Research in neurology (RF 40009).....	20,000.00	.....	4,999.44
Tulane University, New Orleans, Louisiana			
Maintenance of subdepartment of psychiatry (RF 39021).....	15,000.00	.....	10,000.00
University of Brussels, Belgium			
Research in neurophysiology and endocrinology (RF 39068).....	23,145.30	.....	.....
University of Cambridge, England			
Research in Department of Experimental Medicine (RF 37137).....	31,628.12	.....	.....
Research in Department of Experimental Psychology (RF 37079).....	39,793.73	.....	6,265.01
University of Chicago, Illinois			
Teaching and research in psychiatry (RF 38016, 41026).....	27,805.33	150,000.00	50,000.00
University of Cincinnati, Ohio			
Research in neurology in relation to nutrition (RF 37107).....	15,462.04	7,274.96

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University of Colorado, Denver, School of Medicine			
Teaching of psychiatry (RF 39022).....	\$15,120.00	\$.....	\$9,880.00
University of Edinburgh, Scotland			
Research in psychiatry, neurology, and neurosurgery (RF 36054, 40087, 41055).....	18,381.84	20,700.00	26,266.80
University of Freiburg, Germany			
Neuropsychiatric research (RF 37133).....	8,085.48	.....	.....
University of Illinois, Urbana			
Development of neurology and neurosurgery (RF 40105, 41091).....	8,000.00	15,000.00	12,000.00
Teaching and research in psychiatry at the Medical School in Chicago (RF 39023).....	12,500.00	.....	9,490.00
University of Lund, Sweden			
Enlargement of research facilities in neurology (RF 39063).....	18,560.30	.....	3,582.60
University of Oslo, Norway			
Research in neuroanatomy and neuropathology (RF 37057).....	2,123.69	.....	.....
University of Oxford, England			
Research in brain chemistry (RF 39061).....	9,590.90	.....	1,214.10
University of Pennsylvania, Philadelphia			
Research in physiology (RF 41054).....	.....	20,000.00	20,000.00
University of Toronto, Canada			
Research in psychiatry (RF 39001).....	63,587.06	.....	4,423.25
Washington University, St. Louis, Missouri			
Research in neurophysiology (RF 38017).....	54,063.09	.....	11,965.40
Support of Department of Neuropsychiatry (RF 38067, 41027).....	25,156.11	150,000.00	50,000.00
Worcester State Hospital, Massachusetts			
Research on dementia praecox (RF 37034, 40057).....	31,426.35	.....	12,705.92
Yale University, New Haven, Connecticut, School of Medicine			
Development of psychiatry (RF 37114).....	187,500.00	75,000.00

TREASURER'S REPORT

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
MEDICAL SCIENCES — Continued			
Endocrinology			
Columbia University, New York City			
Researches in endocrinology (RF 40011).....	\$31,500.00	\$.....	\$19,856.21
Harvard University, Cambridge, Massachusetts			
Researches in endocrinology (RF 37078).....	1,500.00	.....	1,500.00
Massachusetts General Hospital, Boston			
Research on the parathyroid hormone and calcium and phosphorus metabolism (RF 38082).....	10,000.00	.....	4,000.00
McGill University, Montreal, Canada			
Research in endocrinology (RF 41074).....	.....	25,000.00	2,212.50
National Research Council, Washington, D. C.			
Committee for Research in Problems of Sex (RF 37123, 41011).....	53,260.50	150,000.00	63,120.56
University of California, Berkeley			
Research on hormones and vitamins (RF 39062).....	52,611.52	.....	15,000.00
Yale University, New Haven, Connecticut			
Research in endocrinology (RF 39003).....	9,201.16	.....	9,000.00
Teaching of Public Health in Medical Schools			
American Film Center, Inc., New York City			
Developing the use of films in teaching medicine and public health (RF 41075).....	.....	9,000.00	1,500.00
Cornell University Medical College, New York City			
Department of Public Health and Preventive Medicine			
Endowment (RF 41022).....	.....	600,000.00	600,000.00
Maintenance (RF 36057).....	14,000.00	.....	11,730.49
Dalhousie University, Halifax, Nova Scotia			
Development of teaching in public health and preventive medicine (RF 38081).....	5,258.15	.....	3,031.88

University of Manitoba, Winnipeg, Canada			
Development of teaching of preventive medicine (RF 40061)	\$10,800.00	\$	\$
West China Union University, Chengtu			
Support of public health practice field (RF 40063)	8,644.84	. . . . .	2,500.00
Yale University, New Haven, Connecticut. School of Medicine			
Development of teaching of public health and preventive medicine (RF 40062)	7,500.00	. . . . .	2,962.10
Fellowships			
Administered by The Rockefeller Foundation (RF 36144, 37129, 38113, 39112, 40065, 40134, 41057, 41113)	154,950.82	80,000.00	70,144.22
Medical Research Council, London, England (RF 37033)	15,875.52	. . . . .	. . . . .
National Research Council, Washington, D. C.			
Medical sciences (RF 37061, 40056)	87,867.01	. . . . .	24,214.56
Welch Fellowships in internal medicine (RF 41028) . . . . .	. . . . .	168,000.00	223.76
Scholarships for British Medical Students (RF 40127)	100,000.00	. . . . .	46,404.18
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)	8,083.72	. . . . .	3,250.00
Dartmouth College, Hanover, New Hampshire			
Research in physiological optics (RF 38083, 41073)	20,000.00	80,000.00	100,000.00
Grants in Aid (RF 36148, 37125, 38109, 39116, 40066, 40094, 40138, 41117)	266,817.55	125,000.00	116,624.88
Harvard University, Cambridge, Massachusetts			
Development of legal medicine (RF 39029)	10,000.00	5,000.00
Medicolegal research (RF 41013)	12,000.00	2,000.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
MEDICAL SCIENCES — Continued			
<i>General — Continued</i>			
Johns Hopkins University, Baltimore, Maryland			
Institute of History of Medicine (RF 38022)	\$112,500.00	\$	\$15,000.00
School of Medicine. Research fund (RF 39004)	50,000.00	. . . . .	20,000.00
Leland Stanford Junior University, Palo Alto, California			
Researches in kidney diseases (RF 37030, 40010)	18,470.57	. . . . .	7,000.00
Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City			
Research, teaching, and professional care (RF 41024) . . . . .	. . . . .	120,000.00	30,000.00
National Health Council, Inc., New York City			
Study of the organization, interrelationships, policies, and opportunities of voluntary agencies in the field of public health (RF 41089) . . . . .	. . . . .	75,000.00	5,325.00
Research Council of the Department of Hospitals, New York City			
Research on chronic diseases (RF 38008, 40104)	75,936.18	. . . . .	29,100.22
Tulane University, New Orleans, Louisiana			
Development of Department of Tropical Medicine (RF 41025) . . . . .	. . . . .	200,000.00	200,000.00
University of Buenos Aires, Argentina			
Institute of Physiology. Research (RF 40128)	23,000.00	. . . . .	5,615.67
University of Paris, France. Radium Institute			
Division of Biophysics (RF 32076)	41,506.42	. . . . .	2,310.00
West China Union University, Chengtu			
Equipment of University hospital (RF 41056) . . . . .	. . . . .	10,000.00	7,500.00
Former Program			
Leland Stanford Junior University, Palo Alto, California			
Fluid research fund in medicine (RF 38060)	40,000.00	. . . . .	15,000.00

National Research Council, Washington, D. C.				
Committee on Drug Addiction (RF 36011).....	\$17,391.77	\$.....	\$11,969.63	
Peiping Union Medical College, China				
Allowance for widow of staff member (RF 29034).....	3,562.70	.....	.....
University of Rochester, New York				
Fluid research fund in medicine (RF 41053).....	.....	90,000.00	15,000.00	
Washington University, St. Louis, Missouri				
Maintenance of Departments in the School of Medicine (RF 38059).....	301,589.37	.....	39,560.13	
TOTAL — MEDICAL SCIENCES	\$3,348,976.78	\$2,120,700.00	\$2,234,460.07	
NATURAL SCIENCES				
Experimental Biology				
Amherst College, Massachusetts				
Research in genetics, experimental embryology, and growth problems (RF 39104).....	\$28,900.00	\$.....	\$8,598.84	
Brown University, Providence, Rhode Island				
Researches in genetics (RF 39032).....	3,631.14	.....	1,600.00	
California Institute of Technology, Pasadena				
Developments of chemistry in relation to biological problems (RF 40074, 41064).....	22,500.00	40,000.00*	21,449.84	
Researches on the structure of antibodies and the nature of immunologi- cal reactions (RF 41051).....	.....	33,000.00	5,500.00	
Researches in serological genetics (RF 40073).....	12,000.00	.....	7,000.00	
Carlsberg Foundation, Copenhagen, Denmark				
Special researches (RF 37024).....	5,287.87	.....	3,209.04	
Carnegie Institution of Washington, D. C.				
Support of Drosophila Stock Center and Information Service at the Laboratory of Genetics, Cold Spring Harbor, New York (RF 41094)...	9,000.00	

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* Appropriation for which funds were previously authorized.

NATURAL SCIENCES — *Continued*

Experimental Biology — *Continued*

Catholic University of America, Washington, D. C.

Researches on decomposition and synthesis of certain polynuclear ring systems (RF 40059).....

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\$25,200.00 \$..... \$5,600.00

Collège de France, Paris. Laboratory of Atomic Synthesis

Research on biological problems (RF 37093).....

5,900.15 241.59

Columbia University, New York City

Researches in Departments of Biochemistry and Urology and in the Presbyterian Hospital (RF 40003).....

5,900.00 5,900.00

Researches on electrical properties of cells and tissues (RF 41093).....

..... 15,400.00 2,800.00

Researches on problems of metabolism, with the aid of chemical isotopes (RF 38026).....

37,250.00 14,548.95

Researches on vitamins and related substances in relation to plant growth (RF 40107).....

25,000.00 5,000.00

Connecticut Agricultural Experiment Station, New Haven

Researches in genetics of growth in plants (RF 40106).....

17,500.00 2,500.00

Cornell University, Ithaca, New York

Researches on aging and longevity (RF 41036).....

..... 60,000.00

Researches on biochemistry of proteins, peptides, amino acids, hormones, and related compounds (RF 38094, 41035).....

4,710.36 75,000.00 79,701.18

Researches in nutrition (RF 36029).....

7,523.29 7,500.00

Duke University, Durham, North Carolina

Researches on physical chemistry of proteins (RF 40076).....

6,000.00 3,000.00

Eidgenössische Technische Hochschule, Zurich, Switzerland. Laboratory of Organic Chemistry

Researches on constitution and synthesis of physiologically active compounds (RF 38042).....

30,661.18 10,413.51

Fondation Rothschild, Paris, France. Institute of Physicochemical Biology Researches in cellular physiology, chemical embryology, and genetics (RF 36067)	\$34,443.44	\$.....	\$.....
Harvard University, Cambridge, Massachusetts Researches on the determination of heats of organic reactions (RF 38019, 41018)	3,752.05	14,000.00	7,234.37
Researches on the chemical and electrical behavior of proteins (RF 38038)	61,200.62	.....	13,999.64
Indiana University, Bloomington Researches in cytogenetics (RF 40001)	18,000.00	.....	4,000.00
Iowa State College, Ames Researches in genetics (RF 40075)	15,500.00	.....	8,000.00
Johns Hopkins University, Baltimore, Maryland Department of Chemistry Researches in biochemistry (RF 39017)	13,500.00	.....	6,183.30
School of Hygiene and Public Health Researches in nutrition (RF 36099, 41019)	3,260.33	18,500.00	5,384.20
School of Medicine Researches in nutrition (RF 41050) .....	.....	30,000.00	5,000.00
Karolinska Institute, Stockholm, Sweden Researches in biochemistry (RF 40004, 41016, 41103)	320.82	11,125.00	7,831.07
Leland Stanford Junior University, Palo Alto, California Development of the electron microscope and its use in the biological and medical sciences (RF 41060) .....	.....	65,000.00	65,000.00
Long Island Biological Association, Cold Spring Harbor, New York Symposium at Cold Spring Harbor Laboratory (RF 41010) .....	.....	6,500.00	6,500.00
Marine Biological Laboratory, Woods Hole, Massachusetts Construction and furnishing of addition to library (RF 40037)	70,623.38	66,817.13

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
<i>NATURAL SCIENCES — Continued</i>			
<i>Experimental Biology — Continued</i>			
Massachusetts Institute of Technology, Cambridge			
Development of biological engineering (RF 40039)	\$180,000.00	\$.....	\$21,153.91
Development of electron microscope (RF 41059) .....	.....	70,000.00	70,000.00
Researches on concentrated food formulae (RF 41017) .....	.....	14,000.00	14,000.00
McGill University, Montreal, Canada			
Researches in cytology and genetics (RF 40072)	11,000.00	.....	6,531.25
Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City			
Research on spectroscopic and chemical aspects of certain deficiency diseases (RF 39089)	5,000.00	.....	5,000.00
National Research Council, Washington, D. C.			
Researches in biophysics (RF 37020)	21,418.57	.....	12,052.53
New York University, New York City			
Researches in cellular physiology (RF 38085)	15,000.00	.....	5,000.00
Princeton University, New Jersey			
Researches in organic chemistry (RF 40058)	36,000.00	.....	8,000.00
Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine			
Special researches (RF 40024)	11,250.00	.....	4,500.00
State University of Iowa, Iowa City			
Researches in general physiology (RF 40022)	21,000.00	.....	6,000.00
Swarthmore College, Pennsylvania			
Researches in general physiology (RF 40002)	8,750.00	.....	3,500.00
University of Berne, Switzerland			
Researches in physiology (RF 37054)	10,779.41	.....	5,808.80
University of California, Berkeley			
Construction and installation of cyclotron (RF 40036)	1,150,000.00	.....	429,827.83
Cyclotron research (RF 39042)	33,334.00	.....	23,568.95

University of Cambridge, England. Molteno Institute of Biology and Parasitology			
Research in cellular physiology (RF 35146).....	\$5,459.29	\$.	\$2,423.92
University of Chicago, Illinois			
Biological research (RF 38037).....	77,463.01	.....	.....
Researches in molecular spectra (RF 39030, 41101).....	10,150.00	25,500.00	7,150.00
Researches in application of spectroscopic methods to biological problems (RF 40021).....	50,000.00	.....	15,000.00
University of Copenhagen, Denmark			
Researches in the Institute of Theoretical Physics (RF 40025, 41063)...	900.00	8,000.00	.....
University of Illinois, Urbana			
Research in biochemistry of amino acids (RF 38039).....	37,500.00	.....	15,000.00
University of Leeds, England			
Research on x-ray analysis of biological tissues (RF 38041).....	33,196.32	.....	8,347.08
University of London, England			
Research on vitamins, sterols, and related compounds (RF 38070).....	44,047.43	.....	4,655.90
University of Michigan, Ann Arbor			
Research in physiology of respiration (RF 35049).....	75.96	.....	.....
University of Minnesota, Minneapolis			
High-pressure generator, and researches in biology and medicine (RF 37053).....	54.14	.....	Cr. 1,101.65
Research on the use of radioactive and heavy isotopes as tracers of fundamental biological mechanisms (RF 41061).....	.....	52,000.00	52,000.00
Researches in biophysics (RF 41062).....	.....	17,000.00	3,250.00
Researches in lipid metabolism (RF 39031).....	10,500.00	.....	2,993.49
Researches on mechanism of osmosis (RF 39056).....	8,250.00	.....	5,500.00
University of Missouri, Columbia			
Researches in genetics (RF 39041).....	12,511.97	.....	5,487.56
University of Oxford, England. Dyson Perrins Laboratory of Organic Chemistry			
Construction and equipment (RF 39039).....	73,758.12	46,462.23
Research on hormone synthesis (RF 36083, 41092).....	8,836.53	3,240.00	4,648.23

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
<i>NATURAL SCIENCES — Continued</i>			
<i>Experimental Biology — Continued</i>			
University of Pennsylvania, Philadelphia			
Researches on permeability of the red blood cell (RF 40023).....	\$8,750.00	\$.....	\$2,498.61
University of Rochester, New York			
Research on biological and medical problems (RF 38025, 41034).....	6,062.07	76,000.00	19,497.14
University of Stockholm, Sweden			
Researches under direction of Professor Runnström (RF 37022, 38024).	17,555.52	.....	10,722.24
Scientific equipment and materials for researches under direction of Pro-			
fessor von Euler (RF 37023).....	1,573.36	.....	688.88
University of Texas, Austin			
Researches in genetics of <i>Drosophila</i> (RF 41052).....	.....	34,520.00	11,690.91
Researches on growth-promoting substances (RF 40070).....	12,000.00	.....	5,500.00
University of Uppsala, Sweden. Institute of Physical Chemistry			
Research on physical-chemical properties of proteins and other heavy			
molecules (RF 35044, 40026, 41100).....	21,458.11	11,250.00	14,786.84
University of Utrecht, Netherlands			
Research in spectroscopic biology (RF 37094).....	22,807.71	.....	.....
Researches in biochemistry of growth substances (RF 39007).....	17,343.60	.....	.....
University of Wisconsin, Madison			
Research in immunogenetics (RF 38073).....	13,020.87	.....	5,127.10
Researches in biochemistry of symbiotic nitrogen fixation (RF 40071) ..	21,000.00	.....	5,239.86
Washington University, St. Louis, Missouri			
Research in biochemistry (RF 38074).....	7,601.48	.....	5,520.81
Research in general physiology and experimental embryology (RF 38040)	25,437.21	7,417.13
Researches in carbohydrate metabolism (RF 41020).....	15,000.00	2,500.00

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Fellowships			
Administered by The Rockefeller Foundation (RF 36145, 37130, 38114, 39113, 40135, 41114).....	8122,349.83	\$50,000.00	\$25,059.25
National Research Council, Washington, D. C. (RF 36070, 39070, 39103, 41112).....	165,870.18	180,000.00	45,903.00
General			
American Mathematical Society, New York City			
Establishing an International Review Journal of Mathematics (RF 39071)	1,500.00	.....	1,500.00
Expenses of International Congress of Mathematicians (RF 37108)....	5,000.00	.....	.....
Brown University, Providence, Rhode Island			
Installing microfilm photographic laboratory and supplementing through filming the resources of the library in mathematics (RF 39072).....	26,020.00	.....	9,390.00
China Medical Board, Inc., New York City			
Peiping Union Medical College, China			
Human paleontological research in Asia (RF 32100, 36137, 41102)...	29,581.31	30,000.00	7,259.20
Commission to Survey Agriculture in Mexico (RF 41049).....	.....	10,000.00	6,889.11
Cornell University, Ithaca, New York			
Researches in molecular structure (RF 40077).....	9,500.00	.....	4,500.00
Grants in Aid (RF 36149, 37126, 38110, 39117, 40095, 40108, 40139, 41087, 41118).....	365,398.28	170,000.00	195,894.20
National Research Council, Washington, D. C.			
Administration budget, conferences, special studies, committees, and in- ternational scientific projects (RF 39102, 41111).....	25,000.00	100,000.00	25,000.00
Royal Society, London, England			
Emergency grant for English scientific journals (RF 41008).....	12,500.00	12,500.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
NATURAL SCIENCES — Continued			
<i>General — Continued</i>			
Union of American Biological Societies			
Emergency grant for biological abstracts (RF 41009)	\$.....	\$15,000.00	\$15,000.00
<i>Former Program</i>			
International Commission for the Polar Year 1932-33, Copenhagen, Denmark			
Equipment and expenses (RF 34132)	12,000.00	.....	.....
University of Leiden, Netherlands			
Purchase and endowment of a photographic telescope for the Union Observatory, Johannesburg, Union of South Africa (RF 30021, 34100)	6,575.61	.....	.....
University of Szeged, Hungary			
Department of Science. Research equipment (RF 31025)	715.08	.....	.....
University of Virginia, Charlottesville			
Graduate research in the natural sciences (RF 34153)	2,500.00	.....	2,500.00
Yale University, New Haven, Connecticut			
Laboratories of Primate Biology, Orange Park, Florida			
Maintenance (RF 39008)	117,018.44	.....	41,000.00
TOTAL — NATURAL SCIENCES	\$3,398,438.04	\$1,271,535.00	\$1,650,856.97
SOCIAL SCIENCES			
American Association of Schools of Social Work			
Development of standards for training public welfare officials (RF 38014).	\$1,500.00	\$.....	\$1,500.00
American University, Washington, D. C.			
Training program for government employees of Latin American countries (RF 38063)	1,800.00	.....	1,800.00
Canadian Institute of International Affairs, Toronto, Ontario			
General budget (RF 39033)	15,146.87	6,565.63

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Canton of Geneva, Switzerland			
Department of Public Instruction			
Graduate Institute of International Studies (RF 29136, 38045).....	\$316,713.96	\$.....	\$139,000.00
Centre d'Études de Politique Étrangère, Paris, France			
General budget (RF 38046).....	75,792.16	.....	.....
Council on Foreign Relations, New York City			
Research program (RF 35189, 38015).....	32,435.79	.....	15,000.00
Study groups and research in problems involved in peace settlement following present war (RF 41001, 41099).....	.....	103,700.00	42,000.00
Dalhousie University, Halifax, Nova Scotia			
Program of training and research in public administration (RF 36093, 41080)	7,799.02	20,000.00	8,884.37
Dutch Economic Institute, Rotterdam, Netherlands			
General budget (RF 39085).....	12,158.06	.....	.....
Fellowships			
Administered by The Rockefeller Foundation (RF 35195, 36146, 37131, 38115, 39114, 40136, 41115).....	127,275.87	50,000.00	44,231.28
Social Science Research Council, New York City (RF 37051, 40119, 41078)	144,769.64	75,000.00	62,289.24
Foreign Policy Association, New York City			
Department of Popular Education (RF 41003).....	.....	25,000.00	25,000.00
General budget (RF 41110).....	.....	110,000.00	.....
Latin American Information Service (RF 39074).....	2,500.00	.....	2,500.00
Research Department (RF 38106).....	25,000.00	.....	25,000.00
Geneva Research Center, Switzerland, and University of California, Berkeley			
Collaborative study of commercial policy (RF 38095).....	14,501.81	.....	7,500.00
Grants in Aid			
General program (RF 37127, 38096, 38111, 39118, 40085, 40093, 40101, 40140, 41081, 41119).....	339,890.45	175,000.00	188,784.87
Special fund for study in Latin American countries (RF 41032).....	50,000.00	23,900.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
SOCIAL SCIENCES — Continued			
Harvard University, Cambridge, Massachusetts			
Graduate School of Public Administration			
General budget (RF 39109).....	\$47,500.00	\$.....	\$7,500.00
Training in public service (RF 35078).....	6,979.59	.....	2,497.29
Research in social sciences (RF 32032, 35086).....	52,000.00	.....	.....
Harvard University and Radcliffe College, Cambridge, Massachusetts			
Research in field of international relations (LS 993).....	91,210.36	.....	48,478.84
Institute for Advanced Study, Princeton, New Jersey			
Work of American Coordinating Committee of International Studies Conference (RF 40018).....	15,000.00	.....	14,609.26
Work in economics (RF 40033).....	87,500.00	.....	35,000.00
Institute of Economics and Social Research, Paris, France			
Establishment and support (RF 33072).....	94,980.51	.....	2,904.09
Institute of Economics and History, Copenhagen, Denmark			
International Relations Section. General budget (RF 38065).....	7,556.81	.....	4,306.32
Institute of International Affairs, Stockholm, Sweden			
General budget (RF 40122).....	11,000.00	.....	10,743.89
Institute of Pacific Relations			
American Council, New York City. General budget (RF 38108, 40121) ..			
International Secretariat			
Studies of issues involved in present situation in Far East (RF 38013) ..	28,179.66	.....	26,453.04
Pacific Council, Honolulu, Hawaii			
General budget and research program (RF 38107, 40120).....	89,000.00	.....	48,000.00
International Information Committee, Stockholm, Sweden			
Program of research and popular education in international problems in Sweden (RF 38001).....	2,757.38	.....	.....
International Institute of Intellectual Cooperation, Paris, France			
Maintenance and conferences (RF 37117)	679.44

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League of Nations, Geneva, Switzerland			
Economic, Financial, and Transit Department, Princeton, New Jersey			
Analytical research (RF 37116, 40118).....	\$90,383.50	\$.....	\$25,000.00
Fiscal Committee. Study of international double taxation problems (RF 33004).....	3,357.53	.....	42.98
Leland Stanford Junior University, Palo Alto, California			
Food Research Institute. Research program (RF 40046).....	50,000.00	.....	20,000.00
Library of International Relations, Chicago, Illinois			
General budget (RF 36095).....	5,000.00	.....	3,750.00
London and Cambridge Economic Service, England			
Research on business cycle (RF 37067).....	2,450.90	.....	.....
London School of Economics and Political Science, University of London, England			
Emergency fund (RF 39095).....	39,460.00	.....	11,282.10
Library development (RF 31030).....	9,391.70	.....	.....
Purchase of land for expansion of school plant (RF 31028).....	17,373.24	.....	8,686.53
Massachusetts Institute of Technology, Cambridge			
Industrial Relations Section. Research in the economics of technological change (RF 41042).....	.....	30,000.00	5,000.00
McGill University, Montreal, Canada			
Research in social sciences (RF 36078).....	2,649.79	.....	.....
National Bureau of Economic Research, New York City			
Planning and research in field of finance (RF 37139).....	985.41	.....	985.41
Program of financial research (RF 39106, 41002).....	35,000.00	70,000.00	70,000.00
Program of research in fiscal policy (RF 40016).....	10,000.00	.....	5,000.00
National Institute of Economic and Social Research of Great Britain, London			
General budget (RF 37049).....	86,881.95	16,168.90

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
<i>SOCIAL SCIENCES — Continued</i>			
National Institute of Public Affairs, Washington, D. C.			
Training of personnel for the federal services (RF 38047, 40099)	\$131,250.00	\$	\$30,378.91
New School for Social Research, New York City. Graduate Faculty of Political and Social Science			
Study of social and economic controls in Germany and Russia, and general research assistance (RF 41044) . . . . .	. . . . .	53,000.00	17,750.00
Norwegian Committee for International Studies, Oslo			
Program of research and popular education in international problems in Norway (RF 37102)	10,485.87	. . . . .	. . . . .
Pacific Northwest Council of Education, Planning, and Public Administration, Administration, research, and publication (RF 38048, 40048, 40123)	64,332.27	. . . . .	23,182.39
Royal Institute of International Affairs, London, England			
Research program (RF 37004)	72,546.03	. . . . .	40,409.90
Social Science Research Council, New York City			
Administrative budget (RF 39107)	75,000.00	. . . . .	30,000.00
Committee on Social Security			
Exploratory studies, conferences, and small projects (RF 38064, 39082, 40088)	24,162.16	. . . . .	8,510.68
Study of interrelations between social security program and national income in the United States (RF 39083)	8,150.00	. . . . .	8,150.00
Study of state unemployment compensation administration (RF 38101)	3,800.00	. . . . .	542.65
Work in field of social security (RF 39081)	45,000.00	. . . . .	29,866.13
Conferences and planning (RF 38043, 41076)	51,546.38	50,000.00	40,115.71
General research projects (RF 31126)	87,349.72
Grants in aid of research (RF 38044, 41077)	27,950.00	75,000.00	23,600.00

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Public Administration Committee			
General expenses, exploratory studies, conferences, and small projects (RF 35114, 39057, 39084, 40089).....	\$65,710.89	\$.....	\$45,000.00
Study of administrative methods of Department of Agriculture (RF 37140).....	4,666.36	.....	1,406.60
Survey of programs of training in public administration (RF 37065)....	8,750.00	.....	1,605.23
Research in the economic history of the United States, the islands, and near-by territory (RF 40116).....	300,000.00	.....	52,500.00
Spelman Fund of New York, New York City			
Work in public administration (RF 38049).....	1,350,000.00	.....	350,000.00
State Charities Aid Association, New York City			
Local citizens public welfare committees in New York State (RF 37111, 41004).....	508.67	25,000.00	25,508.67
Syracuse University, New York. School of Citizenship and Public Affairs			
Training course in public administration (RF 39058).....	37,000.00	.....	13,000.00
University of California, Berkeley. Bureau of Public Administration			
Establishing measurement standards for local government activities in the San Francisco-Oakland metropolitan region (RF 39059).....	15,000.00	.....	10,000.00
University of Chicago, Illinois			
Aid to social sciences facilities (RF 31133, 35087, 41041).....	50,000.00	150,000.00	72,500.00
Local community research (RF 31131).....	31,522.50	.....	.....
School of Social Service Administration			
Current expenses (RF 39045).....	35,000.00	.....	20,000.00
General endowment (RF 34057).....	500,000.00	.....	.....
Training and research in public administration (RF 38091).....	12,500.00	12,500.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
SOCIAL SCIENCES — Continued			
University of Delaware, Newark			
Study of individual income distribution (RF 40117).....	\$18,000.00	\$.....	\$11,237.50
University of Denver, Colorado			
Study of the economic methods of National Socialist Germany (RF 41033).....	.....	4,329.20	4,329.20
University of Louvain, Belgium. Institute of Economics			
General budget (RF 38102).....	10,600.29	.....	.....
University of Minnesota, Minneapolis			
Analysis of the distribution of family and individual income in Minnesota (RF 41086).....	.....	35,000.00	5,000.00
Program of training for public service (RF 36065, 40035).....	44,149.19	.....	4,977.47
Study of employment and unemployment in St. Paul (RF 40078, 41079)...	5,000.00	50,450.00	30,225.00
University of Oslo, Norway. Institute of Economics			
Research program (RF 36112).....	5,500.00	.....	.....
University of Oxford, England			
Social Studies Research Committee (RF 40040, 41031).....	18,097.50	24,300.00	36,284.30
University of Paris, France			
Research in social sciences (RF 35072).....	26,233.82	.....	.....
University of Pennsylvania, Philadelphia. Wharton School			
Industrial Research Department. General budget (RF 35074, 40047).....	87,500.00	.....	25,000.00
University of Sofia, Bulgaria. Statistical Institute of Economic Research			
General budget (RF 37110).....	5,335.81	.....	1,941.57
University of Southern California, Los Angeles. School of Government			
Development of program (RF 38033, 40124).....	30,060.98	.....	11,405.92
University of Virginia, Charlottesville. Bureau of Public Administration			
Program of service and research (RF 39108).....	20,000.00	8,000.00

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University of Wisconsin, Madison			
Study of amount and distribution of income in Wisconsin (RF 39079)	\$10,575.00	\$	\$10,575.00
Yale University, New Haven, Connecticut. Institute of International Studies			
Research program (RF 41040)		51,500.00	7,500.00
TOTAL — SOCIAL SCIENCES	\$5,327,844.84	\$1,227,279.20	\$1,988,366.87

HUMANITIES

Drama

American Foundation for the Blind, New York City			
Development of dramatic training work (RF 40109)	\$30,000.00	\$	\$22,500.00
Carolina Art Association			
General expenses of Dock Street Theatre, Charleston, South Carolina (RF 38051)	2,500.00	. . . . .	2,500.00
Cornell University, Ithaca, New York			
State-wide program in music and drama (RF 40015)	14,850.00	. . . . .	6,584.16
Leland Stanford Junior University, Palo Alto, California			
Work in drama (RF 40030)	19,000.00	. . . . .	10,000.00
National Theatre Conference, Cleveland, Ohio			
General expenses and revolving fund to cover royalty fees on plays for noncommercial production (RF 38054)	6,521.29	. . . . .	3,000.00
Support of activities and projects (RF 40131)	55,000.00	. . . . .	15,000.00
Stevens Institute of Technology, Hoboken, New Jersey			
Research in control of sound and light for dramatic purposes (RF 39075) . .	13,700.00	. . . . .	9,650.00
University of North Carolina, Chapel Hill			
Work in drama (RF 37028, 38050)	4,500.00	. . . . .	4,500.00
Western Reserve University, Cleveland, Ohio			
Department of Drama and Theatre (RF 41107)		35,000.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
<i>HUMANITIES — Continued</i>			
<i>Drama — Continued</i>			
Yale University, New Haven, Connecticut			
Development and testing of equipment in theatre lighting (RF 40031) . . .	\$9,500.00	\$	\$9,500.00
<i>Libraries and Museums</i>			
American Council of Learned Societies, Washington, D. C.			
Microfilming projects (RF 41005, 41083) . . . . .	.....	130,000.00	5,000.00
American Library Association, Chicago, Illinois			
Aid in connection with the General Catalogue of the Bibliothèque Nationale (RF 36020)	30,000.00	.....	.....
Committee on International Relations			
Activities in Canada, other British possessions, Greenland, and Europe (RF 39048)	38,000.00	.....	38,000.00
Preparation of new edition of Union List of Serials in the United States and Canada (RF 39051)	8,600.00	.....	8,600.00
Studies of library cooperation with Latin America (RF 39047)	13,325.00	.....	10,825.00
American Library in Paris, Inc., France			
General budget (RF 40042)	20,000.00	.....	.....
Bibliothèque pour Tous, Berne, Switzerland			
Book purchases and development of regional services (RF 39049)	13,000.00	.....	8,000.00
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)	82,597.57	.....	925.97
Folger Shakespeare Library, Washington, D. C.			
Purchase and cataloging of books and manuscripts (RF 40041)	34,668.15	34,668.15

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Library of Congress, Washington, D. C. Hispanic Foundation			
Development of catalogue of Hispanic material and organization of bibliographical services (RF 39097, 41065)	\$11,093.50	\$11,000.00	\$10,971.29
Museum of Modern Art, New York City			
Current expenses (RF 39025, 41067)	7,500.00	15,000.00	22,500.00
National Central Library, London, England			
Establishment of Bureau of American Bibliography (RF 37059)	4,603.69	.....	848.40
General operations (RF 40032, 41048)	4,250.00	8,910.00	13,144.63
National Library of Peiping, China			
Development of library services (RF 36072)	5,500.00	.....	4,750.00
Princeton University, New Jersey. Index of Christian Art (RF 38100)			
	38,000.00	.....	8,000.00
Society of the Friends of the Bibliothèque Nationale, Paris, France			
Printing of the General Catalogue (RF 29089, 34094, 35134)	1,000.00	.....	.....
Special microfilming projects in England in connection with the program of the American Council of Learned Societies (RF 41084)			
	.....	40,000.00	.....
University of Chile, Santiago			
Development of its central library (RF 39094)	4,267.31	.....	3,456.48
University of Oxford, England			
Development of the Bodleian and other University libraries (RF 31121)	575,368.55	.....	39,733.45
Radio and Film			
American Film Center, Inc., New York City			
Division of Program and Exhibition (RF 41046)	11,000.00	5,000.00
General budget (RF 40132)	50,000.00	25,000.00

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
HUMANITIES — Continued			
Radio and Film — Continued			
Columbia University, New York City			
Office of Radio Research (RF 40014, 41045).....	\$10,000.00	\$60,000.00	\$22,500.00
Harvard University, Cambridge, Massachusetts			
Lecturer in broadcasting (RF 39086).....	14,000.00	.....	8,000.00
Leland Stanford Junior University, Palo Alto, California			
Radio Listening Center (RF 41015).....	.....	5,000.00	5,000.00
Library of Congress, Washington, D. C.			
Work in radio broadcasting (RF 40133).....	23,320.00	.....	23,320.00
Museum of Modern Art, New York City			
Film library (RF 40068).....	45,000.00	.....	25,000.00
Study of films in wartime communication (RF 41067).....	.....	5,000.00	2,500.00
National Film Society of Canada, Ottawa			
General budget (RF 39054, 41030).....	7,088.58	17,600.00	8,980.05
New School for Social Research, New York City			
Experimental demonstrations of music in film production (RF 40013)....	10,440.00	.....	10,440.00
Princeton University, New Jersey. School of Public and International Affairs			
Work of the listening center (RF 40054).....	6,250.00	.....	6,250.00
Rocky Mountain Radio Council, Laramie, Wyoming			
General budget (RF 40043).....	13,500.00	.....	7,750.00
Studies of American Culture			
Special grant in aid fund for planning and coordination of regional studies bearing on the cultural tradition of North America (RF 41106).....	.....	25,000.00	.....
University of Chicago, Illinois			
Completion of materials for the Dictionary of American English (RF 41097).....	.....	25,000.00	.....

Far Eastern Interests

American Council of Learned Societies, Washington, D. C.

Cataloguing American collections of Chinese and Japanese books (RF 37120)	\$36,984.02	\$.....	\$13,767.50
Committee on Far Eastern Studies (RF 41029).....	.....	15,000.00	.....
Special intensive instruction in the Chinese, Japanese, and Russian languages (RF 41082).....	.....	50,000.00	.....
Summer seminars in Far Eastern studies (RF 38038).....	4,500.00	.....	3,000.00
Claremont Colleges, California			
Development of Far Eastern studies (RF 39077).....	2,000.00	.....	2,000.00
College of Chinese Studies, Peking			
General expenses (RF 41007).....	.....	15,000.00	7,523.07
Columbia University, New York City			
Books and teaching materials in Far Eastern languages (RF 38030)....	10,000.00	.....	7,500.00
Visiting lecturer on Japanese cultural history (RF 39093).....	6,000.00	.....	.....
Cornell University, Ithaca, New York			
Development of Far Eastern studies (RF 38087).....	7,000.00	.....	5,000.00
Development of Russian studies (RF 40052).....	10,875.00	.....	2,625.00
Institute of Pacific Relations, American Council, New York City			
English translations of source materials on Chinese history (RF 39052)..	14,850.00	.....	9,900.00
Leland Stanford Junior University, Palo Alto, California			
Development of Far Eastern studies (RF 39053).....	9,056.92	.....	2,805.50
Orthological Institute of China, Peking			
General budget (RF 37012, 40028).....	8,619.87	.....	3,451.33
Princeton University, New Jersey			
Development of Far Eastern studies (RF 38029).....	8,134.90	3,135.63

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
HUMANITIES — Continued			
<i>Far Eastern Interests — Continued</i>			
Royal Ontario Museum of Archaeology, Toronto, Canada			
Teaching and research in Far Eastern subjects (RF 37121).....	\$8,828.11	\$.....	83,750.00
United Engineering Trustees, Inc., New York City			
Preparation of Dictionary of Japanese Technical Terms (RF 41108)....	.....	20,000.00	.....
University of Chicago, Illinois			
Books and teaching materials in Far Eastern languages (RF 38031)....	10,000.00	.....	.....
Development of Chinese studies (RF 41098).....	.....	15,000.00	.....
Development of new materials for teaching Chinese languages and literature (RF 36122).....	5,395.45	.....	3,383.46
University of Pennsylvania, Philadelphia			
Development of Far Eastern studies (RF 38028).....	3,344.40	.....	2,185.90
Yale University, New Haven, Connecticut			
Development of Chinese studies (RF 37026).....	2,900.00	.....	2,900.00
Latin American Interests			
American Council of Learned Societies, Washington, D. C.			
<i>Handbook of Latin American Studies</i> (RF 38012).....	7,715.38	.....	.....
Special summer institute for intensive study of the Spanish and Portuguese languages, and preparation of texts (RF 41006).....	.....	25,000.00	15,000.00
Work in field of Latin American studies (RF 40067, 40097).....	47,000.00	.....	20,000.00
Argentine-North American Cultural Institute, Buenos Aires			
Development of program of teaching English, drama, and creative arts (RF 40081).....	12,380.40	.....	4,747.88
Brown University, Providence, Rhode Island			
Increasing collections of material on early American history and Hispanic culture (RF 40069).....	29,764.97	.....	4,196.40

Buffalo Museum of Science, New York			
Advisory services and training of personnel in the Museu Nacional, Rio de Janeiro, and in other museums of South or Central America (RF 41068)	\$.....	\$12,500.00	\$12,500.00
Duke University, Durham, North Carolina			
Purchase of books and other documentation in field of Latin American studies (RF 40049).....	25,000.00	.....	5,000.00
Library of Congress, Washington, D. C.			
Assistance to South and Central American libraries in surveys and training of personnel (RF 41066).....	.....	10,000.00	10,000.00
National Institute of Anthropology and History, Mexico City			
Development of its program (RF 40130).....	20,000.00	.....	6,127.00
Pan American Union, Washington, D. C.			
Division of Intellectual Cooperation (RF 40029).....	8,000.00	.....	4,000.00
Tulane University, New Orleans, Louisiana			
Purchase of books and other documentation in field of Latin American studies (RF 40051).....	15,500.00	.....	4,700.00
University of Michigan, Ann Arbor			
Program of teaching English to advanced students of Spanish-American background (RF 41085).....	.....	15,000.00	3,500.00
University of North Carolina, Chapel Hill			
Purchase of books and other documentation in field of Latin American studies (RF 40050).....	22,000.00	.....	9,000.00
Fellowships			
Administered by The Rockefeller Foundation (RF 37132, 38116, 39115, 40090, 40137, 41116).....	97,554.90	50,000.00	49,186.73

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	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
HUMANITIES — Continued			
Fellowships — Continued			
Authors' League of America, Inc., New York City (RF 38053)	\$8,300.00	\$.....	\$4,237.12
National Theatre Conference, Cleveland, Ohio (RF 39019)	16,000.00	.....	8,182.01
General			
American Council of Learned Societies, Washington, D. C.			
Developing personnel and resources in teaching modern languages (RF 41070) .....	.....	50,000.00	10,000.00
Fellowships, planning committees, and foreign activities (RF 39046, 41029)	18,208.45	80,000.00	18,208.45
General support (RF 34157, 38105, 41029)	61,431.79	5,000.00	31,264.93
Boston Symphony Orchestra, Massachusetts			
Berkshire Music Center (RF 39101)	25,000.00	.....	25,000.00
Delegates of the Press, University of Oxford, England			
Aid to refugee scholars (RF 41047) .....	.....	10,000.00	7,500.00
Grants in Aid			
(RF 38112, 39088, 39119, 40082, 40092, 40100, 40141, 41095, 41120)	274,437.36	145,000.00	124,718.67
Harvard University, Cambridge, Massachusetts			
Research in field of criticism and in uses of languages (RF 39018)	40,000.00	.....	13,867.34
International Committee of Historical Sciences, Paris, France			
General budget, distribution of publications, and expenses of next Congress (RF 37141)	7,200.00	.....	7,200.00
Library of Congress, Washington, D. C.			
Studies of communication trends in wartime (RF 40111, 41069)	10,000.00	28,800.00	38,800.00
National Buildings Record, London, England			
Documentation of architectural records (RF 41071) .....	.....	20,000.00	8,084.70

New School for Social Research, New York City			
Study of totalitarian communication in wartime (RF 41014)	\$	\$15,960.00	\$11,970.00
Payne Fund, New York City			
Preparation of materials for teaching English to foreign-born residents of the United States (RF 40053)	13,750.00	. . . . .	9,960.78
Princeton University, New Jersey, School of Public and International Affairs			
Studies of public opinion (RF 40110, 41109)	20,000.00	50,000.00	20,000.00
Former Program			
American School of Classical Studies, Athens, Greece			
Fellowships in archeology in connection with excavation of the Athenian Agora (RF 40055)	5,800.00	. . . . .	4,000.00
Museum to house objects excavated at the Agora (RF 37089)	125,000.00	. . . . .	. . . . .
TOTAL — HUMANITIES	\$2,285,475.56	\$1,020,770.00	\$1,006,276.98
PROGRAM IN CHINA			
Associated Boards for Christian Colleges in China, New York City			
Emergency grants to private universities and colleges in China (RF 41038)	\$	\$50,000.00	\$50,000.00
Chinese Mass Education Movement, Peipei, Szechwan			
General budget (RF 40044, 41037)	3,125.00	8,000.00	5,125.00
Chinese Ministry of Education, Nanking			
Commission on Medical Education, General budget (RF 40044)	2,000.00	. . . . .	814.37
Emergency Fund (RF 39016)	1,793.70	. . . . .	. . . . .
Fellowships			
Foreign and local (RF 37047, 39050, 40044, 41037)	79,487.26	40,000.00	20,853.71
Grants in Aid			
(RF 39050, 40044, 41037)	19,644.08	37,000.00	17,181.93

	APPROPRIATIONS		1941
	PRIOR YEARS	1941	PAYMENTS
PROGRAM IN CHINA — Continued			
Ministry of Industry and Agriculture, Nanking			
National Agricultural Research Bureau			
Insect control work (RF 40044)	\$3,347.73	\$.....	\$1,688.32
Nankai University. Institute of Economics, Shapingpa, Chungking			
General budget (RF 40044, 41037)	1,576.68	3,000.00	3,178.28
National Central University. College of Agriculture, Chengtu, Szechwan			
Development of work in animal husbandry and veterinary medicine (RF 40044)	2,125.00	.....	797.49
National Council for Rural Reconstruction, Peipei, Szechwan			
General budget (RF 40044, 41037)	20,485.17	5,000.00	10,355.31
Unallocated balance of 1939-40 appropriation (RF 39050)	1,140.00	.....	.....
University of Nanking, Chengtu, Szechwan			
Department of Agricultural Economics			
General budget (RF 40044, 41037)	6,562.50	6,000.00	2,797.76
Yenching University. College of Public Affairs, Peiping			
General budget (RF 39050, 40044, 41037)	10,873.57	5,000.00	4,483.35
TOTAL — PROGRAM IN CHINA	\$152,160.69	\$154,000.00	\$117,275.52
MISCELLANEOUS			
American Library Association, Chicago, Illinois. Committee on Aid to Libraries in War Areas			
Selection and purchase or microfilming of American scholarly journals (RF 41058, 41105)	\$.....	\$110,000.00	\$35,000.00
Emergency Committee in Aid of Displaced Foreign Scholars, New York City			
Salary and expenses of an assistant (RF 40096, 41088)	7,500.00	10,000.00	9,849.32
Government of Finland. University of Helsinki			
Teaching and research program (RF 41039) .....	.....	50,000.00	50,000.00
History of The Rockefeller Foundation (RF 37037)	6,998.21	.....	883.34

New School for Social Research, New York City			
Administration of grants to European refugee scholars (RF 40083)	\$35,000.00	\$	\$18,905.12
Grant in aid fund for refugee scholars (RF 41021)		2,500.00	741.45
Royal Society, London, England			
Microfilm apparatus to facilitate the circulation of current foreign periodicals (RF 41096)		13,000.00	53.90
Special Research Aid Fund for European Scholars (RF 39034, 39078, 39092)	56,861.13		44,500.45
Visits by Individuals and Commissions (RF 30101)	5,416.11		47.23
TOTAL — MISCELLANEOUS	\$111,775.45	\$185,500.00	\$159,980.81
ADMINISTRATION			
Scientific Divisions			
1940	\$67,364.34	\$	\$23,279.90
1941	539,575.00		493,309.41
1942		541,287.00	
General			
1940	29,077.39		17,530.76
1941	265,241.00	12,750.79	243,310.28
1942		256,477.00	
TOTAL — ADMINISTRATION	\$901,257.73	\$810,514.79	\$777,430.35
	\$20,121,772.56		
LESS			
Unused Balances of Appropriations Allowed to Lapse			
The Rockefeller Foundation	\$585,214.08*		
International Health Division	172,410.73	757,624.81	
GRAND TOTALS	\$19,364,147.75	\$9,240,298.99	\$10,084,046.46

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*Includes \$21,050.16 which reverts to authorizations.

REFUNDS ON PRIOR YEAR CLOSED APPROPRIATIONS

American Council of Learned Societies, Washington, D. C.	(RF 34095)	\$230.00	
American National Committee on International Intellectual Cooperation, New York City..	(RF 38066)	112.70	
Chinese Ministry of Education, Nanking. Commission on Medical Education	(RF 39050)	.03	
Columbia University, New York City	(RF 37112)	144.46	
<i>Encyclopaedia of the Social Sciences</i> , New York City	(RF 32114)	1,047.05	
Grants in Aid			
Natural Sciences	(RF 36079)	199.79	
Social Sciences	(RF 36150)	8.07	
Humanities	(RF 36151)	675.99	
Ministry of Industry and Agriculture, Nanking, China			
National Agricultural Research Bureau	(RF 39050)	13.53	
National Council for Rural Reconstruction, China	(RF 39050)	1,103.81	
National Health Administration, Nanking, China	(RF 39050)	7.17	
National Research Council, Washington, D. C.	(RF 38072)	106.44	
New York State College of Agriculture, Cornell University, Ithaca, New York	(RF 34034)	1.06	
Portugal Health Center, Lisbon	(IH 38096)	19.63	
Social Science Research Council, New York City	(RF 38035)	680.48	
University of Chicago, Illinois	(RF 32035)	442.71	
University of Helsinki, Finland	(RF 37099)	1,882.52	
University of Minnesota, Minneapolis	(LS 934)	3.71	
Yale University, New Haven, Connecticut	(RF 39009)	399.55	87,078.70
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INTERNATIONAL HEALTH DIVISION

DESIGNATIONS DURING 1941, UNPAID BALANCES AS AT DECEMBER 31, 1940
OF PRIOR YEAR DESIGNATIONS, AND PAYMENTS THEREON DURING 1941

	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES			
Diphtheria			
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1941-42 (IH 41005).....	\$.....	\$2,250.00	\$1,097.84
Intestinal Parasites, including Hookworm			
Egypt			
1939-40 (IH 38044, 39027).....	319.40	.....	.....
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1941-42 (IH 41028).....	.....	4,360.00	.....
Malaria			
Caribbean Area			
Costa Rica			
1939-40 (IH 39011, 39070).....	468.90	.....	44.25
Cuba			
1938-42 (IH 37087, 39071, 40077).....	16,842.92	6,000.00	10,458.01
Haiti			
1940-42 (IH 40009, 41022).....	1,750.00	10,000.00	2,079.03
Salvador			
1940-42 (IH 40010, 40078).....	9,538.00	2,800.00	6,036.83
Trinidad and Tobago			
1941-42 (IH 41018, 41082).....	5,400.00	2,237.42

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Malaria — <i>Continued</i>			
Europe			
Albania			
1939 (IH 38092).....	\$1,461.42	\$.....	\$.....
Cyprus			
1939-40 (IH 38093).....	13,007.64	.....	76.40
England			
University of Cambridge. Molteno Institute of Parasitology			
1939-42 (IH 39014, 41034).....	891.72	305.00	606.00
Greece			
1939-40 (IH 38094).....	1,065.07	.....	.....
Italy			
Institute of Public Health, Rome			
1938-39 (IH 37092).....	2,834.71	.....	.....
Mediterranean Region			
1939-40 (IH 39021).....	15,485.43	.....	11,456.64
Portugal			
1939-41 (IH 38095, 40034, 41011).....	4,700.37	10,625.00	6,699.17
Far East			
China			
1940-41 (IH 39077).....	11,058.38	.....	3,696.64
India			
1940-41 (IH 39032, 40035, 41013).....	19,404.37	26,400.00	27,659.64

South America			
Brazil			
Anopheles gambiae control			
1939-42 (IH 38091, 39025, 39031, 40033, 41083).....	\$114,820.37	\$120,000.00	\$145,585.78
British Guiana			
1939-41 (IH 39018).....	6,812.74	.....	1,319.06
Peru			
1941 (IH 41009).....	.....	10,000.00	.....
United States			
Chemotherapy studies			
1941-44 (IH 40065).....	23,400.00	.....	2,743.56
Drainage equipment			
1940-42 (IH 40003).....	1,033.91	.....	156.55
Florida			
1940-43 (IH 39028-29, 40031-32, 41004).....	6,056.62	23,950.00	13,854.97
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1939-40 (IH 38047).....	256.85	.....	256.45
University of Chicago, Illinois			
1940-42 (IH 39030, 40073).....	2,000.00	4,000.00	1,999.80
Mental Hygiene			
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1939-42 (IH 36047, 38053, 39033, 40036).....	9,867.02	12,000.00	11,323.53
Tennessee			
1940-42 (IH 39034, 40037).....	11,759.26	16,000.00	14,801.45

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Nutrition			
Canada			
University of Toronto			
1941-44 (IH 41016).....	\$.....	\$9,000.00	\$.....
United States			
North Carolina			
1940-41 (IH 39069, 40038).....	4,435.71	11,400.00	7,521.87
Vanderbilt University School of Medicine, Nashville, Tennessee			
1939-43 (IH 36047, 39003, 40074, 40075).....	36,562.57	20,000.00	16,906.24
Rabies			
Alabama			
1940-41 (IH 36047, 39035, 40039).....	9,050.59	20,000.00	18,822.24
Respiratory Diseases			
Influenza Studies			
Europe			
Hungary			
1940-41 (IH 39039, 40043).....	3,773.18	5,500.00	2,437.91
United States			
California			
1938-42 (IH 38014, 39016, 39036, 40040, 41002).....	15,843.19	23,800.00	23,545.58
Minnesota			
1939-42 (IH 38056, 39038, 40041).....	11,801.84	13,000.00	12,131.45

New York			
1939-41 (IH 38084, 40042).....	\$2,457.95	\$6,700.00	\$6,223.15
New York University, New York City			
1938-41 (IH 38023).....	3,914.19	.....	2,741.87
University of Michigan, Ann Arbor			
1941-44 (IH 40069-70).....	14,000.00	7,000.00	3,500.00
Respiratory Virus Research			
Argentina			
1940-43 (IH 39024, 40017).....	30,000.00	.....	11,148.10
Study of Respiratory Infections			
Columbia University, New York City			
1940-43 (IH 39037, 41003).....	7,502.48	10,000.00	7,759.49
University of California, Berkeley			
1942 (IH 41030).....	.....	4,100.00	.....
Scarlet Fever			
Rumania			
1939-40 (IH 38058).....	6,986.60	.....	.....
Syphilis			
California			
1939-42 (IH 39008).....	17,028.08	.....	3,355.40
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1940-44 (IH 39017, 39068, 40067-68).....	48,070.00	16,520.00	16,726.00
North Carolina			
1940-42 (IH 39022).....	12,464.43	5,833.38

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Tuberculosis			
Caribbean Area			
Costa Rica			
1939-42 (IH 39013).....	\$10,705.46	\$.	\$3,450.92
Jamaica			
1939-42 (IH 38087, 40028, 41081).....	26,070.10	9,020.00	15,978.50
United States			
Committee on Neighborhood Health Development, New York City			
1938-42 (IH 36047, 38031, 40006).....	6,125.01	. . . . .	3,250.01
Consultant			
1938-41 (IH 38003).....	2,643.15	. . . . .	Cr. 3.81
Cornell University Medical College, New York City			
1940-41 (IH 39040).....	10,107.84	. . . . .	9,792.56
Tennessee			
1939-43 (IH 38085, 40071-72).....	20,893.24	10,908.00	11,473.26
Typhus Fever			
Studies			
1940-43 (IH 40001).....	4,963.05	. . . . .	388.34
Yellow Fever			
Africa			
1940-41 (IH 39046, 40049).....	18,754.79	30,800.00	24,373.29

Caribbean Area			
Central America and West Indies			
1939-41 (IH 38088).....	\$2,466.86	\$.....	\$762.88
Panama			
1940-42 (IH 39072, 41017).....	765.38	1,000.00	.....
Europe			
Pasteur Institute, Paris, France			
1939 (IH 38062).....	721.33	.....	.....
South America			
Bolivia			
1940-41 (IH 39042, 40047).....	2,508.10	5,000.00	1,339.51
Brazil			
1940-41 (IH 39043, 40046).....	33,767.17	75,000.00	68,794.08
Studies of jungle yellow fever			
1940-43 (IH 40018, 40019, 40029, 41027, 41031).....	5,867.58	10,122.22	4,978.89
British Guiana			
1939-41 (IH 39019, 40044).....	1,658.23	1,800.00	846.51
Colombia			
1940-41 (IH 39041, 40045).....	16,103.47	48,000.00	43,355.47
Peru			
1939-41 (IH 38061, 39044, 40048, 41008).....	4,799.31	13,300.00	3,824.47
Other countries of South America, including international administration			
1940 (IH 39045).....	1,496.61	.....	19.57

	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Other Studies			
Collection and testing of wild animals for use in the study of diseases of public health interest			
1938-42 (IH 38042, 38080, 39063, 40066, 41020, 41068).....	\$16,226.20	\$11,482.00	\$7,367.25
Statistical analyses of records of certain specific diseases			
1940-43 (IH 39047).....	500.00	.....	.....
LABORATORIES OF THE INTERNATIONAL HEALTH DIVISION AT THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK CITY			
1940-41 (IH 39048, 40022, 40050).....	18,098.41	180,000.00	152,519.30
Remodeling and equipment			
1940-41 (IH 40025).....	6,000.00	.....	6,000.00
STATE AND LOCAL HEALTH SERVICES			
Public Health Administration			
Africa			
Egypt			
1940 (IH 39054).....	1,202.33	.....	.....
Canada			
Nova Scotia			
1937-41 (IH 36022).....	16,597.31	.....	13,695.93
Caribbean Area			
Central Office			
1940-41 (IH 36047, 39050, 40052).....	1,209.13	6,500.00	6,141.57

Costa Rica				
1940-41 (IH 39051, 40053).....	\$528.64	\$1,875.00	\$2,115.62	
Cuba				
1940-41 (IH 39052, 40054).....	625.42	2,000.00	1,842.34	
Far East				
India				
1940-41 (IH 36047, 39055-56, 40056-57).....	3,692.65	7,705.00	4,591.55	
Netherlands India				
1939-40 (IH 38074).....	1,052.34	.....	68.01	
Philippine Islands				
1941 (IH 40084).....	.....	4,000.00	2,474.53	
Mexico				
1940-41 (IH 39049, 40051, 41027).....	935.13	3,085.00	2,005.48	
South America				
Brazil				
1940-41 (IH 39053, 40055).....	8,857.79	10,000.00	12,973.66	
Rio de la Plata and Andean Region				
1940-42 (IH 40023, 41033).....	15,000.00	1,000.00	6,687.86	
United States				
Alabama				
1938-40 (IH 37080).....	1,856.35	1,472.50	
State Health Surveys				
1935-40 (IH 35065).....	3,035.87	

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
STATE AND LOCAL HEALTH SERVICES — <i>Continued</i>			
Divisions of Vital Statistics			
Canada			
Manitoba			
1938-44 (IH 36047, 37085, 39005)	\$5,286.36	\$.....	\$1,813.24
Nova Scotia			
1938-42 (IH 37026)	5,674.51	.....	3,078.61
Divisions of Epidemiology			
Canada			
Alberta and British Columbia			
1938-41 (IH 38006, 41007)	5,150.87	1,865.00	6,206.73
Public Health Laboratories			
Canada			
Prince Edward Island			
1939-43 (IH 38035)	15,300.00	.....	.....
Caribbean Area			
Costa Rica			
1940 (IH 39023)	86.78	.....	86.78
South America			
Ecuador			
National Institute of Hygiene, Guayaquil			
1941-46 (IH 41019, 41025) .....	.....	73,000.00	.....

United States				TREASURER'S REPORT
National Institute of Health, Montana				
1941-42 (IH 41029).....	\$.....	\$600.00	\$.....	
Public Health Nursing				
Committee on Neighborhood Health Development, New York City				
1938-42 (IH 37079).....	6,457.76	.....	4,465.28
Divisions of Sanitary Engineering				
Far East				
Ceylon				
1940-41 (IH 39076).....	2,506.34	.....	764.83
India				
1939-41 (IH 38076, 39015, 39026, 40014, 40058, 41035).....	3,813.92	8,930.00	2,979.13	
Other State Health Services				
Canada				
Ontario				
Emergency Recruitment of Public Health Personnel				
1941-43 (IH 41015).....	.....	10,000.00	446.25
Quebec				
Division of Tuberculosis				
1939-42 (IH 39006).....	3,639.01	.....	.....
Far East				
China				
Szechwan Provincial Health Administration				
1941 (IH 40082).....	.....	10,000.00	6,981.90

	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS	376
STATE AND LOCAL HEALTH SERVICES — Continued				
Local (County) Health Departments				
Canada				
British Columbia				
1936-43 (IH 36021, 38020, 38024)	\$24,894.35	\$	\$5,666.67	
Quebec				
1938-43 (IH 38025)	7,701.42	. . . . .	. . . . .
Caribbean Area				
Costa Rica				
1939-40 (IH 39012)	1,345.16	. . . . .	494.20	
Cuba				
1938-41 (IH 37088)	6,117.52	. . . . .	3,127.65	
Salvador				
1940 (IH 40005)	630.00	. . . . .	565.73	
Europe				
Albania				
Tirana Health Center				
1936-41 (IH 36028, 37089)	4,911.23	. . . . .	4,846.06	
Construction and equipment (IH 36052, 37028)	3,393.54	. . . . .	3,393.54	
Finland				
Helsing Health Center				
1940-45 (IH 40012, 40079)	20,631.37	. . . . .	1,882.52	
Building (IH 40013)	1,365.00	. . . . .	. . . . .

THE ROCKEFELLER FOUNDATION

Greece				
1936-42 (IH 36029, 37034).....	\$12,935.29	\$.....	\$.....	
Portugal				
1940-42 (IH 39058, 40059, 41010).....	3,475.74	10,000.00	7,408.87	
Rumania				
1935-40 (IH 35058).....	62.28	.....	.....
Turkey				
1936-42 (IH 36016, 37093).....	57,878.42	.....	.....
Far East				
India				
Assam				
1941-46 (IH 41012).....	.....	19,800.00	.....
Bengal				
1938-43 (IH 38011).....	17,320.75	.....	1,535.01	
Bombay				
1939-44 (IH 38097).....	17,270.61	.....	1,733.94	
Delhi				
1937-42 (IH 36110).....	11,771.40	.....	1,371.35	
Madras				
1937-40 (IH 36044).....	4,029.45	.....	.....
Mysore				
1936-40 (IH 35156).....	6,738.95	.....	1,295.65	
Java				
1937-40 (IH 34143, 36045).....	10,099.52	.....	2,112.06	
Mexico				
1936-42 (IH 35084, 37086, 39057, 40026-27, 40076).....	20,314.79	1,610.00	8,156.30	

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS	378
PUBLIC HEALTH EDUCATION				
Schools of Hygiene and Public Health				
Canada				
University of Toronto. School of Hygiene 1940-44 (IH 39004, 39067).....	\$38,084.50	\$.	\$6,741.75	
Europe				
Bulgaria				
Institute and School of Hygiene, Sofia 1938-41 (IH 38010, 39075).....	19,501.06	.....	.....
European institutes of hygiene				
Developmental aid				
1940-41 (IH 39074, 40030).....	1,500.69	.....	277.65	
Greece				
National Institute of Hygiene, Athens				
1938 (IH 37074).....	579.14	.....	.....
Hungary				
State Hygienic Institute, Budapest				
1938-40 (IH 37091).....	555.54	.....	Cr. 82.29	
Spain				
National Institute of Health, Madrid				
1940-43 (IH 40024).....	10,000.00	.....	4,227.75	
Turkey				
School of Hygiene, Ankara				
1940 (IH 39059).....	1,353.86	.....	.....

THE ROCKEFELLER FOUNDATION

Far East			
China			
Public Health Training Institute, Kweiyang, Kweichow 1940-41 (IH 40021, 40060).....	\$8,666.00	\$23,000.00	\$11,434.07
Japan			
Institute of Public Health, Tokyo 1935-40 (IH 32188, 37037)	4,598.72	.....	2,083.99
Philippine Islands			
Institute of Hygiene, Manila 1941-44 (IH 40083, 41026).....	.....	16,000.00	.....
South America			
Brazil			
São Paulo Health Center 1941 (IH 41024) .....	.....	1,000.00	.....
United States			
Harvard University			
School of Public Health, Boston, Massachusetts			
Developmental aid 1940-44 (IH 40004).....	13,000.00	.....	2,875.00
Study of public health administrative practices 1940-43 (IH 40007).....	18,000.00	.....	.....
Johns Hopkins University, Baltimore, Maryland			
School of Hygiene and Public Health			
Developmental aid 1940-44 (IH 39066, 40008).....	82,500.00	.....	11,083.37
Field Training and Study Area 1937-42 (IH 37018).....	31,152.25	13,128.03
Land (IH 38032-33)	10,000.00

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
PUBLIC HEALTH EDUCATION — <i>Continued</i>			
Schools of Nursing			
Canada			
University of British Columbia, Victoria			
1937-40 (IH 36035)	\$1,907.10	\$.....	\$1,462.52
University of Toronto 1939-41 (IH 38086)	695.63	.....	339.17
Caribbean Area			
Panama			
Santo Tomás Hospital			
1937-42 (IH 37015)	15,763.90	.....	5,533.31
Europe			
Denmark			
Aarhus			
1938-41 (IH 37029)	5,853.04	.....	.....
Portugal			
Lisbon			
1941 (IH 40080) .....	.....	6,870.00	5,538.96
Rumania			
Bucharest			
1936-41 (IH 35085)	5,047.81	.....	.....
Spain			
Madrid			
1940-43 (IH 40020)	20,000.00	.....	.....

South America			
Brazil			
University of São Paulo 1941-42 (IH 41032).....	\$.....	\$1,000.00	\$.....
Venezuela			
Caracas			
1941-46 (IH 41023).....	.....	20,000.00	.....
United States			
Skidmore College, Saratoga Springs, New York			
1939-43 (IH 38019).....	17,000.00	.....	7,500.00
Fellowships, Travel of Government Health Officials and Teachers of Public Health, and Training of Health Workers			
1937-41 (IH 37023, 37076, 38077, 39060, 39073, 40061, 41006, 41021).....	158,688.97	217,500.00	184,202.23
Other Training			
Mexico			
1940-41 (IH 39061, 40062).....	574.51	1,840.00	1,004.71
United States			
North Carolina			
Public Health Education and School Health Service			
1939-43 (IH 38034).....	16,354.50	5,600.16

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	PRIOR DESIGNATIONS	1941 DESIGNATIONS	1941 PAYMENTS
FIELD SERVICE			
Salaries and Expenses of Staff			
1940-41 (IH 39062, 40063)			
Salaries	\$3,641.65	\$457,000.00	\$455,361.10
Commutation	12,246.82	49,000.00	48,322.43
Travel	18,121.44	157,000.00	161,843.68
Medical examinations	451.15	2,000.00	1,208.67
Field equipment and supplies	1,630.23	5,000.00	4,604.18
Pamphlets and charts	2,809.55	7,000.00	7,055.72
Express, freight, and exchange	662.48	1,000.00	190.20
Insurance and retirement allowances	25,276.65	56,000.00	51,817.66
Bonding	1,407.12	2,000.00	659.11
Field office expenses	140.94	2,000.00	1,459.07
Director's Fund for Budget Revision (IH 41027)		4,277.78	
Director's Fund for Miscellaneous Expenses (IH 41014)		1,000.00	475.73
Exchange Fund (IH 30052, 33077)	21,521.44		
	<u>\$1,614,649.19</u>	<u>\$2,000,000.00</u>	<u>\$1,881,781.98</u>

STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS

ADDITIONS TO LEDGER VALUE

Advance to Protective Committee of \$4 per \$1,000 bond on account of expenses re: \$274,000 Kansas City, Fort Scott & Memphis Ry. Ref. 4s/36	\$1,096.00
Legal expenses in connection with reorganization proceedings re: \$1,918,500 St. Louis Southwestern Ry. Gen. & Ref. Ser. A 5s/90	201.32
	<u>\$1,297.32</u>

SECURITIES PURCHASED

\$67,500	American Telephone & Telegraph Co. Conv. Deb. 3s/56 purchased at par, plus the surrender of 5,400 rights received on account of the ownership of 5,400 shares American Telephone & Telegraph Co. Cap. Stock and valued @ \$1.25 each, or \$6,750.	\$74,250.00
67,500	(Maturity value) United States of America Savings Bonds, Defense Ser. F-1941, dated May 1, 1941, due May 1, 1953 (12 year appreciation bonds), purchased @ 74.	49,950.00
4,000,000	United States of America Treasury Bonds, dated March 15, 1941, 2s/1948-50, purchased @ 103.06	4,122,500.00
500,000	United States of America Treasury Bonds, dated October 20, 1941, 2½s/1967-72, purchased at par	500,000.00
10,000,000	United States of America Treasury Notes, Ser. B dated December 15, 1938, 1½s/43, purchased @ 101.53	10,153,125.00

SECURITIES RECEIVED THROUGH EXCHANGE

\$266,250	Erie R.R. Co. 1st Consolidated Mtg. Ser. B 4s/95 @ 87.	\$231,637.50
266,250	Erie R.R. Co. Gen. Mtg. Income Ser. A 4½s/2015 @ 48.	127,800.00
6,283½	shares Erie R.R. Co. 5% Pfd. Stock, Ser. A (Par \$100) @ \$32.50 per share.	204,213.75
	(All of the above received in exchange for \$1,065,000 Erie R.R. Gen. Mtg. Conv. Ser. B 4s/53 and taken into the books at the prices stated in accordance with Finance Committee minute No. 4201, dated January 6, 1942)	\$563,651.25
120,000	Wabash R.R. Co. 2nd Mtg. 5s/39, with August 1, 1937, and subsequent coupons attached, deposited with the Reorganization Managers as provided for under the Plan of Reorganization dated March 15, 1941, and Certificate of Deposit received in exchange. Ledger value unchanged.	117,360.00
3,000	shares Chicago & Eastern Illinois R.R. Co. Com. Stock (No par), received in exchange for 3,000 shares Chicago & Eastern Illinois Ry. 6% Cum. Pfd. Stock (Par \$100). The new issue was taken into the books at the bid price of the preferred on January 27, 1941, the date the new issue became available, or @ \$1.25 per share	3,750.00
		<u>\$684,761.25</u>
		<u>\$15,585,883.57</u>

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STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS — *Continued*

	AMOUNT RECEIVED	LEDGER VALUE
REDUCTION IN LEDGER VALUE		
Value of 5,400 rights received on account of the ownership of 5,400 shares American Telephone & Telegraph Co. Cap. Stock and valued @ \$1.25 each, deducted from the cost of said stock and added to the value of \$67,500 American Telephone & Telegraph Co. Conv. Deb. 3s/56, purchased at par plus the surrender of said rights.....	\$6,750.00	\$6,750.00
Of the total dividends of \$52,000 received on 8,000 shares South West Pennsylvania Pipe Lines Cap. Stock (Par \$10) during 1940, 49.5425846%, or \$25,762.14 was drawn from paid-in surplus. This sum has accordingly been used to reduce the ledger value of the stock.	25,762.14	25,762.14
Amortization of that portion of premium chargeable to income received December 15, 1941, on \$10,000,000 United States of America Treasury Notes, Ser. B 1 1/8s/43.....	2,772.12	2,772.12
	<u>\$35,284.26</u>	<u>\$35,284.26</u>
SECURITIES SOLD		
\$156,000 Chicago & Erie R.R. 1st Mtg. 5s/82, sold @ 120.95.....	\$188,682.00	\$145,080.00
100,000 Lake Erie & Western R.R. 2nd Mtg. 5s/41, sold at par.....	100,000.00	100,000.00
400,000 Tennessee Coal, Iron & Railroad Co. Gen. 5s/51, sold @ 124.20.....	496,800.00	368,000.00
5,000,000 United States of America Treasury Notes, Ser. A 1 3/4s/42, sold @ 102.08.....	5,103,906.25	5,010,328.13
4,000 shares National Fuel Gas Co. Cap. Stock (No par), sold @ \$11.039 per share..	44,156.73	31,000.00
	<u>\$5,933,544.98</u>	<u>\$5,654,408.13</u>

SECURITIES REDEEMED OR MATURED

\$8,750	Calgary Protestant Public School District No. 19, Province of Alberta 5s/41, paid at maturity at par less a discount of 9.91%, or 90.09.....	\$7,882.87	\$7,437.50
80,000	Illinois Central R.R. Equip. Ser. M 4½s/41, paid at maturity at par.....	80,000.00	78,800.00
30,000	Pennsylvania R.R. Co. Gen. Equip. Trust Certificates Ser. D 4½s/41, paid at maturity at par.....	30,000.00	29,550.00
14,000	Phelps Dodge Corp. Conv. Deb. 3½s/52, redeemed June 16, 1941 @ 105.....	14,700.00	15,203.13
2,000	Phelps Dodge Corp. Conv. Deb. 3½s/52, redeemed December 15, 1941 @ 105.....	2,100.00	2,171.80
50,000	St. Louis-San Francisco Ry. Equip. Ser. CC 4s/41, paid at maturity at par....	50,000.00	45,328.86
100,000	Southern Pacific Co. Equip. Ser. I 4½s/41, paid at maturity at par.....	100,000.00	98,500.00
5,000	Washington Ry. & Elec. Co. Consolidated 4s/51, redeemed June 1, 1941 @ 105.....	5,250.00	4,175.00
10,000	Washington Ry. & Elec. Co. Consolidated 4s/51, redeemed Dec. 1, 1941 @ 105.....	10,500.00	8,350.00
3,675	shares The Ohio Oil Co. 6% Non-voting Cum. Pfd. Stock, redeemed March 15, 1941 @ \$110 per share.....	404,250.00	380,362.50
		<hr/>	<hr/>
		\$704,682.87	\$669,878.79
		<hr/>	<hr/>

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STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS — *Continued*

		AMOUNT RECEIVED	LEDGER VALUE
SECURITIES GIVEN IN EXCHANGE			
\$1,065,000	Eric R.R. Gen. Mtg. Conv. Ser. B 4s/53, exchanged for		
	\$266,250 Erie R.R. Co. 1st Cons. Mtg. Ser. B 4s/95 @ 87.	\$231,637.50	
	266,250 Erie R.R. Co. Gen. Mtg. Income Ser. A 4½s/2015 @ 48.....	127,800.00	
	6,283½ shares Erie R.R. Co. 5% Pfd. Stock, Ser. A (Par \$100) @ \$32.50 per share.....	204,213.75	
		\$563,651.25	\$795,742.30
120,000	Wabash R.R. Co. 2nd Mtg. 5s/39, with August 1, 1937, and subsequent coupons attached, deposited with the Reorganization Managers as provided for under the Plan of Reorganization dated March 15, 1941, and Certificate of Deposit received in exchange. Ledger value unchanged.....	117,360.00	117,360.00
3,000	shares Chicago & Eastern Illinois Ry. 6% Cum. Pfd. Stock (Par \$100), exchanged for 3,000 shares Chicago & Eastern Illinois R.R. Co. Com. Stock (No par). The new issue was taken into the books at the bid price of the preferred on January 27, 1941, the date the new issue became available or \$1.25 per share	3,750.00	15,000.00
		\$684,761.25	\$928,102.30
		\$7,358,273.36	\$7,287,673.48
	Balance (Used to write down the ledger value of \$1,785,200 Chicago, Milwaukee, St. Paul & Pacific R.R. Co. Adj. 5s/2000 "A".....)		70,599.88
		\$7,358,273.36	\$7,358,273.36

RECONCILIATION

Ledger value of securities, December 31, 1940.....		\$148,948,591.48
Additions to ledger value.....	\$1,297.32	
Securities purchased.....	14,899,825.00	
Securities received through exchange.....	684,761.25	15,585,883.57
		<hr/>
		\$164,534,475.05
Reduction in ledger value.....	\$35,284.26	
Ledger value of		
Securities sold.....	5,654,408.13	
Securities redeemed or matured.....	669,878.79	
Securities given in exchange.....	928,102.30	
Net surplus from above transactions used to write down the ledger value of depreciated securities.....	70,599.88	7,358,273.36
		<hr/>
Ledger value of securities, December 31, 1941.....		<u>\$157,176,201.69</u>

SCHEDULE OF SECURITIES ON DECEMBER 31, 1941

BONDS

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
American Telephone & Telegraph Co. Conv. Deb. 3s, Sept. 1, 1956 (Temporary certificates).....	\$67,500	110.	\$74,250.00	108.5	\$73,237.50
Baltimore & Ohio R.R. Ref. & Gen. Ser. A 5s, Dec. 1, 1995 (Stamped).....	1,750,000	80.	1,400,000.00	31.75	555,625.00
Baltimore & Ohio R.R. Ref. & Gen. Ser. F 5s, March 1, 1996 (Stamped).....	495,500	101.88	504,839.38	32.125	159,179.38
Burlington, Cedar Rapids & Northern Ry. Cons. 1st 5s, April 1, 1934.....	64,000	101.56	65,000.00	5.25	3,360.00
Calgary Protestant Public School District No. 19, Province of Alberta 5s, June 2, 1942-1948.....	53,500	85.	45,475.00	70.	37,450.00
Chicago & Alton R.R. Ref. 3s, Oct. 1, 1949.....	551,000	65.	358,150.00	12.375	68,186.25
Chicago City & Connecting Rys. Coll. Trust 5s, Jan. 1, 1927 (C/D).....	1,305,000	52.	678,600.00	3.25	42,412.50
Chicago, Milwaukee & St. Paul Ry. Gen. Ser. C 4 1/2s, May 1, 1989.....	500,000	103.	515,000.00	38.25	191,250.00
Chicago, Milwaukee, St. Paul & Pacific R.R. Ser. A 5s, Feb. 1, 1975.....	446,300	62.59	279,366.99	8.875	39,609.13

Chicago, Milwaukee, St. Paul & Pacific R.R. Conv. Adj. Ser. A 5s, Jan. 1, 2000	\$1,785,200	36.85	\$657,819.58	1.75	\$31,241.00
Chicago & North Western Ry. Gen. 5s, Nov. 1, 1987 . . .	201,000	98.09	197,175.00	21.75	43,717.50
Chicago Rys. Co. 1st 5s, Feb. 1, 1927 (25% paid) (C/D) (500 bonds @ \$750 each)	375,000	96.	360,000.00	38.5	144,375.00
The Chicago, Rock Island & Pacific Ry. 1st & Ref. 4s, April 1, 1934	3,345,000	68.79	2,301,182.55	9.25	309,412.50
Chicago, St. Louis & New Orleans R.R. Cons. 3½s, June 15, 1951	200,000	66.	132,000.00	61.	122,000.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. Gen. 4s, June 1, 1993	700,000	83.89	587,250.00	73.	511,000.00
Cleveland Short Line Ry. 1st 4½s, April 1, 1961	500,000	95.	475,000.00	76.	380,000.00
Consolidation Coal Co. Secured Notes 3s, July 1, 1950 .	485,000	100.	485,000.00	100.	485,000.00
Denver & Rio Grande R.R. 1st Cons. 4s, Jan. 1, 1936 . .	810,000	96.42	781,033.15	10.125	82,012.50
Denver & Rio Grande Western R.R. Gen. 5s, August 1, 1955 (Assented subject to plan)	574,000	59.	338,660.00	1.375	7,892.50
Edmonton School District No. 7 Deb. 5s to April 15, 1953, then 4½s, to Feb. 1, 1967	350,000	81.	283,500.00	72.	252,000.00
Eric R.R. Co. 1st Cons. Ser. B 4s, Jan. 1, 1995	266,250	87.	231,637.50	86.25	229,640.63
Erie R.R. Co. Gen. Income Ser. A 4½s, Jan. 1, 2015 . . .	266,250	48.	127,800.00	48.75	129,796.88
Illinois Central R.R. Ref. 4s, Nov. 1, 1955	1,233,000	82.46	1,016,730.00	40.	493,200.00
Illinois Central R.R. & Chicago, St. Louis, New Orleans R.R. Joint 1st Ref. Ser. A 5s, Dec. 1, 1963	1,000,000	90.	900,000.00	40.875	408,750.00
Imperial Chinese Government Hu Kuang Rys. S.F. Loan of 1911, 5s, June 15, 1975	£189,000	34.	321,300.00	10.5	80,173.80

BONDS — *Continued*

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Kansas City, Fort Scott & Memphis Ry. Ref. 4s, Oct. 1, 1936.....	\$274,000	96.55	\$264,562.64	36.75	\$100,695.00
Kansas City Southern Ry. Ref. & Imp. 5s, April 1, 1950.....	550,000	84.	462,000.00	67.	368,500.00
The Laclede Gas Light Co. Ref. & Ext. 5s, April 1, 1942.....	200,000	102.38	204,759.41	96.	192,000.00
Lake Shore & Michigan Southern Ry. 1st 3¼s, June 1, 1997.....	926,000	87.	805,620.00	78.	722,280.00
Louisville & Nashville — Southern Ry. Monon Coll. Joint 4s, July 1, 1952.....	775,000	72.	558,000.00	88.5	685,875.00
Mexico, Republic of, Cons. Ext. Ser. C 5s, June 1, 1945 (Assenting).....	(£70,800) 343,380	35.05	120,360.00	5.375	18,456.68
Class "A" Certificates for interest in arrears.....	150,228.75	6.	9,013.73	—0—	—0—
Missouri-Kansas-Texas R.R. Prior Lien Ser. A 5s, Jan. 1, 1962.....	331,250	78.5	260,031.25	25.	82,812.50
Missouri-Kansas-Texas R.R. Prior Lien Ser. B 4s, Jan. 1, 1962.....	331,250	64.5	213,656.25	19.625	65,007.81
Morris & Essex R.R. 1st Ref. 3¼s, Dec. 1, 2000.....	175,000	82.75	144,812.50	35.5	62,125.00
Mutual Fuel Gas Co. 1st 5s, Nov. 1, 1947.....	250,000	100.	250,000.00	110.	275,000.00

National Rys. of Mexico Prior Lien S.F. 4½s, July 1, 1957 (Assenting).....	\$350,000	13.	\$45,500 00	2.25	\$7,875.00
Secured 6% Notes due Jan. 1, 1933, for coupons due Jan. 1, 1914.....	1,125	59.	663 75	— 0 —	— 0 —
National Rys. of Mexico Ctf. Ser. A for interest in arrears.....	47,857.50	5 5	2,632 16	— 0 —	— 0 —
National Rys. of Mexico Ctf. Ser. B for interest in arrears ..	94,500	.5	472 50	— 0 —	— 0 —
New Orleans, Texas & Mexico Ry. Non Cum. Income Ser. A 5s, Oct. 1, 1935 (C/D).....	75,000	99.45	74,587 52	27 5	20,625.00
New York Central R.R. Secured S.F. 3¾s, April 1, 1946	979,000	97.95	958,912 15	92 625	906,798.75
New York, Lake Erie & Western Docks & Imp. Co. 1st Ext. 5s, July 1, 1943.....	350,000	90.13	315,452 15	99 625	348,687.50
Northern Pacific Ry. Ref. & Imp. Ser. A 4½s, July 1, 2047.....	1,390,000	85 05	1,182,150 00	45.125	627,237.50
Northwestern Elevated R.R. 1st 5s, Sept. 1, 1941 ...	500,000	70.	350,000 00	5 25	26,250.00
Pennsylvania R.R. Gen. Ser. A 4½s, June 1, 1965 ...	1,500,000	98 25	1,473,750.00	102 75	1,541,250.00
Phelps Dodge Corp. Conv. Deb. 3¾s, June 15, 1952 . .	108,100	108.59	117,389.92	106 25	114,856.25
Philadelphia & Reading Coal & Iron Co. Ref. S.F. 5s, Jan. 1, 1973.	167,000	94.25	157,401 42	24 5	40,915.00
Pittsburgh, Cincinnati, Chicago & St. Louis Ry. Cons. Ser I 4½s, Aug. 1, 1963.....	500,000	103.	515,000 00	119	595,000.00
Raleigh & Gaston R.R. 1st 5s, Jan. 1, 1947 (C/D) . .	250,000	95.	237,500 00	70	175,000.00
Reading Co. Gen. & Ref. Ser. A 4½s, Jan. 1, 1997. . .	333,000	94.25	313,852 50	80.	266,400.00
St. Louis-San Francisco Ry. Equip. Ser. CC 4s, May 15, 1942-43.	100,000	89.89	89,899.78	102 16	102,160.00
St. Louis-San Francisco Ry. Prior Lien Ser. A 4s, July 1, 1950	1,500,000	73.	1,095,000.00	10 125	151,875.00

TREASURER'S REPORT

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BONDS — Continued

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
St. Louis-San Francisco Ry. Cons. Ser. A 4½s, March 1, 1978.....	\$2,500,000	14.2	\$355,000.00	11.375	\$284,375.00
St. Louis Southwestern Ry. Gen. & Ref. Ser. A 5s, July 1, 1990.....	1,918,500	66.81	1,281,740.12	15.	287,775.00
Southern Pacific Co. — Central Pacific Stock Coll. 4s, Aug. 1, 1949.....	100,000	76.	76,000.00	50.75	50,750.00
Southern Pacific R.R. 1st Ref. 4s, Jan. 1, 1955.....	100,000	86.	86,000.00	61.25	61,250.00
Standard Oil Co. (New Jersey) 25 year Deb. 3s, June 1, 1961.....	15,000,000	98.	14,700,000.00	104.5	15,675,000.00
United States of America Treasury Bonds 2s, dated March 15, 1941, due March 15, 1948-50.....	4,000,000	103.0625	4,122,500.00	101.6875	4,067,500.00
United States of America Treasury Bonds 2½s, dated Oct. 20, 1941, due Sept. 15, 1967-72.....	500,000	100.	500,000.00	100.0625	500,312.50
United States of America Savings Bonds Defense Ser. F dated May 1, 1941, due May 1, 1953 (12 year appreciation) *Maturity value.....	67,500*	74.	49,950.00	74.	49,950.00
United States of America Treasury Notes Ser. B 1½s, dated Dec. 15, 1938, due Dec. 15, 1943.....	10,000,000	101.5	10,150,352.88	101.34375	10,134,375.00
Wabash R.R. 2nd 5s, Feb. 1, 1939 (C/D).....	120,000	97.8	117,360.00	33.	39,600.00
Washington Ry. & Electric Co. Cons. 4s, Dec. 1, 1951..	435,000	83.5	363,225.00	108.25	470,887.50
Western Pacific R.R. 1st Ser. A 5s, March 1, 1946 (Assenting).....	200,800	83.	166,664.00	20.25	40,662.00
TOTAL BONDS			855,308,540.78		\$44,040,641.06

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PREFERRED STOCKS

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Atchison, Topeka & Santa Fe Ry. 5% Non-Cum.....	5,000	\$98.25	\$491,250.00	\$58.00	\$290,000.00
Atlanta, Birmingham & Coast R.R. 5% Guar. Cum....	4,062	94.00	381,828.00	59.00	239,658.00
Bethlehem Steel Corp. (Delaware) 7% Cum.....	400	129.07	51,629.47	117.50	47,000.00
Chicago City & Connecting Rys. Participation Certificates (No par) (C/D).....	17,530		1.00		1.00
Colorado & Southern Ry. 4% 1st Non-Cum.....	4,800	54.00	259,200.00	1.25	6,000.00
Consolidated Edison Co. of New York, Inc. \$5 Cum. (No par).....	13,333	91.75	1,223,302.76	87.75	1,169,970.75
Denver & Rio Grande Western R.R. 6% Cum.....	3,280	5.00	16,400.00	.0625	205.00
Erie R.R. 5% A.....	6,283½	32.50	204,213.75	33.00	207,355.50
Illinois Central R.R. 6% Non-Cum. A.....	2,857	15.50	44,283.50	14.375	41,069.38
International Harvester Co. 7% Cum.....	45,721	115.00	5,257,915.00	155.50	7,109,615.50
Missouri-Kansas-Texas R.R. 7% Cum. A.....	10,499	41.98	440,772.00	1.25	13,123.75
Ohio Oil Co. 6% Non-Voting Cum.....	6,825	103.50	706,387.50	112.00	764,400.00
Pere Marquette Ry. 5% Cum.....	5,740	49.66	285,048.76	23.25	133,455.00
Standard Oil Co. (Ohio) 5% Cum.....	15,000	101.00	1,515,000.00	110.00	1,650,000.00
United States Steel Corp. 7% Cum.....	6,600	133.86	883,462.50	116.75	770,550.00
TOTAL PREFERRED STOCKS.....			\$11,760,694.24		\$12,442,403.88

TREASURER'S REPORT

COMMON STOCKS

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
American Telephone & Telegraph Co. Cap.....	5,400	\$181.67	\$981,002.50	\$128.875	\$695,925.00
The Buckeye Pipe Line Co. Cap. (Par \$50).....	49,693	62.77	3,119,109.72	34.00	1,689,562.00
Central National Bank of Cleveland (Par \$20).....	8,482	32.11	272,397.43	7.875	66,795.75
Chehalis & Pacific Land Co. Cap. (Par \$10).....	220		1.00		1.00
Chicago City & Connecting Rys. Participation Certificates (No par).....	10,518		1.00		1.00
Chicago & Eastern Illinois R.R. (No par).....	3,000	1.25	3,750.00	.75	2,250.00
Cleveland Arcade Co. Cap.....	2,500	98.62	246,555.56	75.00	187,500.00
Cleveland Trust Co. Cap.....	638	192.23	122,641.62	66.50	42,427.00
Consolidated Edison Co. of New York Inc. (No par)...	22,200	45.26	1,004,792.50	12.375	274,725.00
Consolidation Coal Co. Rights to purchase Common Stock.....	5,875		— 0 —	.0625	367.19
Continental Oil Co. (Delaware) Cap. (Par \$5)....	60,627	11.15	676,125.70	21.875	1,326,215.63
Eureka Pipe Line Co. Cap. (Par \$50).....	12,357	45.00	556,065.00	17.875	220,881.38
Illinois Central R.R.....	4,070	9.62	39,173.75	5.875	23,911.25
Indiana Pipe Line Co. Cap. (Par \$7.50).....	74,535	9.20	685,722.00	2.75	204,971.25
International Nickel Co. of Canada, Ltd. (No par)....	30,600	65.14	1,993,253.40	26.875	822,375.00
Interstate Natural Gas Co. Inc. Cap. (No par).....	33,763	14.96	505,042.25	18.75	633,056.25
Kennecott Copper Corp. Cap. (No par).....	33,100	59.78	1,978,731.03	37.00	1,224,700.00
Middle West Corp. Cap. (Par \$5).....	68,351.92	9.75	666,431.22	3.50	239,231.72
National Fuel Gas Co. Cap. (No par).....	843,060	7.75	6,533,715.00	10.00	8,430,600.00
National Transit Co. Cap. (Par \$12.50).....	126,481	12.70	1,606,308.70	9.00	1,138,329.00

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THE ROCKEFELLER FOUNDATION

New York Transit Co. Cap. (Par \$5).....	24,784	\$6.50	\$161,096.00	\$6.375	\$157,998.00
Northern Pipe Line Co. Cap. (Par \$10).....	27,000	8.33	225,000.00	7.875	212,625.00
Ohio Oil Co. (No par).....	94,684	35.37	3,349,446.50	7.50	710,130.00
Phelps Dodge Corp. Cap. (Pa. \$25).....	37,600	52.72	1,982,151.40	30.00	1,128,000.00
Provident Loan Society of New York 6% Certificates of Contribution.....	\$266,000	100%	266,000.00	105.60%	280,896.00
Southern Pipe Line Co. Cap. (Par \$10).....	24,845	\$6.25	155,281.25	\$5.75	142,858.75
South West Pennsylvania Pipe Lines Cap. (Par \$10)...	8,000	34.28	274,237.86	23.75	190,000.00
Standard Oil Co. of California Cap. (No par).....	60,967	17.25	1,051,680.75	18.875	1,150,752.13
Standard Oil Co. of Indiana Cap. (Par \$25).....	691,140	28.90	19,973,946.00	26.375	18,228,817.50
Standard Oil Co. (New Jersey) Cap. (Par \$25)....	1,109,478	32.98	36,593,938.27	41.75	46,320,706.50
Standard Oil Co. (Ohio) (Par \$25).....	135,648	25.50	3,459,024.00	33.25	4,510,296.00
Tilden Iron Mining Co. Cap.....	667 ³ / ₄	27.35	18,256.29	100.00	66,750.00
Union Tank Car Co. Cap. (No par).....	240,000	6.69	1,606,087.97	26.625	6,390,000.00
Wilson Realty Co. Cap.....	591		1.00		— 0 —
TOTAL COMMON STOCKS.....			\$90,106,966.67		\$96,713,655.30

TREASURER'S REPORT

SUMMARY

	LEDGER VALUE	MARKET VALUE
Bonds.....	\$55,308,540.78	\$44,040,641.06
Preferred Stocks.....	11,760,694.24	12,442,403.88
Common Stocks.....	90,106,966.67	96,713,655.30
	<u>\$157,176,201.69</u>	<u>\$153,196,700.24</u>

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PRICE, WATERHOUSE & CO.

CERTIFIED PUBLIC ACCOUNTANTS

56 PINE STREET, NEW YORK

ACCOUNTANTS' CERTIFICATE

THE ROCKEFELLER FOUNDATION:

We have examined the balance sheet of The Rockefeller Foundation as at December 31, 1941, and the related statements and summaries of funds and appropriations for the year 1941, and the list of investment securities as at December 31, 1941, have reviewed the system of internal control and the accounting procedures of the Foundation, and have examined or tested its accounting records and other supporting evidence by methods and to the extent we deemed appropriate. Our examination was made in accordance with generally accepted auditing standards applicable in the circumstances and included all procedures which we considered necessary.

The investment securities at December 31, 1941, were counted by us or confirmed to us by the custodians, and the bank balances at that date were confirmed to us by the depositaries.

Following the policy previously authorized, no effect has been given in the accompanying statements to accrued income not received or to expenditures made from advance accounts not reported in time to be recorded when the books were closed as at December 31, 1941.

In our opinion, with the foregoing explanations, the accompanying balance sheet and related statements and summaries of funds and appropriations, and the list of investment securities fairly present the position of The Rockefeller Foundation at December 31, 1941, and the results of its operations for the year 1941, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

PRICE, WATERHOUSE & CO.

New York, N. Y.

March 26, 1942

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