

The Rockefeller Foundation

Annual Report

1940

THE ROCKEFELLER
FOUNDATION

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GEORGE EDGAR VINCENT

George Edgar Vincent, president of The Rockefeller Foundation from 1917 until his retirement in 1929, died on February 1, 1941, at the age of seventy-six.

The following statement was adopted by the Board of Trustees of the Foundation at a meeting on April 2, 1941:

There are only three of us left who served as trustees of The Rockefeller Foundation when George Vincent was president. Thirty trustees who were associated with his administration have retired; of these thirty, fourteen are living and sixteen are dead. Dr. Vincent, Dr. Rose, Dr. Buttrick, Mr. Gates — the officers who shaped and guided the policy of this organization — are gone now. To us today they seem like legendary giants and we their dwarfed successors.

We three trustees who remain speak this morning of Dr. Vincent not only on our own behalf but on behalf of former trustees, living and dead, who were his admiring colleagues and loyal friends. In a real sense, too, we speak of him on behalf of the present trustees who, while they never had the privilege of serving under his presidency, have seen in every aspect of the Foundation's work his lengthening shadow.

Under Dr. Vincent's guidance the program of the Foundation not only received the pattern and quality which it still maintains, but it gained a standing throughout the world completely unique for a private organization. Were Dr. Vincent alive, he would be the first to assert that this result was not due to his efforts alone. He had behind him the vision and support of his trustees, and he was at all times assisted by an able corps of officers. But the leadership was his, and to that leadership he brought the powers of an incisive and piercing mind.

Although he was endowed with a prodigal range of talents, we who served with him as trustees remember perhaps with particu-



Photograph Excised Here

George Edgar Vincent

lar vividness his amazing powers of expression. He could restate, interpret, and summarize ideas more rapidly and with greater clarity than any man with whom this board has been associated. It was through this interpretive capacity that he was able to establish the Foundation in public estimation at a time when foundations were suspect, and little was known or understood as to our purposes or ideals.

Dr. Vincent's gift was much more than a mere facility with words. It was rooted in an intellectual integrity which was deep and uncompromising. There was a fundamental honesty about him, a kind of mental rectitude, a respect for fair play, which no one who met him could fail to observe. And yet he was in no sense naive or simple. On the contrary, he was urbane and sophisticated — in every meaning of the phrase a civilized human being. Although there was no sentimentality about him, he had a fine sensitiveness in his relations with individuals and with groups. He was not instinctively a fighter — there was no streak of pugnaciousness in him — but he had a gallant courage, and when he fought, which he did occasionally, he always faced his opponent and used a rapier, not a bludgeon.

All these characteristics were capped with an irrepressible gaiety and sparkle which those of us who knew him will longest remember. Not only his own wit and good humor but his delight in it from others enlivened the meetings of this board in a way which only those who served with him can appreciate. Often a thorny problem or a tense situation was speedily cut through by one of his rapid thrusts edged with gentle irony.

Finally, let us record that he had a genuine passion for perfection and was impatient with the second-best. This insistence upon high quality, this refusal to compromise with anything less than excellence, has run like a golden thread through all the work of the Foundation. In spite of mistakes and misjudgments it is the dominating ideal that has inspired this organization from the beginning, and to the service of this ideal Dr. Vincent brought the support of his own great talents.

How long the Foundation's existence will extend into the future, we of this present board cannot know; but of one thing we can be sure: Dr. Vincent's influence will survive to the end.

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, 1940, to December 31, 1940, 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

THE
ROCKEFELLER FOUNDATION
PRESIDENT'S REVIEW
FOR 1940

PRESIDENT'S REVIEW

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PRESIDENT'S REVIEW

THE YEAR IN BRIEF

DURING 1940 the appropriations of The Rockefeller Foundation amounted to \$9,854,497. The income of the Foundation from investments during the year was \$7,605,342.81. This income was supplemented by a transfer of \$1,150,000 from the principal fund.

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

Public Health	\$2,750,000
Natural Sciences	2,200,000
Social Sciences	1,500,000
Medical Sciences	1,300,000
Humanities	1,075,000
Rural Reconstruction in China	200,000

Of the money spent during the year, 77 per cent was for work in the United States and 23 per cent for work abroad. In spite of the serious interference of the war, the Foundation's activities during 1940 involved cooperative efforts in forty-four countries in Europe, Asia, Africa, and the Americas.

Details of the Foundation's finances for the year appear on pages 359 to 442 of this report.

FLAGS AND BOUNDARY LINES

For an organization like The Rockefeller Foundation which over many years has tried to carry on its work regardless of flags or boundary lines, these are unhappy days. To sit by and watch the disappearance or decadence or, worse, the perversion of institutions of learning which in earlier and better years we were privileged to assist is not an easy assignment. In the decade that followed the war these institutions gave high promise in public health, in medicine, and in the natural and social sciences. The Institute of Hygiene at Warsaw, the Institute of Public Health at Prague, the Kaiser Wilhelm Gesellschaft in Berlin, the Institute of Psychiatry at Munich, the Institute of Inorganic Chemistry at Göttingen — these were a few of many organizations, in a world where thought was free, to which the Foundation gave needed assistance.

Even more difficult is it to see the brilliant men with whose work we were associated — many of them on fellowships or with grants in aid from the Foundation — now driven from the posts for which they were trained, debarred from their laboratories, some of them fugitives, some in concentration camps, many of them separated from their families, or lost in foreign countries where they sought haven. To these scholars scat-

tered in many lands, whose lives are now a sacrificial testimony to the principle of intellectual freedom, we in this protected hemisphere pay tribute of admiration and homage.

Among the disappointments which organizations like the Foundation have to face in times like these is the fact that it is no longer possible, under the regulations of the United States Treasury Department, to make payments on appropriations for work in the occupied areas of Europe. Norway, Belgium, Holland, Denmark, France, Rumania—the projects which were being supported in these countries in medical research and in the natural and social sciences cannot now be assisted. Conditions have so changed that many of these projects would probably have minor value anyway; but it is one of the tragedies of the present situation that even a little money that might help an outstanding scholar here and there to keep his work alive cannot now be sent.

This is not said in any criticism of the government regulations. They are undoubtedly essential in the present international situation. But the hardship which they impose is none the less real. They constitute one further bit of evidence, if further evidence is needed, of the breakdown in international solidarity which in the realm of scholarship, at least, had become a vital factor of progress.

The development of the war has had the further effect of driving back several of the Foundation's outposts established in connection with its own operating program around the world. Our Paris office has been closed and the Shanghai office transferred to Manila. A temporary office has been opened in Lisbon. Our personnel has had to be recalled from Egypt where work was being carried on in malaria and schistosomiasis; from Turkey where we were engaged in sanitary engineering; from Rumania where scarlet fever studies were being conducted; and from Hungary, which was a station for influenza research. However, Foundation personnel is still operating on the Burma Road, in India, in south China, in the Belgian Congo, in Uganda (Central Africa), in Spain and Portugal, and of course in Latin America.

INTO THE NIGHT

In the shadows that are deepening over Europe the lights of learning are fading one by one. The conception of knowledge as an international responsibility has vanished. The free flow of ideas across boundary lines between laboratories and universities has dried up. Everywhere the exigencies of the war have erased the possibility of intellectual and cultural life as that term was understood a few years ago.

On the Continent, as distinguished from Great Britain, the situation during the last year has rapidly deteriorated. January 1941 finds a large number of universities and institutes closed, and many others working under conditions scarcely tolerable. As German forces have moved into one country after another a definite pattern has been followed in relation to the universities and other schools. Allowed at first to continue with their work, their teaching and student activities were closely supervised by the German authorities. The supervision involved an attempt to enforce a "cultural program" similar to that already imposed by the Nazis on German institutions. Where this attempt was resisted, as it frequently was, the measures of repression adopted by the occupying authorities included the closing of the institutions, sending faculties to concentration camps, and even breaking up student demonstrations with machine guns and tanks.

In two Czechoslovak universities during the winter of 1939-40 hundreds of students were imprisoned and many were shot. Finally the universities were closed and most of the student body was deported for forced labor in Germany. In Holland in 1940, as in Poland in 1939, there were many arrests and deportations of students and professors. Similarly in the Norwegian universities the German attempts to enforce the

Nazi cultural pattern have been marked by the frequent arrests and disappearances of professors and students alike. Belgium's four universities were all permitted to reopen in October, but severe restrictions were imposed upon the University of Brussels and the Catholic University of Louvain, whose library was completely and apparently deliberately destroyed by the Germans. The number of students has been greatly reduced in Belgian institutions, and the Germans are exercising close control over the teaching. In Paris, following the Armistice Day demonstration in which a number of students were machine-gunned, the University was closed for a period and the Rector dismissed.

The condition of university life and standards on the Continent is now little short of appalling. Due to flight, imprisonment, or disappearance the number of professors in institutions has been reduced by at least 50 per cent. Jewish professors in France were discharged as a result of the September decrees issued from Vichy, and similar action has been taken in other countries under German domination with the exception of Denmark. Professors residing in German-occupied territory who were known to be anti-Nazi have been taken to concentration camps or have disappeared. The same is true of German refugee scholars who had found haven in countries sub-

sequently invaded by German troops. Similarly in the three Baltic states — Lithuania, Latvia, and Estonia — which were absorbed by Russia in June 1940, the process of converting the universities into Soviet institutions has proceeded rapidly. More than half the professors have been removed from their positions and many of them have been imprisoned or have disappeared. The teaching programs have been completely reorganized, particularly in the social sciences.

Over all the continental universities hangs the pall of uncertainty and fear. The contact with contemporary life has been abruptly broken. Even when fundamental research is being continued, publication has largely been abandoned or postponed. In the social sciences such research as is carried on is confined to innocuous projects which have no relevancy to the present scene. Even neutral countries are under pressure to permit a totalitarian interpretation in the teaching of such subjects as economics, political science, and sociology; and scholars — to quote a recent guarded letter — "exercise a certain tact and circumspection in our treatment of the most up-to-date problems."

In such surroundings scholarship withers and only through heroic struggle keeps itself alive. When the German Minister of Justice tells the Association of University Professors that the old

ideal of objectivity was nonsense and that "today the German university professor must ask himself one question: does my scientific work serve the welfare of National Socialism?" he is voicing a doctrine which if broadly applied spells the end of Western scientific thought. When relativity becomes "an example of characteristically perverse Jewish thinking," and genetics is a battleground for the "Aryan theory," then the end of the day has come in which Claude Bernard could say: "I give small thought to where the truth will lead me, provided that I find it."

It is only in an atmosphere of freedom that the lamp of science and learning can be kept alight. In all the history of the race knowledge has never flowered in a subject people. It is only free men who dare to think, and it is only through free thought that the soul of a people can be kept alive.

REFUGEE SCHOLARS

The necessity of protecting the careers of scholars unable to continue work in their native lands has given rise to two Foundation programs: one a placement program, from 1933 to 1939; the other an emergency rescue program in 1940. Beginning in 1933 the Foundation, at the request of universities and research institutes offering

positions of reasonable permanency, made grants for the placement of refugee scholars. During the seven-year period ending in 1939, the Foundation appropriated \$775,000 for this purpose. Of this amount approximately five hundred thousand dollars was allocated to American institutions, the balance going to institutions in Europe and elsewhere. Of the 122 individual scholars assisted by this process in finding places in the United States, ninety-nine were established in permanent positions by the end of 1939, and their distinguished talents were thus added to the intellectual life of America. Excluding those who had died, gone into other activities, or migrated to other countries, only seven of this whole group failed to measure up to expectations.

In 1940, with the invasion of Scandinavia, the Lowlands, and France, and the intensification of war in England, a new kind of problem arose, necessitating a new type of program. Many eminent scholars, some of whom the Foundation had already rescued from Central Europe between 1933 and 1939, suddenly found themselves not only unable to continue their work, but often in extreme personal peril. The situation was an emergency one. Long negotiation such as was formerly necessary to secure permanent placement was now out of the question. In order to save these men, action had to be taken at once.

With the assistance of the New School for Social Research, of which Dr. Alvin Johnson is the director, The Rockefeller Foundation instituted a rescue program, in which other agencies, notably the Carnegie Corporation and the Belgian American Educational Foundation, have participated. Grants sufficient to provide travel to this country and maintenance for two years for imperiled scholars have been made either to the New School or to other interested institutions. In the case of those scholars assigned to the New School, only temporary placement is involved, and it is expected that they will find permanent posts elsewhere, either in this country or abroad. Assisting in this task of permanent placement is the Emergency Committee in Aid of Displaced Foreign Scholars, which, under the leadership of Dr. Stephen Duggan, acts as an important clearinghouse on the subject.

During 1940, on behalf of these refugee scholars, The Rockefeller Foundation made fifty-six grants totaling \$266,350. Of these, forty-five were made to the New School and eleven to other institutions. The fifty-six scholars represent eleven nationalities, including nineteen Germans, eleven French, seven Poles, five Russians, five Austrians, three Norwegians, two Spaniards, one Belgian, one Czech, one Italian, and one Swiss. Among them were physiologists, biochemists,

mathematicians, psychiatrists, neurologists, economists, statisticians, historians, philosophers, and philologists, all of whom had occupied distinguished places in European universities. One was a Nobel prize winner; nearly all had international reputations.

The restrictions imposed on the conquered countries of the continent are such that only a small proportion of its productive scholarship can be thus salvaged. But if the conception of the world-wide republic of knowledge is to be kept alive, efforts of this kind, hopelessly inadequate as they may be, are not without importance.

TRAINING PHYSICIANS FOR GREAT BRITAIN

Just before he died, Lord Lothian, British Ambassador to the United States, asked The Rockefeller Foundation whether it would consider the possibility of giving a number of British medical students the opportunity to complete their training in the medical schools of the United States and Canada. While medical students in England are not subject to draft, the air raids in London and elsewhere throughout Great Britain have imposed excessive demands upon all medical schools and teaching hospitals. Destruction has been extensive. In London, at this writing, only one teaching hospital has escaped

bombing. The conditions for thorough and adequate teaching in medicine are therefore severely deranged. A considerable number of the teachers, moreover, have been called to military or special civilian duties, and, together with the profession as a whole, are exposed to injury and death in a measure that heightens the importance of adequate training for those who will be their successors. A break in the chain of medical teaching in any country spells disaster for the next generation.

Lord Lothian's suggestion was warmly supported by leading British medical authorities, and as a result the Foundation appropriated \$100,000 to initiate the plan. This proposed cooperation between British and American medical schools is the fruit of earlier and very satisfactory relationships. For seventeen years the Foundation has provided fellowship funds to the British Medical Research Council for the training of British postdoctoral medical students in America. These fellows have been of exceptional quality. Upon their return to the British Isles they have carried with them a favorable impression of their American experience. As a result, American medical education is held in esteem by many of the younger leaders in British medicine. This new project is launched, therefore, in an atmosphere of mutual respect and confidence.

Twenty-five leading medical schools in Canada and the United States have indicated their cordial willingness to accept these new students, and some have offered to remit tuition. An officer of the Foundation is now in England working with a British committee on the details of selection and transportation. Candidates will be considered not only from the London area but from the provincial universities in England, Scotland, and Wales, where extensive damage has also been done to clinical teaching services. Arrangements are being made for the local supervision of the students in America and for the acceptance by British medical authorities of their American training, when successfully completed, as the equivalent of the British licensure. Appointments will be for not more than three years and will provide modest living expenses and tuition. The three-year period is likely to include two years of clinical training and one year of internship. The student will be expected to provide his own cost of travel. He will, of course, be required to return to Great Britain upon the termination of his scholarship. The scholarship will be administered by the authorities of the school to which he is assigned, and it is not expected that he will be enrolled as a candidate for an American degree.

Unless unforeseen difficulties occur, it is anticipated that some of the students will arrive in

America this spring, and the balance by the opening of the fall term. The Foundation intends to consider a possible extension of the plan if the first year's experience is successful.

THE HEALTH COMMISSION TO EUROPE

The Battle of France left such chaos in its wake and the question of public health, particularly among children, presented such threatening possibilities that, early in July 1940, The Rockefeller Foundation organized a Health Commission, under the direction of its International Health Division, which was sent to Europe as fast as a program could be developed and personnel recruited. It was decided that the activities of the Commission should follow the established policy of the Foundation's work in public health in that it would cooperate primarily with government organizations. In so far as could be foreseen, it was thought that the various forms of aid might include the provision of technical advisers, particularly in areas crowded with refugees, in which difficult health problems were bound to emerge; local training of new health personnel; sanitation; control of epidemics such as typhus fever, influenza, malaria, and other diseases; re-establishment of state and local health services; and the study of urgent nutrition problems which the war would undoubtedly create.

In the execution of the program the Director of the International Health Division, Dr. Wilbur A. Sawyer, has made two extended trips to Europe, visiting France, England, Spain, and Portugal. Two other medical members of the Foundation's staff, who have had long experience and are widely acquainted in France, have been in Paris and Vichy since last August; and two nutritionists recruited in American medical schools and a sanitary engineer from the Foundation staff are now working in Marseille. At the request of the British Ministry of Health a bacteriologist-epidemiologist has been sent to England in connection with the influenza problem; and in addition plans are under way to send one or more nutritionists and a specialist in typhus fever to Spain, and a bacteriologist-epidemiologist to France.

Owing to the limitation of communications between Europe and America, as well as the bewildering uncertainties of the immediate future, the difficulties which have confronted and still confront the development of this program on the Continent have been almost insurmountable. The project which is headed up in Marseille involves a nutritional study of selected groups of the children of Free France, and at the present writing it is progressing favorably with the complete cooperation of the public health authorities

of Vichy. Other projects in France it has not been possible to mature. The Foundation plans to continue its efforts as long as any possibility of a constructive contribution remains.

INFLUENZA

In 1933 the late Sir Patrick Laidlaw and his associates at the National Institute for Medical Research in London succeeded in isolating the causative agent of an epidemic of influenza and showed definitely for the first time that it was due to a filtrable virus. This virus has come to be known as "influenza A." In January 1940, Dr. Thomas Francis, Jr., professor of bacteriology at New York University, with a grant from The Rockefeller Foundation, isolated the virus of an explosive type of influenza in North Carolina. This virus was called "influenza B," and the two types are quite distinct. It is now known that there are one or more new types of influenza, apart from A and B, which have not as yet been described.

Toward the end of 1939 a curious accident occurred in the laboratories of the International Health Division of The Rockefeller Foundation in New York (not to be confused with the laboratories of The Rockefeller Institute for Medical Research, although both occupy the same premises). An outbreak of distemper-like disease

developed among the ferrets used in the studies of influenza A. In order to prevent the spread of the infection, a vaccine was made from the organs of some of the animals which had just recovered from influenza and had come down with the distemper; and this vaccine was injected into a large number of normal ferrets. When these vaccinated ferrets were later inoculated with influenza A virus, they were found to be immune.

This phenomenon, accidentally encountered, was intensively studied during the year 1940 in the hope that it might lead eventually to the development of a satisfactory anti-influenza vaccine. The research has been under the direction of Dr. Frank L. Horsfall, Jr., of the laboratories of the Foundation. In the course of the work different types of vaccine were tried, and eventually, in place of infected ferret tissues, developing chick embryos were employed. The vaccine thus produced was studied in a number of human volunteers and was found to give a sharp rise in antibodies against influenza virus in the blood of vaccinated persons. In some instances this increase was over a hundredfold, and the high antibody level resulting from the experimental vaccination persisted for a number of months. Because these results seemed much more promising than those previously obtained with any other type of vaccine, it was considered desirable to

determine whether the antibody rise in the blood indicated active immunity to influenza.

Plans were therefore made to vaccinate representative groups in different parts of the country in the expectation that during the usual winter influenza season epidemics might affect some of the localities under study and thus give an answer to this crucial question. During the mid-summer, while the vaccine was still only in the preliminary stages of development, epidemics of influenza were reported in Puerto Rico and Cuba. In Puerto Rico the epidemic had already passed its peak; a few vaccinations were undertaken, but these were done too late to give any evidence as to the efficacy of the vaccine. Similarly in Cuba most of the institutions in which vaccination was undertaken had already been affected and most of the vaccinated persons were exposed to infection before they had an opportunity to develop immunity. In one institution, however, where vaccination preceded by two weeks the outbreak of the epidemic, the evidence was definitely suggestive of the preventive value of the new vaccine.

During the interval between the Cuba epidemic and the end of the year, over one hundred seventy thousand persons were vaccinated in the United States through the generous cooperation of health authorities in various parts of the country. Late in the year, at the request of the

Medical Research Council of Great Britain, 500,000 doses of the new vaccine were shipped to England for study and experimentation. No results have thus far been reported. Of this shipment 115,000 doses went down when the *Western Prince* was torpedoed, but this amount has now been replaced.

Vaccinations in California were begun after the epidemic of influenza had made its appearance. On the basis of a small number of cases studied, however, the infection in one institution appeared to be predominantly influenza A, and there was a suggestion that the incidence of the disease was lower among the vaccinated than among the unvaccinated groups. In another institution where the proportion of influenza A appeared to be only about 50 per cent, no significant difference between vaccinated and unvaccinated was apparent.

During the midwinter an extensive outbreak occurred throughout the southern states. In Florida and Alabama a large number of persons had been vaccinated four months previously. Although complete data are not available for statistical analysis at the time this report is being written, the preliminary survey indicates that the incidence of influenza on the whole was somewhat lower among the vaccinated persons than among the unvaccinated.

It will take several months of detailed labora-

tory study to determine accurately the percentage of individuals who suffered from influenza A in this epidemic, and it is therefore impossible to draw final conclusions at this time. However, the results which are available to date suggest that, although this vaccine is by no means perfect, it may have some practical value as a prophylactic measure against one type of influenza.

During the study of vaccination significant information regarding the epidemiology of influenza has been brought to light. An analysis of 273 cases occurring in seven localized epidemics showed that 41 per cent were influenza A, 16 per cent influenza B, 1 per cent A and B mixed, while the remaining 42 per cent represented one or more new types, as yet undescribed. The existence of more than one type of influenza virus has been known for some time, but that more than one type was active simultaneously in a single epidemic was a surprising discovery.

Much additional study is required before a final assessment can be reached as to the value of vaccination against influenza in general. In the meantime plans are being made for the continuation of the work. It is hoped that during the next influenza season, that is during the winter of 1941-42, an experimental vaccine may be available which can be applied to at least three different types of the influenza disease.

THE RETREATING GAMBIAE

In the last two numbers of this REVIEW reports have been presented of the progress of the campaign against the *Anopheles gambiae* mosquito in Brazil. This dreaded malaria-carrying insect, a native of Africa, was first discovered in Natal in 1930 by a member of the staff of the Foundation. Apparently it had come in an airplane or on one of the fast French destroyers which at that time were serving the French air line between Dakar in West Africa and Natal in Brazil. The alarming spread of this African scourge in Northeastern Brazil and the virulent character of the malaria which it produced resulted in a systematic campaign carried on by the personnel of the Foundation in collaboration with the Brazilian Government. Dr. Fred L. Soper, representative of the Foundation in Brazil, has been in charge of the direction and administration of the offensive. Over two thousand doctors, technicians, scouts, inspectors, guards, and laborers are enlisted in the battle.

A year ago we reported that the *gambiae* had been pushed back to its central strongholds in the main river valleys and on the narrow coastal shelf of Northeastern Brazil — an area of perhaps twelve thousand square miles. Around this area a line of fumigation posts was erected to keep a mosquito from breaking through into new territory, and a concerted advance was begun to

narrow still further the boundaries of its domain. The weapons employed were Paris green for potential breeding places and spray insecticides for the fumigation of all buildings.

This intensive campaign in 1940 had dramatic results. During the critical wet season the *gambiae* was pushed back on all sides, so that by the beginning of the dry season it had been practically restricted to the lower Jaguaribe Valley. This made possible the concentration in this area of a large number of workers for the final onslaught beginning in July. It can now be reported that no larvae or adults of *gambiae* have been found in the lower Jaguaribe Valley since the first week in September. A small additional focus lying some sixty kilometers beyond the known infested area was discovered in October, but it yielded readily to attack and was apparently clean by the middle of November. No evidence of *gambiae* in Brazil was found during the last forty-seven days of 1940.

Further relevant evidence lies in the fact that in areas of earlier infestation where control measures have been progressively discontinued, *gambiae* have not been found, even during the rainy season when the Brazilian type of anophelines flourishes. In the Icó field laboratory alone, routine microscopic examination of some two million anopheline larvae, collected during the last eight months of 1940 in areas where control

measures had been suspended, failed to reveal any evidence of surviving *gambiae* infestation. Considering the fact that the *gambiae* mosquito is a domestic insect with marked preference for certain types of readily observed breeding places, the failure to find either larvae or adults in an area in which no control measures are being applied seems highly significant.

Those directing the campaign no longer consider it rash to speak of the eradication of *gambiae* from Brazil, although it must be remembered that the struggle will not be won until the last fertilized female *gambiae* on this side of the Atlantic is destroyed. In any case, no matter how many isolated foci may yet be uncovered, the critical phase of this immediate campaign seems to be over. Certain mopping-up operations remain to be done as the search is continued for infested areas. The number and extent of these areas should become rapidly apparent with the onset of the rainy season early in 1941.

The assurance with which the situation is at the moment regarded is reflected in the following comparative budgets for the *gambiae* campaign for 1939, 1940, and 1941:

	<i>Brazilian Government</i>	<i>Rockefeller Foundation</i>	<i>Total</i>
1939	\$500,000	\$100,000	\$600,000
1940	900,000	230,000	1,130,000
1941	400,000	100,000	500,000

UNRAVELING THE YELLOW FEVER MYSTERY

The year 1940 was marked by a sharp outbreak of yellow fever in the Nuba Mountains of the Anglo-Egyptian Sudan, involving thousands of cases and many deaths. The infected area had been shown to be endemic in a survey made by The Rockefeller Foundation in 1933 and 1934. This new epidemic was probably transmitted by the *Aedes aegypti* mosquito, although there is a bare possibility that other vectors were involved. Information recently received shows that the outbreak has largely been confined to the native population and apparently it has in no way been related to the movement of troops.

At the request of the British Government The Rockefeller Foundation has sent to the Sudan 250,000 doses of the yellow fever vaccine developed in the laboratories of its International Health Division and is preparing to send an equal amount within the near future. In this connection it should be reported that the Foundation is supplying yellow fever vaccine to the United States Army for the vaccination of military personnel, as well as to the United States Public Health Service. The amounts involved may run to over a million doses.

The discovery some years ago that yellow fever existed in South American jungle areas in

which no *Aedes aegypti* mosquitoes were present, and that the disease is transmitted by unknown carriers and probably through hosts other than man, has led to intensive efforts to unravel the mystery. The work of the Foundation in Colombia, South America, in 1940, has thrown new light on this puzzling situation. The work was carried on partly in field laboratories and partly through field expeditions in the jungle. As a first step, all forms of arthropod life, whether blood-sucking or otherwise, were collected, divided into broad groups such as mosquitoes, ticks, etc., and then ground, centrifuged, and filtered. The filtrates were inoculated into white mice and rhesus monkeys.

By these methods the presence of yellow fever virus was demonstrated in two species of mosquitoes — the *sabelline* and the *haemagogus*. In spite of repeated attempts to isolate the virus from many classes of insects, no virus was found in any form of insect life other than mosquitoes.

The next step was to determine the susceptibility of jungle animals to yellow fever virus. For this purpose over two thousand wild animals were captured. It was found that while the yellow fever virus did not kill any of the animals tested and generally did not produce signs of illness, many species had virus circulating in the blood stream while the animals were running

about — a condition especially favorable to the spread of the virus. The tests showed several broad groups of animals, comprising many species, to be susceptible. The chief groups are as follows:

Primates: man and monkeys.

Marsupials: the opossums, all species.

Edentates: anteaters, sloths, armadillos.

Rodents: agouti, paca, capybara, some species of mice.

By means of the mouse protection test, developed in the Foundation's New York laboratory in 1931, the distribution of a previous epidemic among the animals near Villavicencio was successfully studied, even though more than two years had elapsed since the termination of that outbreak. Indeed it was possible to show how the disease had spread from one species to another over a broad terrain.

As a result of the several avenues of investigation followed in Colombia, the following tentative generalizations appear to be justified:

1. Yellow fever is primarily a disease of jungle animals. The classical form involving transmission from man to man by the *Aedes aegypti* mosquito is more of a secondary cycle depending largely upon conditions of population concentration and mosquito breeding created by man himself.

2. Transmission of jungle yellow fever appears

to be by jungle mosquitoes from animal to animal.

3. There is no animal reservoir of virus in the usual sense. Virus continues to circulate in the blood of susceptible animals for three or four days only, and does not subsequently reappear. Mosquitoes, however, once infected tend to harbor the virus for the remainder of their lives, which may be several months under favorable conditions.

The most important control procedure with respect to jungle yellow fever is the vaccination of that part of the population which comes into contact with the infected forest area. It now appears that protection test studies in wild animals can be of great value in determining the risk to human beings entering a region. Previously, it was necessary to wait until human deaths occurred before considering the region as one of yellow fever interest. Today the findings among the animals may be used to orient the vaccination campaign in order to give maximum protection.

The discovery that yellow fever can be transmitted in the jungle by carriers other than the *Aedes aegypti* mosquito does not minimize the significant part which the aegypti mosquito plays in the distribution of the disease among human beings. It is not too much to assert that if in urban areas this insect were brought under

control as it has been in Brazil, the world could avoid the threat which in these days of fast transit might so easily develop into a cataclysm in East Africa, in India, and even in the Orient, to say nothing of parts of the Americas, should the virus of yellow fever break through the barriers of quarantine, vaccination, and medical vigilance.

ANOTHER SCHOOL OF PUBLIC HEALTH

In 1940 the Foundation gave \$500,000 to the University of Michigan for the development of a School of Public Health. A similar amount for this purpose was given by the W. K. Kellogg Foundation. Half of the money is to be applied to the cost of a site, building, and equipment; the other half is for maintenance over a ten-year period. The grant of The Rockefeller Foundation represents an extension, in a new geographical area, of an earlier program for the development of schools of public health in America.

The Foundation's initial appropriation for the establishment of a school of public health was made in 1916 to the Johns Hopkins University. For the same purpose aid was given to Harvard University in 1921; and to the University of Toronto in 1924. In all, the Foundation spent approximately twelve million dollars in the establishment of these three schools. It can fairly be said that they now constitute the basis for

university training of public health personnel on this continent.

Recent legislation has greatly increased the need for trained personnel in the public health field. When the Social Security Act was passed in 1935, with its large grants to states for public health and child health, the public health movement in the United States received a new impetus, and the first real step was taken in the evolution of a national health program. The subsequent passage of the Venereal Disease Control Act and the National Cancer Institute Act, and the recent increase in health funds authorized under the Social Security Act indicate a permanent and, it is believed, an increasing interest by the Federal Government in the health of the nation. The bottleneck in the development of this broad program is the lack of adequately trained personnel to run it. It is an interesting commentary that of all physicians employed by health departments in the United States on a full-time basis only 22 per cent have had a certificate or degree in public health, and nearly half of the total have had no special public health training whatever. It is to enable the School of Public Health at the University of Michigan to assist in the adequate training of personnel for these large, developing programs that the Foundation's recent appropriation was made.

The School of Public Health at the University

of Michigan, operated for many years as a division, will now be on a parity with other schools at the University. It will function in close association with the Schools of Medicine, Engineering, Dentistry, Education, Nursing, and other allied units. Particular emphasis will be given to public health administration, medical epidemiology, biostatistics, and sanitary engineering. The aim of the School will be to embrace in its curriculum those social and professional studies and services essential to a broadened consideration of public health.

THE MEDICAL SCIENCES

Most of the Foundation's appropriations during 1940 in the medical sciences relate to teaching and research in psychiatry, neurology, and psychology. In this field there were fourteen grants ranging from \$8,000 to \$175,000 each and totaling \$693,900. Five of these grants were new. To the University of Edinburgh the Foundation gave \$18,250 for studies of head injuries, under the combined direction of Mr. Norman Dott and Dr. D. K. Henderson; to the University of Illinois, \$8,000 for the development of neurology; to the American Psychiatric Association, \$12,500, over a three-year period, toward the cost of teaching conferences for the professional personnel of state mental hospitals; to Duke Uni-

versity, \$175,000, payable over a period of seven years, for the development of teaching in psychiatry: and to Tufts College Medical School, \$25,000, payable over five years, for research in neurology.

The nine remaining grants in this field were for projects which had been previously supported by the Foundation. They were as follows:

Harvard Medical School and the Massachusetts General Hospital, for teaching and research in psychiatry, as one of the services in a general teaching hospital, payable over two years	\$106,000
Institute of the Pennsylvania Hospital, for teaching and research in psychiatry in a mental hospital used by the medical schools in Philadelphia, payable over three years	75,000
Department of Psychiatry of the Johns Hopkins University School of Medicine, for clinical and laboratory research in psychiatry	36,650
Subdepartment of Neurology of the Johns Hopkins University School of Medicine, for teaching and research in neurology, payable over three years	23,000
Harvard Medical School, for research in epilepsy and schizophrenia, payable over three years	57,000
Worcester State Hospital, for research on schizophrenia in this central teaching hospital, payable over three years	37,500
Harvard University, for research on personality and human relationships, payable over five years	60,000
Tufts College Medical School, for research in brain chemistry, payable over five years	30,000
Harvard University, for research and advanced teaching in psychology, in connection, especially, with industrial management, payable over two years	30,000

The second group of grants in the medical sciences was in the field of the teaching of preventive medicine. Four appropriations were made to new projects, ranging from \$9,000 to \$14,000 and totaling \$43,800. A grant was made in April to the University of Brussels in the amount of \$14,000 for preventive medicine under Professor René Sand. This appropriation later had to be rescinded as a result of the war. A grant of \$10,000 was made to the Universities' Health Council at Chengtu in West China for the use of the three medical schools which are located there. At Yale University assistance in the amount of \$9,000, payable over three years, was given for the establishment in the Department of Internal Medicine of a Section of Preventive Medicine. The University of Manitoba in Winnipeg was given \$10,800, over a period of three years, toward the development of teaching in public health.

A third group of larger grants for varied purposes included funds for studies in physiology (especially endocrinology), kidney diseases, and chronic diseases. These grants ranged from \$21,000 to \$73,334 and totaled \$161,334. A new item was a grant of \$25,000, payable over a three-year period, to the University of Buenos Aires toward research in the Institute of Physiology under Professor B. A. Houssay. Renewing previous

interests, the Foundation gave \$42,000, payable over two years, to Columbia University for research in endocrinology; \$21,000, payable over three years, to the Leland Stanford Junior University School of Medicine, for research in kidney diseases; and \$73,334, payable over three years, to the Research Council of the Department of Hospitals of New York City for research by the staff of the Medical School of Columbia University on chronic diseases in a New York City hospital.

THE GIANT CYCLOTRON

With so much creative human talent employed in devising increasingly powerful engines of destruction it is at least some comfort to know that today in the United States work is proceeding on two of the mightiest instruments the world has seen for the peaceful exploration of the universe. One is the 200-inch telescope nearing completion on Mount Palomar, California; the other is the giant cyclotron under construction at Berkeley, California. The new telescope will explore the outer reaches of the universe, the realm of the infinite; the new cyclotron will probe the inner reaches of the universe, the realm of the infinitesimal. The telescope was made possible by an appropriation in 1928 of \$6,000,000 by the International Education Board, established by

Mr. John D. Rockefeller, Jr. This last year the Foundation appropriated \$1,150,000 to the University of California for the construction and housing of the cyclotron.

From the time of Democritus, the natural philosopher has tried to probe inside the matter of which our physical universe is built in order to discover the nature of its smallest parts and the laws which govern them. For centuries there could be nothing but vague speculation, for suitable experimental procedures were not available. But brilliant advances have been made since the turn of the present century, and in forty years of research a flood of light has been thrown on the nature of atomic structure. Two decades ago this inner citadel of the universe was successfully attacked by shooting into the atom small projectiles of such high speed that they disrupt the internal pattern. Then from a study of the erupted fragments, of the mutilated remainder, and of the battered projectile, new knowledge was obtained of the atom's structure.

The most successful device for this purpose has been the cyclotron, invented by Professor Ernest O. Lawrence of the University of California. In essence the cyclotron is a machine for imparting extremely high velocities to atomic particles by means of electrical impulses. The particles, which are the bullets of the gun, are charged atoms.

Whirling in ever-widening circles in a chamber mounted between the poles of an immense magnet, these particles are sped faster and faster by alternate changes of an electrical field from negative to positive and vice versa until they are finally shot out through an opening to smash against a target whose atoms are to be cracked by their impact. It is as if a stone were whirled on the end of an elastic cord in a constantly enlarging orbit until at last it flies off at a tangent with tremendous force. When these bullets emerge from the cyclotron they are in the form of a steady beam, moving at velocities which may exceed 100,000 miles a second. At such high speeds they constitute the most powerful concentrations of energy ever controlled by man.

There are now in operation throughout the world some thirty-five cyclotrons of varying sizes. Of these, twenty-four were either built by, or are now being operated by, men who were trained in Lawrence's laboratory. Lawrence himself has built a sequence of cyclotrons of increasing size, varying in weight from 500 pounds to some 220 tons, and producing a beam ranging from 80,000 volts in his smallest cyclotron to 16,000,000 volts in his largest. The new giant cyclotron will contain over 4,000 tons of steel and copper in its magnet alone and will produce a beam whose voltage will range from 100,000,000

to perhaps 300,000,000. The beam of the largest cyclotron now operating penetrates, in air, about five feet; the beam of this giant instrument will penetrate 140 feet.

But of what use is this machine and what can it do for man? The chief practical application to date has been in the use of the beam to produce radioactive matter. The new array of radioactive substances which has resulted will almost surely have an important relationship to current scientific problems; but one broad field of application has already been clearly demonstrated: these artificially radioactive atoms are the familiar "tagged atoms" which are now being used in chemical, biochemical, physiological, and other laboratories all over the world in a wide range of basic research which would be quite impossible were it not for this unique new material.

Furthermore, the beam of exceedingly high-speed particles can be applied, like x-rays, gamma rays, and other types of radiation, directly to living organisms, and the effects can be analyzed and ultimately utilized. It will require years to investigate the efficacy of beams of different composition and intensities on various vital processes; but experiments have already shown, for example, that beams of neutrons can penetrate deeply into living tissue and can there release local radiations which can be, but

need not be, intense enough to kill cells. These further applications are now in their first tentative stages. It is as difficult to predict the exact nature of their use as it would have been in the case of x-rays at a similar point in their development.

But if these results are being obtained by cyclotrons now in existence, why build this new giant machine? The answer takes us into the field of exploration and the insatiable intellectual curiosity which is the mark of civilized man. The most powerful cyclotrons now in existence produce particles whose speeds, when fired at atoms, enable them to knock off only the external and more loosely bound features of the atoms under attack. It is at this point that the new giant cyclotron, now under construction, is of critical importance, for it is designed to produce projectiles so powerful that they can penetrate and explore the nucleus itself.

It is essential to realize the significance of this point. During the last forty years, science has learned much about atomic structure. One outstanding mystery, however, remains, and in many senses it is the major mystery. Relatively little is known about the nucleus, the central core of the atom. There is evidence that this nucleus possesses a discoverable structure, that it is formed of certain elementary units in accordance

with laws with which we are not familiar; and physicists today consider its investigation the most important present problem in physical science. Here in the interior of the nucleus is the one essentially unexplored part of our universe. It is a world into which we have hitherto been powerless to enter; and the urge to penetrate, to explore, and to analyze is irresistible.

This urge, moreover, is heightened and justified by the conviction that this virgin territory will prove to be rich. Practically all of the energy of the atom, for instance, is stored within the nucleus; and it is the nucleus which really determines the character of an atom and is hence ultimately responsible for all the properties of matter. Furthermore, there is evidence that the essential forces which bind the nucleus together are due to an elementary particle called a "mesotron." These same mesotrons play an important role in cosmic rays; and if more could be learned about mesotrons it would immediately throw light not only on this other perplexing problem, but on still further riddles with which science is now grappling on the frontiers of knowledge.

The real case for building a great cyclotron rests upon its ability to make accessible a new infinitesimal world — the interior of atomic nuclei, with all the possibilities of fresh knowledge that may there reside. It is an adventure in

pure discovery, motivated by the unconquerable exploring urge within the mind of man.

In this sense, therefore, the new cyclotron is more than an instrument of research. Like the 200-inch telescope it is a mighty symbol, a token of man's hunger for knowledge, an emblem of the undiscourageable search for truth which is the noblest expression of the human spirit.

SCIENCE AND THE MORAL ORDER

In spite of its claims and accomplishments science is today under sharp attack. The growing public realization that its powerful tools can be used for man's enslavement and destruction has given rise to bitter questions and charges; and we read today of "civilization betrayed by science" and of "a degraded science that shirks the spiritual issues and hypnotizes its victims with its millions of gadgets." In this hour of intellectual confusion and moral chaos the social consequences of science have been brought to the fore, and the question is persistently asked: Are these consequences so important, because of technical applications, that the social interest is paramount over intellectual interest? Are there too many nations and too many people everywhere using the instruments of a civilization they have not achieved? Are bigger telescopes and cyclotrons needed in a world like this?

It would be presumptuous to attempt an answer to this question in a few brief paragraphs even if the writer were especially competent to make any answer at all. The question arises, of course, because science as a technique for gaining understanding of nature is also a technique for gaining control over nature — that is, it is a technique for gaining power. And power can be used by evil men to do evil even more obviously and dramatically than it can be used by men of good will to do good.

But this is true of many things in life. Sulfa-nilamide, perhaps the most amazing development of modern medical science, came from the German dye industry, but so did mustard gas. Exactly the same principles of physics are employed to point a 500-ton telescope at a star and a 15-inch naval gun at its target. Language is a powerful tool which can be used to mirror spiritual insight or to spread false and destructive propaganda. The possibility of misuse is not an argument for no use at all.

However, this point of view would scarcely justify science in dissociating itself from considerations of value and purpose. The disavowal of concern with social ends would seem to be a callous and irresponsible way to defend science against the charge that it provides man with forces which outstrip his powers of control. Such

a defense in fact arises from too narrow a view of science. For science is more than the technologies which cluster about it — more than its inventions and gadgets. It is even more than the discovery and correlation of new facts. Science is a method, a confidence, and a faith. It is a method of controlled and rechecked observations and experiments, objectively recorded with absolute honesty. It is a confidence that truth is discoverable. It is a faith that truth is worth discovering.

The contribution which this aspect of science can make to human problems is too often overlooked. Science has developed a specialized set of mental procedures and a noble tradition concerning their use. Confronted by a problem the scientist begins by sorting out the pertinent factors. He discards the irrelevant, testing relevancy as critically and dispassionately as possible. Then with the relevant material in front of him he begins the painstaking tasks of describing, classifying, discovering correlations, constructing hypotheses, experimentally testing, discarding, or adjusting these hypotheses — and extending them to new fields. It is of the essence of this whole process that he should suspend judgment until ponderable evidence is at hand, that he should continually reexamine underlying theories and definitions, that he should be prepared to

abandon a position however attractive it may be, that he should be sanely skeptical of conclusions and that he should maintain complete dispassionate intellectual honesty.

Surely a technique of this kind has some meaning in the confused issues which we are now facing. We can scarcely afford to declare a moratorium on this kind of intellectual objectivity. It has undeniable social serviceability. It can create what John Dewey calls "a new morale," a new approach to the solution of the difficulties which now overwhelm us. It can be a nourishing atmosphere for the development of a factual outlook, of a healthy and flexible skepticism, of a disposition to seek for the causes of things, and of objectivity and tolerance in the appraisal of evidence. As Professor Dewey says: "The future of democracy is allied with the spread of the scientific attitude. It is the sole guarantee against wholesale misleading by propaganda. More important still, it is the only assurance of the possibility of a public opinion intelligent enough to meet present social problems."

In giving expression to this faith one would wish to guard against excessive optimism. Measurement and accuracy by themselves do not touch even the fringe of social questions. Human relations cannot be reduced to mathematical formulae or deterministic sequences. Knowledge

of facts does not tell us what to do about them. The social sciences can successfully copy some of the techniques of the physical sciences, but ahead of us is the long, difficult road, through trial and error, toward goals of social organization and control that lie obscured on the far horizon.

But science at least furnishes us a lead. Its methods teach patience; it stands for detachment and suspended judgment; it emphasizes the value of imagination and doubt; in a world of emotion and passion it shows us what the weighing of evidence means. That its by-products have created an unbelievably complex tangle of human ordering beyond our present means of guidance can scarcely be denied; but as a pattern of intelligence it still furnishes us the hope of deeper understanding and insight, and perhaps of some ultimate solutions.

EXPERIMENTAL BIOLOGY

The activities of The Rockefeller Foundation in the natural sciences continued, in 1940, to put emphasis upon the different fields included in the broad area of experimental biology. A number of items, totaling \$95,000, were concerned with studies in genetics. Thus the Foundation made grants to Iowa State College for researches on the genetics of disease resistance and the nature of vigor in race crosses; to McGill Univer-

sity for researches in cytology and genetics; to California Institute of Technology for work in serological genetics; to the Roscoe B. Jackson Memorial Laboratory for studies of the effects of varying internal chemical constitutions on the developing egg; to Indiana University for researches in cytogenetics; and to the Connecticut Agricultural Experiment Station for work on the genetics of growth in plants.

In general physiology, an appropriation of \$10,500 was made to Swarthmore College for research on the respiratory mechanism of diving mammals, and \$10,000 was given to the University of Pennsylvania for research on the properties of red blood cells.

The items which represent applications of chemistry to biological problems normally form a considerable part of the year's activity. During 1940 there were eight such appropriations, totaling approximately two hundred six thousand. Assistance was extended to the University of Texas in connection with the biochemistry of growth substances; to Columbia University for researches on the biochemistry and genetics of cystinuria in dogs; to the University of Chicago for studies on enzymes, with particular emphasis on spectroscopic methods; to Princeton University for researches in organic chemistry; to the Catholic University of America for researches

on the decomposition and synthesis of polynuclear ring systems; to Duke University for researches on the physical chemistry of proteins; to the University of Wisconsin for research on the biochemistry of symbiotic nitrogen fixation; and to Columbia University for researches at the New York Botanical Garden on the biochemistry of vitamins and plant growth.

Although a number of research activities in Europe were helped through small grants in aid, larger appropriations totaling \$24,980 were made in only three instances: to Professor Hammarsten at Stockholm for his biochemistry studies, to Professor Bohr and his group at Copenhagen for the application of physical and chemical techniques to biological problems, and to Professor Svedberg at Uppsala for the continuation of his long-range study of the physical chemistry of proteins.

Two appropriations in the field of experimental biology were of a somewhat different character. A grant of \$110,400 was made to the Marine Biological Laboratory at Woods Hole toward the cost of building an addition to the library. The Foundation has had a long association with the development of the Woods Hole Laboratory, which is without question the ranking center for summer work in biology. Growing beyond the special significance of its name,

Woods Hole now provides excellent facilities for investigators working on all types of modern biological problems — for geneticists, endocrinologists, biophysicists, general physiologists, embryologists, biochemists, etc. The library is an essential and developing part of these facilities.

The second grant was to the Massachusetts Institute of Technology in the amount of \$200,000 to be used over a period of seven years in the development of "biological engineering." Massachusetts Institute of Technology has long had strong departments in the basic sciences and in engineering, with a well-established tradition of cooperation. Years ago, this strength enabled the Institute to develop the first department of chemical engineering. The tools and techniques of physics, chemistry, and engineering are playing an important and increasing part in the field of experimental biology. The Massachusetts Institute of Technology hopes to bring its new department of biological engineering to the same high level already achieved in chemical engineering. The Foundation's appropriation will enable the Institute to add staff for both undergraduate and graduate work, will strengthen both teaching and research, and will involve close cooperation with biological and medical activities in Boston and vicinity.

THE CHALLENGE TO THE SOCIAL SCIENCES

In such an hour as this the social sciences may seem like frail reeds to lean upon. Never has the skein of human relations been so tangled or the course of cause and effect so confused. The world society of the twentieth century with its intricate web of interdependence among all the millions of men presents a challenge to disciplined intelligence such as no generation has ever faced. In this shrunken world the emotional potential is enormously higher because we share with once distant countries their invasions, their bombings, and their starvation; but the means of knowing and understanding are vastly more difficult and complicated. We are emotionally sensitized, and therein lies the hope of a true brotherhood of man; we are intellectually unprepared, and therein lies the danger of catastrophe.

But for reason to surrender to bafflement or for hope to lose itself in panic flight is unthinkable. The race with confusion and complexity may be desperately close, but intelligence will still persist in trying to find answers to the urgent questions which confront our time. How shall we govern ourselves in a modern technological society? How shall we manage our vast productive capacity? How shall we reconcile the contradiction between the character of our polit-

ical institutions and the possibilities of our economic achievement? How can the social adjustment of millions of human beings be arranged with less frustration and more harmony and justice? How can peace among nations be established? These are the questions that are put to the social sciences — not for specific answer, but for clarification. The intellectual choices which face us are now so blurred that moral judgments cannot easily be made. We need the light which more exact knowledge would bring.

What have the economists and political scientists to report in relation to improved facilities for observing and interpreting the social scene? What would a wise and provident society direct a foundation to do with funds available for social studies? Let it be admitted at once that there is no capacity in the social sciences for insuring quick results. There is no fast road to the solution of social problems. Mr. Henry Moe, secretary of the Guggenheim Foundation, has admirably stated the point:

Pressure is always upon the endowed foundations, and the stress of war increases it, to do the immediate thing; but, by and large, the foundations do their jobs well only in so far as they hold out against the pressure. At the moment the pressure for immediacy is from the proponents of hasty plans for saving civilization from wreck. But the hard fact is that improvisations will not do.

The only service a foundation can perform in such a time as this is to help support able persons and groups who are working fruitfully on significant social issues. Social scientists have to presuppose the opportunity for long-maturing work. The assumption has to be made that there is time for intelligence to take hold, that the world of the future will still be a free world in which reason rather than force will control. This assumption may be a leap of faith, but it is only through faith that men will find courage to face, with what intellectual tools they can devise, the towering obstacles ahead.

APPROPRIATIONS IN THE SOCIAL SCIENCES

During 1940 the Foundation made twenty-two grants for the support of work in the social sciences — eight primarily in the field of international relations; two in connection with studies of the amount and distribution of the national income; two in financial and fiscal policy; six in public administration; three in the field of industry, labor, and social security; and one in economic history. It is possible in this REVIEW to list them only briefly. It should be noted of course that appropriations in any one year of the Social Science Division, or of any other division of the Foundation, represent a more or less ran-

dom sampling, and thus give an unavoidably distorted picture of long-range programs and active projects, the support of which may have been voted in previous years.

International Relations

American Committee for International Studies.

This Committee provides a central organization for discussion and review of research, now widely decentralized among individuals and institutions. For two years \$ 40,000

New School for Social Research, for studies of the economic and social conditions of central Europe 10,000

Economic, Financial, and Transit Department of the League of Nations, now located at Princeton, New Jersey. The studies by this group of economic fluctuations, capital movements, growth of population, and terms of trade provide in this area as useful a guide as the past can furnish for future use. For two years 50,000

Food Research Institute of Leland Stanford Junior University. For three years 60,000

Oxford University, for use by its Social Studies Research Committee 24,000

Institute of Pacific Relations

Pacific Council. For two years 89,000

American Council. For two years 30,000

Swedish Institute of International Affairs, for research by scholars from the four universities of Sweden 11,000

Amount and Distribution of National Income

University of Delaware, for analysis of the excellent material available in that State on the distribution of income. For two years 18,000

University of Alabama, for research on the industrial origin of income by regions 10,000

Financial and Fiscal Policy

National Bureau of Economic Research. For three years \$20,000
 Institute for Advanced Study at Princeton, for study of the role played by finance in the organization of modern society, including the study of credit problems in both national and international aspects. For three years 105,000

Public Administration

National Institute of Public Affairs. This Institute selects each year qualified graduate students, preparing for public service careers, for apprentice training in federal agencies. For three years 105,000
 University of Minnesota, for development of its public service training program. For four years 39,000
 University of Southern California, for public service training. For three years 24,000
 Public Administration Committee of the Social Science Research Council 15,000
 Pacific Northwest Regional Council. The Council was created to study some of the problems of the region comprising Washington, Oregon, Idaho, and Montana in a broader way than is provided for by agencies within each state. For two years 50,000
 Additional for research and publication 7,500

Industry, Labor, and Social Security

Industrial Research Department of the University of Pennsylvania, for support of its studies of the amount and character of unemployment, problems of occupational mobility, the interaction of wages, costs, productive factors, technical changes, etc. For three years 105,000
 University of Minnesota, for a preliminary examination of the problem of employment and unemployment in St. Paul 11,500
 Committee on Social Security of the Social Science Research Council 15,000

Economic History

Social Science Research Council, for support of research undertaken at the suggestion of a group of economic historians, on the economic history of the United States, the islands, and the nearby territory. For genuine understanding it is important to study the long flow of economic and social events. Only by such studies can the causes, course, and significance of the processes of change in the economy of the United States be understood, and light thrown upon gradually developing structural and secular changes. The proposed study will integrate the work of economists, historians, and statisticians. For a four and a half year period

\$300,000

THIS HEMISPHERE

In the last few years the Foundation has been particularly interested in trying to discover methods by which we here in the United States can obtain a more intelligent understanding of the cultural life of Latin America. There is of course no single approach to this question, but certain appropriations, made by the Foundation in 1940, show the lines along which thinking has ranged — thinking admittedly inadequate and incomplete.

Three universities — Tulane, Duke, and North Carolina — have pooled their programs of teaching and research in relation to Latin America. Tulane's interest is primarily in Central America, particularly in anthropology and history; Duke is promoting studies relating to Bolivia,

Brazil, Colombia, Ecuador, and Peru; while the University of North Carolina is undertaking research and teaching in the other countries of South America. To this common program the Foundation appropriated \$68,000 in 1940, payable over five years, for the purchase of books and other documents. The Foundation also gave Brown University \$35,000, over five years, for the production and exchange of microfilm copies of important records in cooperation with various libraries and archives in Central and South America.

Two national agencies also received grants. The Pan American Union, pioneer in the field of cultural relations with Latin America, was given \$12,000, payable over three years, for its Division of Intellectual Cooperation. This Division, reorganized in 1929, has become an outstanding agency for the dissemination of information concerning cultural developments in the Americas. Bulletins in English, Spanish, and Portuguese are distributed throughout the United States and Latin America, and some forty periodicals depend upon this service. The Foundation's grant will enable the Division to expand its work. To the American Council of Learned Societies, the Foundation appropriated \$52,000, payable over three years, for the support of the Council's Committee on Latin American Studies,

on which both humanists and social scientists are represented. Part of this sum is for the salary of a field agent who will spend most of his time in Latin America; the balance is intended to increase the publication of guides and studies in Latin American subjects.

In this connection mention might also be made of the appropriation of \$20,000, payable over three years, to the National Institute of Anthropology and History in Mexico City. Under the direction of Dr. Alfonso Caso, and with the aid of visiting scholars and fellows from North and Central America, this Institute is conducting a promising program of teaching and research in archeology, anthropology, ethnology, and history.

DRAMA, MOTION PICTURES, BOOKS, AND RADIO

During 1940 the Foundation maintained its interest in the field of drama. To the National Theatre Conference, which includes in its membership leaders in the development of university, school, and community theatres, the Foundation appropriated \$55,000, payable over five years. This Conference maintains a central booking service for dramatic organizations and issues publications in the general field of dramatic production. The Foundation also appropriated a total

of \$64,500 for dramatic work in three universities: Stanford University, for the development of advanced activities, especially in play composition and experimental production; Cornell University, for its state-wide program in music and drama; Yale University, for the development of new equipment for theatre lighting. To the American Foundation for the Blind, the Foundation gave \$30,000 in support of a three-year program for special training of teachers of drama in institutions for the blind.

Three appropriations were made in the field of motion pictures. The sum of \$60,000 was given to the Museum of Modern Art for support, over a three-year period, of its Film Library. This Library now has a collection of 1,661 motion pictures, dating back to the feeble beginnings of the art, and films from this collection have been shown in the past year in forty-two states. The American Film Center, which is concerned with the production and distribution of motion pictures of educational and cultural value, was given \$50,000, payable over two years. The Foundation also appropriated \$20,160 to the New School for Social Research for experimental demonstrations of the use of music in film production under the direction of Hanns Eisler, the well-known Austrian composer.

Three appropriations reflect the concern of

scholars for the preservation and use of books in war time. The Foundation gave \$50,000 to the Folger Shakespeare Library for the purchase of rare books and manuscripts, principally in England. In cases where English scholars wish to retain the originals as national possessions, photostatic copies will be taken and placed in the Folger collection. To the American Library in Paris, which in spite of the war is maintaining its important services, the Foundation appropriated \$25,000 for general support during a five-year period. To the National Central Library, London, which has taken a leading part in the development of book exchange in England, the Foundation appropriated \$8,500. This Library is facing a new responsibility in servicing displaced populations, including students.

The Foundation made three grants for work in various aspects of radio broadcasting. The Library of Congress received \$23,320 to enable the Library to broadcast radio programs based on its rich store of cultural and historical material. The Rocky Mountain Radio Council received a grant of \$18,500 to explore the utility and value of a special radio service in a thinly settled area with strong regional interests. To Columbia University, the Foundation appropriated \$35,400 in support of studies of radio listening under the direction of Paul F. Lazarsfeld. Using the so-

called panel technique, Professor Lazarsfeld will make an intensive study of the effect of radio on listeners.

Linguistic studies received three grants totaling \$43,600. The agencies represented were the Orthological Institute of China, which is endeavoring to improve methods of teaching English in China and to train teachers in English; the Payne Fund, which is preparing materials for teaching English to foreign-born residents of the United States; and Cornell University, which is developing courses in Russian literature and language.

Finally the Foundation made several grants to groups which are trying to find out what mass communication is doing to present the European war to people in this country. Nations fight not only on military, economic, and diplomatic fronts; they fight with words and pictures. During the last year America has been increasingly the object of this "fourth front" of attack, the war of print, of radio, and of film. To the School of Public and International Affairs at Princeton University, which has established a listening center for shortwave radio transmissions from Europe, the Foundation gave \$25,000. By constant recording and analysis, the Center attempts to determine the major trend of this wartime broadcasting. The Foundation also made a

grant of \$20,000 to enable the Library of Congress to establish an office, under the direction of Dr. Harold D. Lasswell, for more general studies of radio transmissions, the press, and other media. To the Princeton School of Public and International Affairs, the Foundation gave \$20,000 in continued support of its public opinion research project under the direction of Professor Hadley Cantril. Using the returns of two national polls of public opinion, the project is attempting to trace the fluctuations of public opinion on various questions relating to the war in Europe, and to discover geographical as well as general patterns of opinion.

RURAL RECONSTRUCTION IN CHINA

Now in its fourth year of war, China is a heartening example of a country which is undefeated because it will not accept defeat. In the effort which she is making to defend, rebuild, and reorganize her land, the reconstruction of her agricultural economy plays an important part. Since 1934 the Foundation has been proud to have a small share in this significant program which has been centered to a considerable degree in the work of eight institutions.

These eight institutions, after long migrations from their original locations in eastern China, are now adjusting themselves to a new environ-

ment in the southwest provinces. They still, however, face constant difficulty and danger. Inadequate transportation and unsettled conditions make it almost impossible to secure the necessary books and equipment. Prices are rising. Buildings are frequently bombed, and an adequate bomb shelter is a first necessity in any location.

Within recent months these eight institutions have been visited by officers of the Foundation. During the year the National Council (formerly the North China Council) for Rural Reconstruction withdrew from Kweichow Province and established an Institute of Rural Research and Training in cooperation with the Chinese Mass Education Movement in the Province of Szechwan. Nankai University's Institute of Economics, formerly at Tientsin, has finally settled at Chungking, where its staff is conducting classes and research, and new buildings are being erected. The Department of Agricultural Economics of the University of Nanking, now at Chengtu, has adapted its activities to the character of Szechwan Province and is working effectively. The National Central University's small project in animal husbandry has been carried on conscientiously at Chengtu in cooperation with local organizations. A project for insect control was continued by the National Agricultural Bu-

reau and has resulted in an effective policy in this field in the southwestern region. The Commission on Medical Education has helped to guide China's medical schools through this crisis, and its routine work will probably not need further help from the Foundation. The College of Public Affairs of Yenching University, which has remained at Peiping, continued its operations during 1940, although its assistance to rural reconstruction is necessarily limited.

In 1940 the Foundation provided \$135,000 for this program in China, \$60,000 being allocated to the projects mentioned above, \$50,000 for fellowships, and \$25,000 for small research grants. In addition, for the third year, the Foundation appropriated \$65,000 for emergency assistance to a group of nine colleges and universities represented by the Associated Boards for Christian Colleges in China.

FELLOWSHIPS

Since many of the Foundation's fellowships are international in character, the war has had a particularly devastating effect on this aspect of its work. The total number of Foundation fellows active during 1940 was 31 per cent less than in the preceding year. The greater part of this decrease was in fellowships for Europeans; their number decreased by 68 per cent. There was,

however, one significant offset: fellows from Latin America increased by 19 per cent.

The total number of fellowships supported during 1940 was 453, at a cost of approximately \$589,000. Of this total, 283 were administered directly by the Foundation. The fields represented by the latter fellowships were as follows: public health, ninety-eight; public health nursing, twenty-two; medical sciences, thirty-seven; natural sciences, thirty-seven; social sciences, twenty-nine; humanities, fifty-three. Under the Foundation's China program seven fellowships were granted to Chinese for study abroad.

The Foundation also supported fellowships awarded by the following agencies: the National Research Council, sixty-three; the Social Science Research Council, fifty-eight; the American School of Classical Studies, Athens, six; the Author's League of America, eight; the National Theatre Conference, seven; and the Medical Research Council of Great Britain, one. The funds given by the Foundation to the American Council of Learned Societies are distributed as supplementary fellowships or study aids; during the year 1940, twenty-seven individuals were engaged in research with the aid of these grants.

The fellows supported in 1940 were citizens of thirty-six countries; 172 of them pursued work in countries other than their own. Since 1915

The Rockefeller Foundation, both directly and through representative national agencies, has provided fellowships for approximately 6,880 individuals from seventy-four different countries.

APPLICATIONS DECLINED DURING 1940

During 1940 the Foundation was obliged to decline a total of 2,412 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 or any social or political questions, no matter how important or disinterested these questions may be.

The applications declined during 1940 may be classified under the following headings: conferences and meetings, thirteen; continued aid to projects, ten; cures, remedies, investigations of theories and inventions, seventy-nine; development of educational and cultural institutions and

projects, 169; European refugees, 592; fellowships, travel, and training grants, 468; local institutions (including hospitals, theatres, libraries, museums, churches, etc.), 185; personal and medical aid, ninety-three; public health projects, thirty-three; publication, seventy-seven; research projects, 354; miscellaneous, 339.

REPORT OF THE SECRETARY

SECRETARY'S REPORT

THE members and trustees of The Rockefeller Foundation during the year 1940 were:

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

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*

Chester I. Barnard	Douglas S. Freeman
Harold W. Dodds	Herbert S. Gasser
Lewis W. Douglas, <i>alternate</i>	John D. Rockefeller, 3rd
John Foster Dulles, <i>alternate</i>	Walter W. Stewart
Arthur Hays Sulzberger	

The following served as scientific directors of the International Health Division of the Foundation during 1940:

Thomas Parran, M.D., *Chairman*

Stanhope Bayne-Jones, M.D.	Harry S. Mustard, M.D.
Ernest W. Goodpasture, M.D.	Lowell J. Reed
Felix J. Underwood, M.D.	
Wilbur A. Sawyer, M.D., <i>Director of the Division</i>	

MEETINGS

Regular meetings of The Rockefeller Foundation were held on April 3 and December 3 and 4, 1940. Eight meetings of the executive committee were held during the year to take actions within general policies approved by the trustees.

FINANCIAL STATEMENT

A summary of the appropriations account of the Foundation for the year 1940 and a statement of its principal fund follow.

SUMMARY OF APPROPRIATIONS ACCOUNT

FUNDS AVAILABLE	FUNDS APPROPRIATED
Balance from 1939. \$1,756,021	Appropriations
Income for 1940... 7,605,343	Public Health... \$2,750,000
Unexpended balances of appropriations allowed to lapse and refunds on prior year grants.... 851,481	Medical Sciences 1,285,034 Natural Sciences 2,188,180 Social Sciences.. 1,499,000 Humanities..... 1,074,780 Program in China 200,000 Miscellaneous... 70,000
Transferred from principal fund in accordance with resolution of trustees, April 3, 1940..... 1,150,000	Administration Scientific Divisions..... 570,775 General..... 261,728
	<hr/>
	\$9,899,497
	Less appropriation for which funds were previously authorized..... 45,000
	<hr/>
	\$9,854,497
	Authorization for later appropriation by the executive committee. 152,857
	<hr/>
	\$10,007,354
	Balance available for appropriation in 1941..... 1,355,491
<hr/> \$11,362,845	<hr/> \$11,362,845

PRINCIPAL FUND

Book value as of December 31, 1939..... \$146,159,942

Add

Unused balance of appropriation of April 5, 1939,
returned to principal fund..... 58,423
\$146,218,365

Deduct

Amount withdrawn from principal in accordance
with resolution of trustees, April 3, 1940..... 1,150,000

Principal fund as of December 31, 1940..... \$145,068,365

INTERNATIONAL HEALTH DIVISION

INTERNATIONAL HEALTH DIVISION

SCIENTIFIC DIRECTORS

Stanhope Bayne-Jones, M.D. Thomas Parran, M.D.
Ernest W. Goodpasture, M.D. Lowell J. Reed
Harry S. Mustard, M.D. Wilbur A. Sawyer, M.D.
Felix J. Underwood, M.D.

STAFF DURING 1940

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

Charles A. Bailey, M.D.	Henry P. Carr, M.D.
Marshall C. Balfour, M.D.	Joseph C. Carter
Claude H. Barlow, M.D. ¹	Ottis R. Causey
Marston Bates	Lowell T. Coggesshall, M.D.
Johannes H. Bauer, M.D.	Ralph K. Collins, M.D. ³
George Bevier, M.D.	Platt W. Covington, M.D. ⁴
Mark F. Boyd, M.D.	Porter J. Crawford, M.D.
John C. Bugher, M.D.	F. Elisabeth Crowell ⁵
Alexander W. Burke, M.D. ²	Brian R. Dyer

¹ Resigned November 5, 1940.

² Retired December 31, 1940.

³ Died October 1, 1940.

⁴ Died April 19, 1940.

⁵ Retired May 31, 1940.

Monroe D. Eaton, Jr., M.D.	John Maier, M.D. ⁵
John E. Elmendorf, M.D.	William A. McIntosh, M.D.
Edward W. Flahiff, M.D.	D. F. Milam, M.D.
John P. Fox, M.D.	Hugo Muench, M.D.
Raymond M. Gilmore ¹	J. Harland Paul, M.D.
Kenneth Goodner ²	George C. Payne, M.D.
John B. Grant, M.D.	Edward G. Pickels
Richard G. Hahn, M.D.	Persis Putnam
Rolla B. Hill, M.D.	Elsmere R. Rickard, M.D.
George K. Hirst, M.D. ³	Paul F. Russell, M.D.
Frank L. Horsfall, Jr., M.D.	Francis F. Schwentker, M.D.
Thomas P. Hughes	Raymond C. Shannon
John L. Hydrick, M.D.	Hugh H. Smith, M.D.
Henry R. Jacobs, M.D.	Kenneth C. Smithburn, M.D.
William P. Jacocks, M.D.	John C. Snyder, M.D. ⁶
John H. Janney, M.D.	Fred L. Soper, M.D.
Harald N. Johnson, M.D.	Winfield C. Sweet, M.D.
John F. Kendrick, M.D.	Richard M. Taylor, M.D.
J. Austin Kerr, M.D.	Ruth G. Taylor
Stuart F. Kitchen, M.D.	Mary Elizabeth Tennant
Frederick W. Knipe	Max Theiler, M.D.
Henry W. Kumm, M.D.	John M. Weir, M.D.
Sylvester M. Lambert, M.D. ⁴	Clifford W. Wells, M.D.
Charles N. Leach, M.D.	Loring Whitman, M.D.
Edwin H. Lennette, M.D.	D. Bruce Wilson, M.D.
Estus H. Magoon	Daniel E. Wright
Alexander F. Mahaffy, M.D.	Clark H. Yeager, M.D.

¹ Resigned December 31, 1940.² Appointed August 1, 1940.³ Appointed July 1, 1940.⁴ Resigned March 15, 1940.⁵ Appointed March 1, 1940.⁶ Appointed April 1, 1940.

INTERNATIONAL HEALTH DIVISION

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INTERNATIONAL HEALTH DIVISION

PUBLIC HEALTH ACTIVITIES

THE International Health Division of The Rockefeller Foundation in 1940 was able to a surprising degree to continue its program of former years of aid to public health work in many parts of the world. The present year, however, was marked by a general withdrawal from many cooperative health undertakings in Europe. On the other hand, a program partly in the same geographical area but different in method and scope was inaugurated by the establishment and maintenance of a Rockefeller Foundation Health Commission to Europe. The object is to render services in the public health field to regions afflicted with refugee problems, disorganization of sanitary services, postwar epidemics, nutritional deficiencies, or other conditions arising from the war and constituting major health disasters. A brief description of the initial steps taken by this Commission is given in the President's REVIEW on page 18 of this report.

A second activity motivated indirectly by disturbed political conditions of the world and directly by requests from governmental agencies and other official bodies for cooperation in the

provision of vaccines led to a complete change in the scale of both yellow fever and influenza vaccine production at the Laboratories of the International Health Division in New York City.

As a continuation of its regular program during the year 1940, The Rockefeller Foundation through its International Health Division gave assistance to public health work of one kind or another in thirty-eight different countries. Field studies or control operations on malaria were carried out in China, India, Cyprus, Portugal, Greece, England, Brazil, British Guiana, Costa Rica, Salvador, Cuba, Haiti, and the United States. Through its own technical staff or by direct grants to other institutions, the Foundation was connected with studies of the common cold at Columbia University; anemia in Puerto Rico; scarlet fever in the United States; rabies in Alabama; syphilis at Johns Hopkins University, in North Carolina, and in San Joaquin County, California; sylvatic plague in Alberta and British Columbia; tuberculosis at Cornell University Medical College and in Tennessee, New York, Costa Rica, and Jamaica; schistosomiasis in Egypt; nutrition at Vanderbilt University School of Medicine and in North Carolina; typhus fever at Harvard Medical School; mental hygiene at Johns Hopkins School of Hygiene and Public Health and in Tennessee.

Foundation assistance was given for studies in respiratory diseases in Westchester County, New York, and in Argentina. Influenza studies were carried on with the aid of The Rockefeller Foundation in New York, Minnesota, California, and in Hungary. The Foundation collaborated in the study or control of yellow fever in Bolivia, Brazil, British Guiana, Colombia, Peru, Panama, Uganda, and the Belgian Congo.

Assistance was given to central or local health departments either by direct financial grants or by lending the services of staff members in certain areas of the following countries: Finland, Greece, Albania, Portugal, Rumania, India, Ceylon, Egypt, Java, Argentina, Brazil, Salvador, Costa Rica, Cuba, Mexico, Canada, and the United States.

In the field of public health education, aid was given to schools or institutes of hygiene and public health or to schools of nursing in Denmark, Sweden, Hungary, Bulgaria, Spain, China, Japan, Turkey, Panama, and Mexico. In the United States and Canada the Foundation co-operated with the Skidmore College Department of Nursing, the University of California Division of Nursing, and the Schools of Nursing of the University of British Columbia, the University of Toronto, and Vanderbilt University.

The expenditures in 1940 of The Rockefeller

Foundation through its International Health Division are shown by the following approximate figures:

Control and Investigation of Specific Diseases	\$594,660
Laboratories of the International Health Division in New York	174,000
State and Local Health Services	83,850
Public Health Education	324,365
Technical Staff	755,000
	<hr/>
	\$1,931,875
	<hr/>

A report of the more technical aspects of the work of the International Health Division for 1940 with detailed financial tables will be published early in the summer of this year and will be available on request.

PRODUCTION OF VACCINES

During the year the International Health Division was asked by the Federal Government to cooperate with it in action on several health problems related to national defense. Specifically, the Subcommittee on Tropical Diseases of the Committee on Chemotherapeutic and Other Agents and of the Committee on Medicine, which had been organized by the Division of Medical Sciences of the National Research Council, asked the International Health Di-

vision of The Rockefeller Foundation to provide and maintain a supply of 100,000 doses of yellow fever vaccine for use by the armed forces of the United States. A further request was to furnish the Army and Navy Medical Corps with a plan for production by the United States Government of this vaccine with an estimate of the costs and a list of competent personnel, together with recommendations for the scientific control of the results of such vaccination.

As a result the Scientific Directors of the International Health Division recommended to the National Research Council that it plan for the establishment, under the auspices of the Federal Government, of a permanent laboratory for the manufacture of yellow fever vaccine. On the establishment of such a laboratory, the International Health Division would make available staff members as consultants for the investigation, manufacture, testing, and application of yellow fever vaccine and the facilities of its laboratory to train qualified government representatives in the necessary techniques. In the meanwhile the Division was prepared to supply the vaccine required by the government services.

Cooperation was offered to the three government services also in connection with the preparation of influenza vaccine when available knowledge justifies such action. Meanwhile, at

the request of the Medical Research Council in England, over five hundred thousand doses of influenza A vaccine were sent to England for trial there. The request was made with the full knowledge that the efficacy of the vaccine was not fully established.

The amounts of influenza and yellow fever vaccine which the Foundation was already called upon to furnish in 1940 were in excess of the capacity of the research laboratory in New York City. Additional space was provided and by October large scale vaccine manufacture was begun. It was necessary to design and build special equipment. Both influenza and yellow fever vaccines are prepared from developing chick embryos infected with the respective viruses. A large amount of incubator space for eggs had to be provided. Special apparatus had to be constructed for removing the inoculated embryo from the shell under strictly sterile conditions. The same was true in regard to the grinding of the infected embryos into a fine pulp. Since both vaccines have to be desiccated in the frozen state, it was necessary to design containers especially suited for this purpose.

The desiccation under uniform conditions of large amounts of virus such as was present in these vaccines likewise presented considerable difficulty. The essential point in the process de-

veloped was the maintenance of the vaccine at a temperature considerably below freezing throughout the period of desiccation. The concentrated dry vaccine is accompanied with a bottle of sterile diluent for the rehydration of the vaccine. The maximum capacity of the laboratory to prepare yellow fever vaccine is now 80,000 doses in every forty-eight hours or 1,200,000 doses per month.

Before the end of the year 500,000 doses of yellow fever vaccine were prepared. Of this amount 200,000 doses were held in readiness for the United States Army and Navy and the United States Public Health Service; 244,000 doses were sent to Africa for the use of British health authorities, and 10,000 doses were sent to India to be held in readiness for any emergency.

DISEASE CONTROL

YELLOW FEVER

The active centers for yellow fever investigation continue to be Brazil, Colombia, and Uganda. During 1940 The Rockefeller Foundation collaborated in South America with the governments of the following countries in the study and control of yellow fever: Brazil, Colombia, Peru, Bolivia, and British Guiana. Centers for laboratory work are Rio de Janeiro and

Bogotá. The laboratories maintained at these places through the cooperative efforts of the respective governments and The Rockefeller Foundation make their services available also to neighboring countries. With Bolivia, Peru, and British Guiana, the Foundation collaborated in the organization of antimosquito measures.

In Brazil collaboration during 1940 was limited to the study and preparation of yellow fever vaccine, the study of factors responsible for the maintenance and spread of jungle yellow fever, and the examination and study of material collected by viscerotomy. Collection of liver specimens, antimosquito measures, and the application of vaccine were the work of the newly created National Yellow Fever Service. Brazil has continued to develop and improve its measures to combat yellow fever. The strategy of the yellow fever campaign has for several years been directed toward the local eradication of *Aedes aegypti*, the urban and sometimes rural yellow fever mosquito. Large areas previously infested are now clean. Antimosquito measures are organized on a routine basis. The year 1940 is the sixth consecutive one during which no primary *aegypti*-transmitted yellow fever has been reported for the Americas and the third consecutive year in which *aegypti*-transmitted yellow fever secondary to jungle fever has not been found.

There is considerable evidence indicating that the virus of jungle yellow fever can maintain itself for several years or even longer in certain areas of Colombia, Bolivia, and Brazil. Lines of evidence suggest that human cases of jungle fever are accidental infections in the course of a mosquito-borne epizootic during which high concentrations of virus are built up for a short period of time in the infected forests. The maintenance of the virus over the winter season, however, involves something more than the hibernation of infected mosquitoes. No evidence has so far been found that any vertebrate is responsible for the hibernation and winter spread of the virus. Considerable progress was made during 1940 in the study of vertebrates and blood-sucking invertebrates of infested regions. This study will, of necessity, cover several years.

Routine postmortem examination of liver tissue from all persons dying after brief illness throughout large parts of South America was, during 1940 as in preceding years, a valuable source of information regarding the occurrence and distribution of yellow fever. In the Rio de Janeiro Laboratory during the year almost thirty-three thousand tissues were examined and 322 were found to be indicative of yellow fever. Jungle yellow fever was confirmed during 1940 in certain parts of Colombia, in certain parts of

Peru and Bolivia, and in six Brazilian states. Vaccination was widely used in 1940 in infected areas in Brazil, Colombia, and, to a lesser extent, in Peru and Bolivia. Over a quarter of a million (272,702) persons were vaccinated in Brazil alone.

The most startling event of the year was an outbreak of virulent yellow fever, probably *aegypti*-borne, in the Nuba Mountains of Southern Kordofan in the Egyptian Sudan, Africa. The extent of the outbreak and the provision by the Foundation of vaccine and investigative personnel have been described on page 28 of the President's REVIEW. The district infected was hard to approach until the roads opened in October. A large proportion of the population is inaccessible even when the roads are open as they live in villages on the tops of isolated hills reached only by climbing on foot. *Aedes aegypti* is prevalent in the Nuba Mountains owing to the habit of keeping water in containers more than ten days to avoid frequent trips for long distances up or down hill to obtain it. The source of the infection has been reported to be unknown but the outbreak is not attributable to world conditions as the infected region is remote from air routes. The disease evidently had been present in that general area for many years as was proved by the positive mouse protection tests of

blood specimens collected in 1933-1935 and examined in the Laboratories of the International Health Division in New York. They indicated the presence of yellow fever within the lifetime of the present generation. What caused this sudden flare-up is not clear. The Rockefeller Foundation personnel investigating the outbreak came from Entebbe, Uganda, close to the Sudan, where the Foundation in cooperation with the Government of Uganda maintains a yellow fever research laboratory with field men constantly on the lookout for evidences of yellow fever.

INFLUENZA AND OTHER RESPIRATORY DISEASES

During the year a nomenclature with regard to various types of influenza was decided upon by the American and English investigators chiefly interested. Since the discovery that a virus pathogenic for ferrets could be recovered from patients with influenza, it had become recognized that influenza was not a single etiological entity. Widespread outbreaks had been described in which this ferret-pathogenic virus was not concerned. The disease caused by infection with any one of the various strains of the virus discovered by the English research workers, Smith, Andrewes, and Laidlaw, in 1933, was to be termed influenza A. If any further viruses were isolated from the group that was not influenza

A, they would be labeled influenza B, C, etc., and the responsible agents, influenza B virus, C virus, etc. The influenza A virus had been originally termed influenza virus or epidemic influenza virus. Influenza-like diseases attacking animals other than man, for example, swine influenza, were to be excluded from the A, B, C, terminology.

Dr. Thomas Francis, Jr., of the Department of Bacteriology, New York University College of Medicine, working with a subvention from the International Health Division, described a new type of influenza virus obtained from an epidemic of acute respiratory disease which occurred in February and March of 1940 at Irvington House, a convalescent home for children, located at Irvington, New York.

Following the classification given above in which the established form of influenza had been called influenza A, outbreaks caused by virus of the new type were designated influenza B. The newly isolated virus was found, by tests of stored sera, to have been the cause of epidemics of acute respiratory disease in North Carolina in 1940 and of the extensive epidemic studied in California in 1936. These epidemics had no clinical features to differentiate them from outbreaks of influenza A. However, the two diseases were etiologically distinct. The epidemics of 1936-1937 and 1938-

1939 were caused by influenza A virus while those of 1936 and 1940 were of the influenza B type.

By November 1940 influenza B virus had been isolated and adapted to mice. The susceptibility of the Syrian hamster to influenza B virus was also studied. The hamster was found to be as susceptible to infection by this virus as to influenza A virus. With the exception only of its antigenic composition and virulence, influenza B virus is very similar to influenza A virus. However it produces a much less definite clinical illness in the ferret than does influenza A virus.

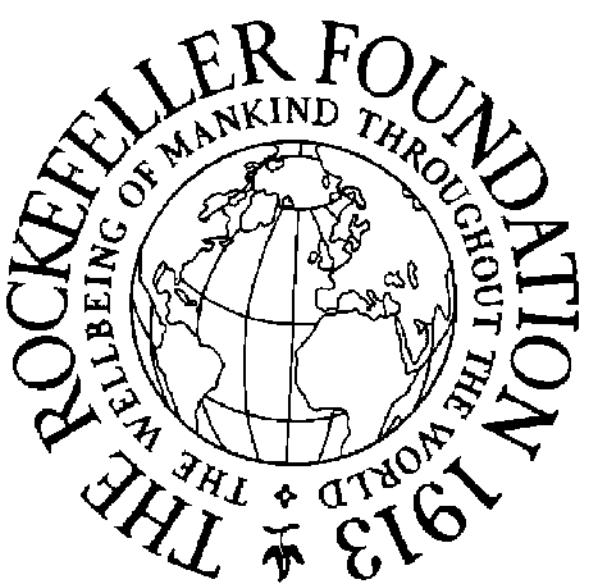
Although at least 30 per cent of all cases of clinical influenza studied during last year were not caused by either influenza A or influenza B virus, intensive efforts to recover the agent or agents responsible for these illnesses have so far been unsuccessful.

The accidental discovery during 1939 that a vaccine prepared from the tissues of ferrets infected with both influenza A virus and a special strain of canine distemper virus was effective in rendering ferrets immune to influenza A has stimulated intensive study. The results obtained in ferrets were sufficiently interesting to warrant the trial of similar vaccines in human beings. However, the fact that human beings cannot be infected readily by laboratory strains of influ-

enza A virus made it impossible to test directly whether vaccinated individuals were immune to influenza A although numerous volunteers would have been available for such trials. Some indication as to the effectiveness of the vaccine as an immunizing agent can be gained from studying the antibody response which follows vaccination in groups of volunteers. Despite the evidence that the vaccine stimulated a greater production of neutralizing antibodies than any other vaccine studied, it seemed important to test the prophylactic efficacy of this vaccine by its widespread use under natural epidemic conditions.

The first field test with the vaccine was carried out during an epidemic of influenza in Puerto Rico in July 1940. Another field test was conducted during an epidemic in Cuba the following month. In both instances the investigations were begun too late in the course of the epidemic to yield significant results concerning the efficacy of the vaccine.

During the early fall over twenty thousand volunteers in twenty-six institutions in three states were vaccinated. Approximately four months later an epidemic of influenza broke out and affected ten of the institutions in which there were vaccinated groups. Since the vaccine was directed only against influenza A and could not be expected to produce any immunity against

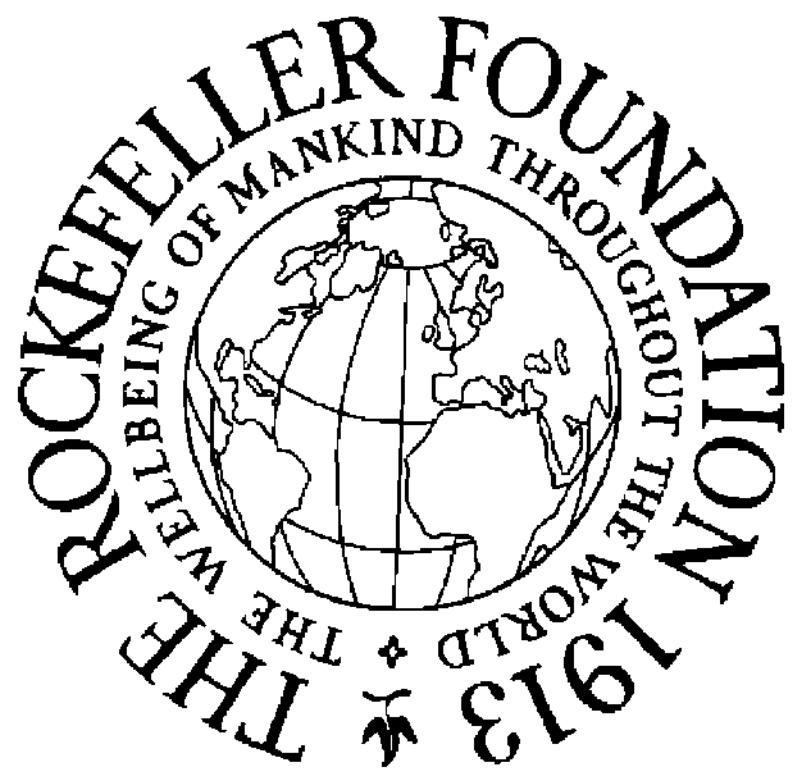


Photograph Excised Here

Doses of influenza and yellow fever vaccine prepared in the Laboratories of the International Health Division, New York.

other varieties of influenza, it was necessary to carry out laboratory tests on each patient. By means of this extensive investigation it was possible to determine the number of cases of influenza A which occurred in both the unvaccinated control groups and in the vaccinated groups. It was found that the vaccine had significantly reduced the incidence of influenza A and that only half as many cases occurred in vaccinated individuals as in those who had not been vaccinated. The vaccine did not, however, completely prevent the occurrence of the disease. During the period in which these experimental vaccinations were carried out approximately 136,000 doses of the complex chick embryo vaccine were distributed to various health authorities, medical schools, and other institutions throughout the United States so that these groups might conduct experimental vaccination programs of their own.

The study of respiratory diseases was also aided by grants in support of work in seven institutions, five in the United States and two abroad. Since May 1939, when the representative of the Foundation left Hungary, studies under the direction of Dr. Miklos Dreguss at the State Hygienic Institute at Budapest have continued to receive support. Work in the Virus Section of the Bacteriological Institute at Buenos



Photograph Excised Here

Top: Fluoroscope and x-ray unit, San José, Costa Rica. *Center:* Treatment clinic for relief of intestinal parasites, Mexico. *Below:* Laying foundation for gambusia nursery, Pattukkottai, South India.

Aires, Argentina, to which the Foundation is giving assistance was begun in October 1940. The remainder of the year was taken up chiefly with the installation and organization of the laboratory, but a considerable amount of material for study was collected during an epidemic of influenza.

In the United States support was given to work in California and Minnesota, and to three projects in New York State. In California the Department of Public Health received aid toward the purchase of a site for the construction of a laboratory building as well as for the pursuit of influenza studies in Western United States. Two 1940 epidemics in California were studied and a member of the laboratory investigated an epidemic in the Hawaiian Islands. At the Minnesota State Department of Health support has likewise been given to the establishment of an influenza laboratory as an official service of the State Health Department. Investigations of the common cold under Dr. A. Raymond Dochez of Columbia University continued to receive aid. The Westchester County Health Department in New York received support for a study of influenza during pre-epidemic, epidemic, and post-epidemic periods in a selected district. The continuation of the study of the distribution of antibodies in a suburban population begun three

years ago in Yorktown Heights, New York, has added further support to the hypothesis that antibody levels against influenza A virus are relatively characteristic for given individuals and remain almost unaltered for an interval of at least two years.

The influenza studies conducted in the New York University College of Medicine centered around the subject of immunity. The chief accomplishment during the year was the isolation and identification of a new virus, influenza B virus, as the causative agent of certain epidemics of influenza.

MALARIA

In the International Health Division Laboratory in New York the interest in malaria centered around chemotherapy. There seems to be little hope of developing an effective immunizing agent which will protect the host from an attack of malaria since the disease itself confers only temporary immunity upon its host.

The human malarias can not be maintained in experimental animals nor can the parasite of malaria be cultivated satisfactorily outside of its host. This handicap has been partially overcome by the use of the Warburg apparatus, an instrument for the measurement of the rate of respiration in living tissue. It has been employed

to determine the relative effectiveness of different drugs on the parasite *in vitro*. The chief method of approach for new antimalarials has been to test representative drugs from a large series of different compounds for their effect on the experimental malaria infections of birds and monkeys. Several unrelated preparations which hitherto had not been known to possess any antimalarial activity have been discovered to be partially effective. These preparations and others subsequently shown to possess similar action will be subjected to intensive chemical investigation with the hope of disclosing more active preparations, and ultimately their pharmacology will be studied so that their toxicity, absorption, and excretion are thoroughly understood before they are tested in human subjects. This investigation is being conducted as a long-term project.

A full account is given on pages 25-27 of the main features of an unusual type of malaria control — the campaign against the *Anopheles gambiae* mosquito in Brazil. Chief among the successful measures used were the conscientious application of Paris green to all potential breeding places and the routine fumigation of all houses with spray insecticide containing pyrethrum. The continued reduction of *gambiae* mosquitoes was followed by a great decrease in the number of malaria fever cases treated. All dispensary and

field distribution of antimalarial drugs was suspended on September 1, 1940, because of the small number of cases still requiring treatment.

The strategy of the *gambiae* campaign has been to concentrate on those measures which would eliminate this mosquito without reference to the control of the native anophelines of the region, which are quite different in their habits both in the aquatic and adult stages. All control measures were progressively discontinued between the middle of April and the first week in December in previously known infested areas once these areas had passed periods of three months or more without the appearance of *gambiae*. The opportunity for unrestricted breeding, beginning at the height of the rainy season, has been taken advantage of by the native Brazilian anophelines but has failed to elicit any apparent response from the disappearing *gambiae*.

The experiences gained from this campaign now seem to indicate that the methods of control have been effective and that their thorough application by trained personnel has almost if not entirely effected the eradication of this important malaria vector. With the suspension of a large part of the Paris greening and fumigation the only active function of the Malaria Service of the Northeast at the end of 1940 was the

search for any possible newly infected areas and the elimination of these areas with the methods already successful elsewhere. However, nothing is taken for granted in this war of extermination. Great watchfulness will be continued and a sentinel service will have to be maintained indefinitely.

As noted on page 82, during 1940 field studies and control operations on malaria were carried out in the United States and in twelve other countries. In the United States support was given to a control study in Escambia County, Florida, to a station for malaria research at Tallahassee, Florida, and to laboratory studies in malaria at the University of Chicago. Other work done in South America and the Caribbean region included studies or surveys in British Guiana, Costa Rica, Salvador, Cuba, and Haiti. In England support was given to a laboratory study at the Molteno Institute of Parasitology, Cambridge University. Some financial support was still given in connection with former malaria work in Greece, Cyprus, and Portugal. A number of investigations were under way in India and new field work in malaria was begun in China.

One of the chief interests in the Caribbean area is malaria. In British Guiana a service was organized in 1939 to investigate the malaria

problem. Certain industrial interests, the government, and The Rockefeller Foundation jointly under one director are making an intensive study of an area of about forty square miles in and near Georgetown. The years 1939 and 1940 were comparatively dry. Drainage or larvicides can rarely be employed. New methods of control must be sought. House captures of adult anopheles in 1940 indicate that half the mosquitoes were *Anopheles darlingi* and half were *Anopheles tarsimaculatus*.

For the first time *A. darlingi* has been found in Central America. This mosquito was found in restricted areas in the southern part of British Honduras well back from the coast. This is a house-haunting species, but in British Honduras it was found among roots, debris, or vegetation at the shady edges of quiet pools in slowly running streams. The common malaria mosquito is *Anopheles albimanus*.

The International Health Division of The Rockefeller Foundation was requested in January 1940 by the Minister of Health in Colombia to assist in the study of the lowland area in Barranquilla. A sanitary engineer who is a staff member, together with district engineers and an entomologist of the Health Department made a complete survey in April 1940 with recommendations for drainage and other measures in regard

to the control of malaria. The cooperative project for malaria control by land drainage in Liberia, Costa Rica, was practically completed. Foundation cooperation terminated at the end of the year. Effectiveness of land drainage in Liberia is shown by a distinct drop both in splenic index and parasitic index. A mosquito survey of Costa Rica was completed and published.

The malaria survey of Cuba begun four years ago was continued. Surveys of the Provinces of Oriente and Piñar del Rio are completed, and those of Havana and Camaguey Provinces are nearly complete. The Mariana County system of drainage was further perfected. Only seven cases of malaria were reported in the County during 1940. This unit now serves for demonstration and teaching purposes. In 1940 the Division began cooperation with Cuba for permanent malaria control measures in Bayamo and Santiago in Oriente Province.

In Haiti a malaria survey as a cooperative project was begun in October 1940 using the same methods as those employed in Costa Rica and Cuba. Financial cooperation with the Malaria Division of Panama ended with the beginning of 1940. A trained government staff is continuing the work. A former Foundation fellow, now director of health for Salvador, completed a malaria survey in 1940. The Division

cooperates in engineering studies and in giving field instruction and aid for buying instruments. The government is beginning a long-time program for permanent malaria control by drainage. Malaria surveys have been in progress in Venezuela during the past four years. The International Health Division has not contributed financially but staff members have made visits to the work and given some assistance in training.

A cooperative study of malaria control in China began on March 20, 1940, in the Province of Yunnan. The work is confined to the Chefang Valley, which has a population of about twenty-five thousand people living in scattered villages and in the town of Chefang. This town of 2,500 people is 25 miles north of the Burma border. Work started with spleen and blood examinations. It was proved beyond a doubt that malaria is heavily endemic among the pastoral and rice-growing population. All three malaria parasites were found but *Plasmodium falciparum* was the most common. Twenty-one species and varieties of anophelines have so far been identified but the only vector of importance is *Anopheles minimus*. Almost 75 per cent of the *A. minimus* were caught in resting places classified as human habitations. Apparently malaria transmission may occur at any time of the year, but the most active transmission takes place during and just

after the rainy season between July and November.

OTHER DISEASES

Surveys to determine the frequency, character, and mode of spread of tuberculosis have been conducted during the past twelve years under the auspices of the International Health Division in different countries with wide differences of race and environment. A white and Negro population has been studied in Philadelphia, rural white and Negro populations have been studied in Alabama and Tennessee, and a Negro population in a tropical climate has been studied in Jamaica, British West Indies. Studies have also been made in New York City and in a small city and rural district of Austria where the death rate from the disease is much higher than in this country. These studies have emphasized the differences between the disease in the white and in the Negro races. The well-known survey of tuberculosis made in Framingham, Massachusetts, showed that the ratio of existing cases of tuberculosis to annual deaths was approximately 1 to 13. In the white population of Philadelphia the ratio has been approximately the same, but in the Negro population of Philadelphia this ratio has been only 1 to 4.3, and in Jamaica 1 to 2.9. Tuberculosis of the native population of

Jamaica pursues a rapid course, the dissemination of tubercle bacilli is much greater than in white persons, and the disease spreads more rapidly from one adult to another.

Observations indicate that persons who react weakly to tuberculin, or not at all, are more susceptible to the disease than those who are highly sensitized, and it has been observed that inoculation with heat-killed tubercle bacilli causes the negative tuberculin reactors to become positive. For this reason persons who do not react, or react only weakly, have been inoculated with an experimental vaccine consisting of heat-killed tubercle bacilli. In Jamaica approximately eighty-five hundred persons were inoculated by the end of 1940. The series will soon be closed, but the subjects will have to be observed for some time and the results analyzed before it will be possible to find out whether the incidence of clinical tuberculosis has been appreciably reduced.

Efforts to find new procedures for increasing the safety and efficacy of vaccination have in recent years involved the study in New York City and Jamaica of resistance to tuberculosis induced in animals by inoculation with heat-killed tubercle bacilli in paraffin oil. The two combined produce a local lesion much larger than that produced by the microorganism alone. Sensitization appears earlier and is more intense than in ani-

mals that receive killed tubercle bacilli without the oil. Experiments are in progress to determine whether heat-killed tubercle bacilli combined with oil actually protects against tuberculous infection more effectively than heat-killed tubercle bacilli alone.

In New York City aid was continued to the epidemiological study of tuberculosis by the New York City Department of Health in the Kips Bay Health District with the cooperation of the Cornell University Medical College. A consultation clinic provides free chest x-rays and expert opinion on tuberculosis for practicing physicians in the district whose patients are unable to pay. In line with the policy of utilizing the tuberculosis unit as a teaching center, a course was devised for the instruction of personnel of the Department of Health. The course has already been given to a group of supervising nurses and will be revised and used for the training of members of the Bureau of Nursing engaged in tuberculosis work. During the school year of Cornell University Medical College, each third-year student has received a total of six hours of instruction in the public health aspects of tuberculosis.

During 1940 the aid given to the State Department of Public Health of Tennessee for tuberculosis study was continued. The staff of the study

operates in conjunction with the Williamson County Health Department, with headquarters in Franklin.

A demonstration in tuberculosis case finding was carried out in San José, Costa Rica, during 1940. In the census areas an unusually high percentage of the population of 13,184 persons (91.8 per cent) reported for examination. One hundred and eight had active pulmonary tuberculosis, an incidence of 0.82 per cent. More than half of these cases were new and unknown to government or private physicians; 63.9 per cent of the cases discovered in the demonstration were in the minimal stage of tuberculosis. The importance of examining a high percentage of the population was demonstrated. The first portion of the population examined (87.3 per cent), comprising those who readily cooperated, disclosed only 0.54 per cent with tuberculosis, while among those who required repeated urging (12.7 per cent) the incidence was 1.75 per cent.

A syphilis program at the Johns Hopkins University School of Hygiene and Public Health, which has received support since 1937, was continued during 1940. This is directed by Dr. Thomas B. Turner, professor of bacteriology, and includes laboratory investigations, epidemiological field studies in the Eastern Health District of Baltimore, and the training of public health

personnel. The field studies relate to the incidence, prevalence, and trend of syphilis in the district. Investigations on the incidence of *Leptospira icterohemorrhagiae* and humoral immunity against that parasite have also been made because of cases of Weil's disease discovered by chance through the facilities of the syphilis laboratory. During the year it was found possible to place the various courses in venereal diseases offered by the School of Hygiene and Public Health under the immediate supervision of a faculty member who could devote the major portion of his time to this work.

Other field studies of syphilis, one in California and one in North Carolina, have been started with Foundation support. There is no formal connection between these studies and the one in Baltimore; but the patterns of the studies are similar, and there is close collaboration among the persons conducting the three projects.

December 1940 marks the close of the first year of the special syphilis study in San Joaquin County, California. Satisfactory working relations with the physicians of the community, the hospitals, and the State Camp at Stockton have been developed, and machinery has been established for the collection of data for the study. Over forty-seven hundred case records have been reviewed, abstracted, and coded. This study is

carried on as part of the program of the San Joaquin Local Health District, with headquarters in Stockton in an area which represents both urban and rural features of the Far West and where there are several different racial mixtures.

In North Carolina support has been given to an epidemiological study of syphilis in the Tri-County Health District, which embraces Orange, Chatham, and Person Counties. The headquarters of the District are at Chapel Hill, the location of the University of North Carolina. With the exception of one or two industrial communities, the area is rural in character, with a population of both whites and Negroes. The epidemiological study is part of the State Health Department's syphilis program and is being directed by John H. Wright. Supplementing the epidemiological study, provision is made by the University of North Carolina for research with respect to diagnosis and treatment of the disease and training of personnel to carry out control work.

The rabies study conducted in cooperation with the Alabama State Board of Health since 1937 continued to receive support during 1940. The problem is to learn more about the epidemiology of rabies and to investigate problems relating to immunity as the basis for the formulation of a control program.

Taking advantage of the long incubation period of rabies in most human beings who have been infected, Pasteur showed that an active resistance could be built up without harm to the individual by injecting daily increasing doses of living virus attenuated by rabbit passage and desiccation.

Since Pasteur's work many modifications for the improvement of the method have been proposed, and some of these have received acceptance. The most interesting departure from the original conceptions and techniques has been the substitution for the living attenuated virus of Pasteur of a virus which has been inactivated or treated by physical and chemical agents so that it will no longer infect experimental animals even when given in huge doses. The apparent success of human vaccines led to explorations of the possibility of developing a vaccine which would prevent infection in the dog, and thus indirectly protect man. After an initial success by two Japanese investigators, Umeno and Doi, in 1921, numerous attempts were made to perfect canine vaccine. Because of the increasing seriousness of the rabies problem, the legislators of the State of Alabama passed a law requiring that all dogs be given antirabic vaccination annually, and the State Health Department of Alabama invited the International Health Division of The

Rockefeller Foundation to undertake a study of the problem of rabies.

Observations in Alabama have established that the dog is the principal reservoir of the disease. However, the fox is also involved in that State. Since the original work of the Japanese investigators there has been considerable controversy as to the efficacy of canine vaccination against rabies. A potency test in which the albino mouse is employed as the test animal has recently been adopted by the United States Department of Agriculture. All commercial canine rabies vaccines must answer the requirements of this mouse test before being marketed for interstate use.

The incidence of canine rabies possibly could be reduced to such a point that the disease in human beings would become extinct or extremely rare by an effective program acquainting the public with the mode of transmission and means of preventing spread of the disease; rigid enforcement of dog tax and the registration of all dogs; destruction of all ownerless dogs; and the quarantine for a three-month period or destruction of dogs exposed to the disease. Studies are under way with the hope of finding a suitable method of vaccinating dogs as an adjunct to control programs.

Throughout the past ten years The Rocke-

feller Foundation has been cooperating with the Egyptian Government in the control of schistosomiasis. A demonstration in clearing canals of the snails which cause this disease was brought to a close in 1940. The government, which has been petitioned to continue the work, has established the Bilharzia Destruction Section which holds the same rank as other full sections of the Ministry of Public Health. The former member of the Foundation staff who directed the cooperative work is under contract with the Egyptian Government to continue his services for three years more.

At the Johns Hopkins University School of Hygiene and Public Health and also in the Eastern Health District of Baltimore there was under way in 1940 a cooperative study of mental hygiene, supervised by Dr. A. W. Freeman, professor of public health administration. During the year a Mental Hygiene Consultation Service was operated in connection with one of the well-baby clinics in the Eastern Health District. The emphasis was on the devising and putting into operation, as an integral part of the community's health service, procedures to bring about the prevention of mental hygiene problems.

A companion study to this urban survey in the Eastern Health District of Baltimore is the

Tennessee rural survey conducted by the Tennessee State Department of Public Health with Foundation support. The application of remedial and preventive measures in mental hygiene suitable for a local health department is one of the objectives, and a demonstration mental health clinic was established during the year to handle cases most hopeful from the point of view of prevention and treatment.

At the Vanderbilt University School of Medicine a nutrition study under Dr. John B. Youmans has received support since April 1939. Dr. Youmans left for Europe toward the end of 1940 to conduct nutritional studies for The Rockefeller Foundation Health Commission,¹ and in his absence the work at Vanderbilt is being carried on by Dr. White Patton. During 1940 the original survey of an area in Wilson County was continued.

A nutritional study undertaken by the North Carolina State Board of Health in cooperation with the Duke University School of Medicine, received Foundation support during the year. This study is limited to research activities of an exploratory nature designed to determine the nature and extent of the nutrition problem

¹Early in 1941 the name of The Rockefeller Foundation Health Commission to Europe was changed to The Rockefeller Foundation Health Commission.

among selected groups from different areas of North Carolina.

One of the purposes of The Rockefeller Foundation Health Commission is to render services in the public health field to regions afflicted with public health problems related to the war, including nutritional deficiencies. A study of nutritional problems and control of possible epidemics are among its chief concerns. In addition to Professor Youmans, other nutritional experts to join the Commission are Dr. Harold C. Stuart, Dr. Arnold P. Meiklejohn, and Dr. William D. Robinson.

In the course of the year 1940 the International Health Division assumed an active interest in the study of typhus. Plans were made to concentrate on a systematic study with the different vaccines in experimental animals. This work was to be directed by Dr. Hans Zinsser at Harvard University. When Dr. Zinsser died in August, these particular activities were transferred to the International Health Division Laboratory at The Rockefeller Institute.

The extent to which vaccination can be depended upon to control the disease is not accurately known. By the end of the year seven different types of typhus vaccine were undergoing testing at the Laboratory for their protective efficacy in guinea pigs.

AID TO STATE AND LOCAL HEALTH SERVICES

During 1940 The Rockefeller Foundation maintained branch offices of the International Health Division in Mexico City; in Havana, as the central station for the Caribbean area, with an additional office in San José, Costa Rica; in Rio de Janeiro, Brazil; in Buenos Aires, Argentina; and in India at Delhi and Calcutta.

In Mexico there is close cooperation with the Federal Health Department in its attempt to develop state and local health services and in training personnel and employing it on a full-time basis. In the Caribbean area the Foundation's office was moved from Ancon, Canal Zone, to Havana, Cuba, in June 1940. The central office for Brazil, at Rio de Janeiro, is of long standing and around it have centered campaigns against yellow fever and malaria which have been receiving Foundation support. The center of another administrative region in South America is Buenos Aires, containing the office of the Rio de la Plata and Andean region, which includes Argentina, Chile, Bolivia, Paraguay, Uruguay, Peru, and Ecuador. In India, in addition to the office at Delhi, a common headquarters has been established for staff members stationed at Calcutta in the Bengal Presidency.

There are three staff members in Calcutta, one of whom serves as director of the All-India Institute of Hygiene and Public Health.

Two projects were still active in Portugal in 1940, one centering at the Malaria Institute and the other at the Lisbon Health Center. Short courses for doctors and engineers were given at the Malaria Institute. Here also research was carried out on the connection between rice culture and malaria. Preventive measures under the supervision of the Malaria Institute have been responsible for the reduction of malaria in the rice-growing area. The Lisbon Health Center was inaugurated in May 1939 and began to operate shortly thereafter. Work at this Center was continued in 1940 and has brought about an estimated reduction of from 30 to 50 per cent in the local death rate for children. In 1940 antituberculosis work was begun and the nursing staff increased. With typhoid vaccine manufactured in Portugal for the first time in 1940, the Health Center successfully launched vaccination not only in its demonstration area but in other governmental spheres as well. Typing of pneumonias was another new activity, and extensive work in diphtheria immunization in the schools was begun. The Center's demonstration area also serves as a practice field for students from the Medical School in Lisbon providing them with

opportunity to investigate typical health problems.

The Foundation has contributed \$7,500 toward the construction of a health center headquarters in the Commune of Helsinge, Finland. This building is to be used in conjunction with the Helsinge Health Center, to which aid has been granted on a five-year basis and which serves as a demonstration and teaching center for the School of Public Health Nursing in Helsinki. A well-baby clinic has already started its work in the new Health Center and clinics for maternal hygiene and mental hygiene were opened in August. In September this Health Center was divided into eight nursing districts, and twenty health students obtained field practice in these districts. Additional funds were supplied in November 1940 to help in obtaining two additional public health nurses, a mental hygienist, a psychiatrist, and a nutritionist. The latter is particularly needed, in the face of the rationing that is being enforced, to give advice on the purchase of low-cost menus for family use. Infant care continues to be stressed as one of the important problems of the Center.

Aid to state and local health services is given throughout large parts of the Caribbean area. Visits were made by staff members to public health laboratories in Colombia, Costa Rica,

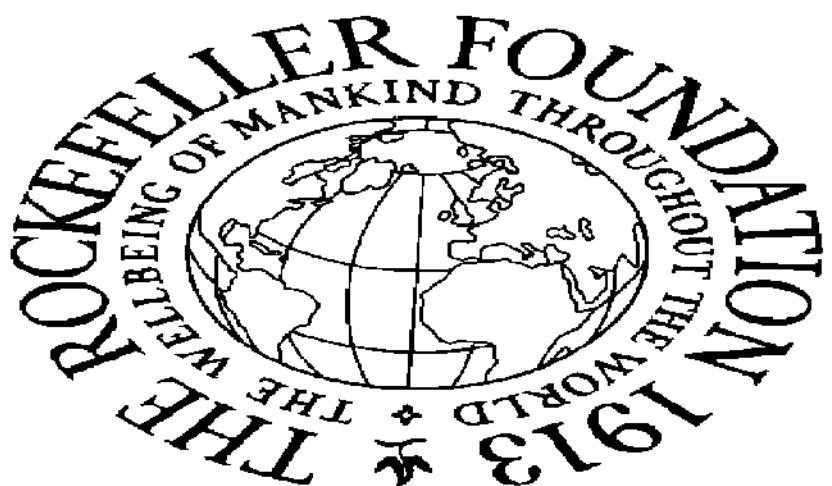
Guatemala, Honduras, Jamaica, Nicaragua, Panama, and Salvador. Some of these laboratories were founded through cooperation with the International Health Division, others have personnel trained through Division fellowships or have received assistance in acquiring equipment. Considerable use is made of public health nurses, especially in Costa Rica, Panama, and Venezuela. A staff member who is a sanitary engineer is assigned to the Caribbean region to provide consultation services upon request for public health departments in the several countries composing the region. Such cooperative aid was given during the year in connection with health work in Cuba, Costa Rica, Salvador, Colombia, Venezuela, Nicaragua, and Honduras. Health units toward the establishment of which the Division has assisted in Costa Rica, Cuba, Salvador, Nicaragua, Panama, and Venezuela were inspected by staff members in 1940. In three of these countries, Costa Rica, Cuba, and Salvador, financial aid was given during the year for the work of local health departments.

A small grant was made to help in providing complete public health service for the inhabitants of Santa Tecla, Salvador, fifteen miles from the capital, San Salvador. This rural health unit in Salvador is to serve as a demonstration local health department. Every house in Santa



Photograph Excised Here

Solarium, Lisbon Health Center.



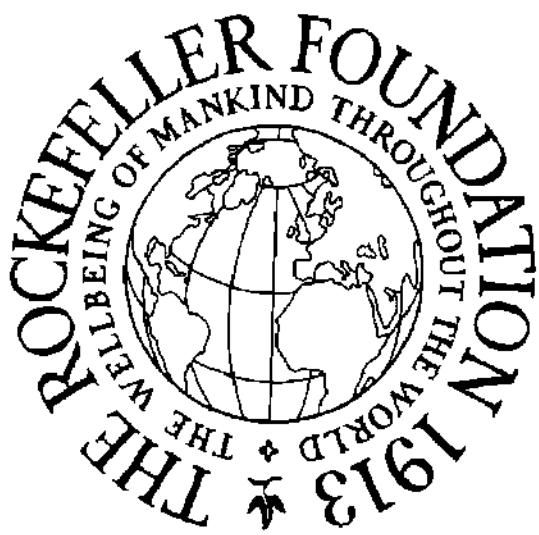
Photograph Excised Here

New building for Helsinge Health Center, Finland.

Tecla has been surveyed; sanitary conditions have been recorded and defects noted for correction. The municipality of Santa Tecla has an estimated population of 34,900, of whom more than two-thirds live in the town itself. During the year all children in the government schools were examined. In Costa Rica, the Foundation contributed toward the travel expenses of fifteen health officers receiving instruction for a period of two weeks at the Tres Ríos Health Unit.

During the year the Cuban Malaria Commission which constitutes a special division of the Cuban State Health Department continued to administer the full-time local health work in which The Rockefeller Foundation is assisting. This cooperative program seeks to develop, within the local health organization, an administrative procedure capable of providing, at a cost within the possibility of local resources to meet, modern, effective health work, including not only the control of preventable diseases, like malaria, and the promotion of health but also the prosecution of those studies and investigations in the field of public health upon which health work must be founded in order to be effective. This health unit covers a complete program of public health work and places emphasis upon popular education in health matters.

In Mexico the staff member in charge of



Photograph Excised Here

Public health nursing, University of California. Opportunities to observe and direct activities of normal children are afforded in the playroom of the nursery school.



Photograph Excised Here

Marianao County Health Unit, Cuba. Reading health story from *Salud y Sanidad*, of which forty-five thousand copies are distributed each month in the schools of the county.

Foundation cooperation in public health work serves as subdirector of a division of the Federal Health Department. Cooperation in Mexico is directed toward the coordination and supervision of public health projects toward which the International Health Division contributes and the promotion of interest in efficient health services. The purpose of the regional health work in Mexico is to show in a demonstration district that the services of full-time, trained, resident health personnel are markedly superior to the efforts of part-time, untrained, nonresident health personnel. At present the organization of cooperative health work in Mexico consists of: a supervised district made up of the five contiguous states of Morelos, Michoacan, Mexico, Hidalgo, and Tlaxcala; the State Health Department of Morelos, with headquarters in Cuernavaca; and four municipal health units within the State of Morelos.

Aid was also given in Mexico to the Xochimilco Health Unit. This local health department serves a total population of approximately 33,500 and since 1935 has provided a field for demonstration and practice. The multiple problems of the region have made Xochimilco useful in supplying field training for all types of local health workers. In 1939 the new School of Public Health was established in Tacuba on the oppo-

site side of the Federal District from Xochimilco. Field training continued to be given in Xochimilco during 1940, but owing to transportation difficulties plans have been made for the transfer of the training station from Xochimilco to a site adjacent to the School of Public Health. Plans are for the Xochimilco unit to be maintained in the future by the Federal Government without support of the International Health Division.

In India there has been renewed attention to sanitary engineering as an essential branch of public health work. Research work has been undertaken to provide techniques and standards of measurement enabling directors of health to determine the factors which would result in contamination of water supply from latrines in any given place. Observations made in the Punjab Province near Lahore, where the nature of the soil is alkaline, have been completed, and experiments have been set up in the Singur Health Unit of the Bengal Presidency where the soil is slightly acid. The staff member directing these experiments teaches sanitary engineering at the All-India Institute of Hygiene and Public Health in Calcutta.

During 1940 work was started in connection with a project bearing on the control of soil-borne diseases in Ceylon. The Government of

Ceylon has for many years been actively interested in rural health work. The present experiment is located in one of the remote parts of the Kalutara Health Unit area, which embraces a portion of the west coast of Ceylon. Typhoid, dysentery, and hookworm disease are endemic. Health conditions have improved since the Health Unit has been in operation, but the diseases have not been fully controlled. There is much overcrowding, and a large portion of the houses without latrine accommodations draw their water supply from unprotected wells. The control of typhoid, dysentery, and hookworm is therefore a matter of the control of soil pollution and water pollution. An experiment comprising four villages in the southern section, with a total population of 6,000, aims at providing each of the 1,106 homes with a latrine of a type approved by the Public Health Department. Wells also are to be covered and sealed with a cement apron to prevent contamination from bathing or washing. Village health leagues are actively cooperating.

During the year there were assisted a number of projects of interest to state and local health services in Canada. In Manitoba aid was given to the Division of Statistics of the Department of Health and Public Welfare toward the reorganization of this Division under the direction of a trained medical statistician. This same Division

was also aided in making morbidity and maternal studies to supply data for the development of an effective maternal hygiene program. The Section of Statistics and Epidemiology of the Department of Public Health of Nova Scotia also continued to receive aid during the year. Special attention was given to the collection of more serviceable information pertaining to still-births as a prerequisite to the introduction of improved methods of control.

In the field of epidemiology studies were aided in Alberta and British Columbia. These studies had to do with an investigation of sylvatic plague and Rocky Mountain spotted fever. Recent findings indicate that sylvatic plague has extended into Alberta, 180 miles north of the International Boundary. It is likely also to spread to British Columbia, if it has not already done so. Plague infection may remain quiescent in an infected area and flare up only at intervals. This, coupled with the large area to be checked on, makes repeated sampling of the rodent population necessary if old or newly introduced foci of infection are to be detected.

The Provincial Department of Health in Quebec received aid toward the establishment of a Provincial Division of Tuberculosis in an effort to effect closer coordination of the tuberculosis program by bringing about the cooperation of all

agencies concerned. In 1940 nine traveling chest clinicians worked on case location and six others divided their services between traveling clinics and sanatorium work. During 1940 ten to fifteen per cent more cases of tuberculosis were diagnosed in the early stages of the disease than during 1939.

Local health departments were aided in British Columbia, Nova Scotia, and Quebec. In British Columbia aid was given to the Fraser Valley Health District. Headquarters are at Abbotsford, the largest village in the District. This Health District is a farming and dairying area with an estimated total population of approximately seventy-nine hundred, for whom the Provincial Board of Health of British Columbia is providing an effective health service on a full-time basis. This Board was also assisted in coordinating all the public health activities in the metropolitan area of Vancouver, including the health services of the University of British Columbia in an area called the Greater Vancouver Metropolitan Health District. Principal attention is directed toward child welfare, mental hygiene, school health service, and environmental sanitation, including food and milk control.

The Department of Public Health of Nova Scotia received aid toward the establishment of

a full-time health unit in the Cape Breton District as an initial stage in providing full-time local health services throughout Nova Scotia. The Provincial Department of Health in Quebec received support in developing a health organization suitable for the medium-sized cities of Quebec Province. The health unit aided is located in the city of Trois Rivières, an industrial center with a population of 42,000. This unit is also used by the Provincial Department of Health as a field training center for new health officers, nurses, and sanitary inspectors.

In the United States certain aspects of health services in New York City and Alabama continued to receive support. In New York City a nursing staff education project of the Committee on Neighborhood Health Development has been aided for three years. The plan for improving personnel has now become a part of the program of the New York City Health Department Bureau of Nursing. Two developments fostered by the nursing staff education project are: the arrangement with the Bureaus of Tuberculosis and Social Hygiene for lectures and conferences at the regular meetings of the nursing staff; and the presence of various medical directors and other administrators at weekly conferences of the central administrative nursing staff for discussion and advice as to how the nurse's time can be

used most effectively in special fields such as communicable disease.

In Alabama aid was given to the State Board of Health for adapting a tuberculosis program previously developed in Lee County to a larger district health department, with a view to its ultimate extension to the State as a whole. Papers were published on this work during the course of the year bearing the titles: "A Survey of Tuberculous Infection in a Rural Area of East Alabama" and "The Fate of Persons Exposed to Tuberculosis in White and Negro Families in a Rural Area of East Alabama."

PUBLIC HEALTH EDUCATION

The International Health Division in 1940 directed the studies of 120 men and women to whom it had granted fellowships. The subjects of special interest into which the group was divided are shown in the following tabulation:

<i>Classification</i>	<i>Number</i>
Public Health Administration	58
Public Health Nursing	21
Public Health Laboratory	7
Sanitary Engineering	8
Vital Statistics	2
Industrial Hygiene	1
Syphilis Control	11
Special	12
	—
	120

The 120 fellows came from twenty-eight countries: twenty-nine from Canada; twenty-five from the United States; six each from Brazil, Japan, the Philippines, and Venezuela; five each from India and Mexico; three each from Panama and Denmark; two each from Argentina, Chile, Colombia, Cuba, Guatemala, Peru, Sweden, and Turkey; one each from Ceylon, China, Costa Rica, Fiji, Finland, Greece, Haiti, Norway, Portugal, and Salvador. Of these fellows, 110 were assigned to ten education institutions in this country and Canada, four spent their entire period of fellowship study abroad, and six were assigned to field studies or to nonacademic institutions. Twenty-two of the fellowships were held by nurses, one of whom was a special fellow studying public health administration at the Johns Hopkins University.

In addition to the fellowship program described above, supervision was given to seventeen persons studying in the United States on government and other fellowships: ten from Venezuela, one each from China, Italy, and Siam, and four from the United States.

The amount appropriated for fellowships for the year 1940 was made to provide as well for grants for the travel of government health officials and training of health workers. For the year, \$200,000 was available for allocation for

fellowships and travel and training grants. Thirty-three travel and training grants were approved for persons representing twelve countries: thirteen from the United States; four from India; three each from Canada and Argentina; two each from Panama and Venezuela; and one each from Costa Rica, Haiti, Mexico, Peru, Salvador, and Uruguay. Three of these grants went to nurses. Also included in these travel grant figures are five small grants made to undergraduate medical students at Harvard University to enable them to do practical work in the field of public health during the summer. This is a new program and the results of the experiment were most encouraging. The estimated cost of the thirty-three grants was \$12,305.

A number of health officials of South American countries attended the Eighth American Scientific Congress in Washington held in May 1940. Officials of Uruguay, Argentina, and Peru accepted invitations from the Division to visit health organizations in the United States and Canada before returning home.

Since it was founded in 1913, the International Health Division has donated \$367,000 in support of schools and institutions of hygiene and public health in Europe. Many of the European institutions are now cut off from contact with work elsewhere. They have no access to current publi-

cations of scientific interest. The Foundation made a grant in 1940 for developmental aid to the libraries of European institutions of hygiene which would enable them to obtain current books and subscriptions to certain journals. Prominent among the establishments aided is the Institute of Hygiene in Madrid whose entire library was destroyed during the war in Spain.

A grant was made to the Public Health Training Institute in China. This Institute was formerly situated in Nanking. In 1938 it moved to Kweiyang in the Province of Kweichow. It gives classroom instruction to 130 students who are being trained as medical officers of health, sanitary inspectors, nurses, and midwives. It provides laboratory services for the Province of Kweichow and it operates an urban training center at Kweiyang and a rural training center in Tingfan County. Both centers provide health facilities for the Public Health Training Institute and other medical and nursing schools. The rural station operates a fifteen-bed hospital and four health stations throughout Tingfan County. The National Health Administration of China confronts one of its most urgent problems in the training of public health personnel. A large part of this need is met by the Public Health Training Institute. Funds provided by The Rockefeller Foundation have made possible the employment

of new staff, purchase of additional equipment, and extension and strengthening of the field program.

It is now generally recognized by schools of hygiene and public health that facilities for field training are essential. The University of Toronto School of Hygiene in Canada was organized in 1924. It has received a considerable amount of aid from the International Health Division. An urgent problem in connection with this school is the organization of field training activities, including the development of one or more model district health organizations to provide health services for the people and training facilities for the University schools. Neither of these problems can be solved without the employment of certain personnel connected with the School of Hygiene, who could take charge of the proposed districts when these are organized. The Foundation has made available funds for the employment of such personnel.

The Harvard School of Public Health received funds for developmental aid in sanitary engineering. The purpose is to strengthen the Department of Sanitary Engineering in the Harvard University Graduate School of Engineering since it furnishes instruction to the School of Public Health. A grant was also made to the Harvard School of Public Health for the study of adminis-

trative practices, to appraise teaching techniques, and to undertake certain curriculum studies. Dr. H. D. Chope, formerly city health officer of Newton and director of the field training unit, is in charge of this study. The purpose is to study public health administration as practiced in outstanding health departments, to appraise techniques used in public administration and business administration, and to attempt to devise and demonstrate methods for teaching public health administration. Both the Johns Hopkins University School of Hygiene and Public Health and the School of Hygiene of the University of Toronto received grants to enable them to increase the teaching staff of certain departments in order to carry a larger teaching load without deterioration in the quality of the instruction.

The most important grant of the year in the field of public health education was that described on pages 32-34 of the President's Review. It was a large gift to the University of Michigan for a School of Public Health. The W. K. Kellogg Foundation of Battle Creek and The Rockefeller Foundation each contributed \$500,000 toward this project.

THE MEDICAL SCIENCES

THE MEDICAL SCIENCES STAFF

During 1940

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

ALTHOUGH the situation in Europe is not promising for medical training and research, war conditions themselves have probably hastened somewhat a combined attack on research in psychiatry, neurology, and neurosurgery at the University of Edinburgh which the Foundation aided in 1940. On the other hand a grant made in the spring toward the establishment of an Institute of Social Medicine at the University of Brussels, for which a new building had been erected, was unfortunately nullified by developments of the war. Other aspects of the program in the medical sciences have been affected by war. Because of the disorganization in medical teaching in Great Britain under war conditions, the division of medical sciences has departed from its policy of providing only graduate fellowships, to supply funds for scholarships to enable selected British medical students to complete their undergraduate work in the United States and Canada. About 20 per cent of the grant in aid program for medical sciences was devoted to assistance for scholars who had lost their positions in Europe because of race or political views before the war, or were in flight from Eu-

rope because of the war; and several other grants in aid were of an emergency character. Funds provided for fellowships in the medical sciences in 1940 were about 46 per cent less than for 1939. The number of fellows from Europe was reduced by about 86 per cent as compared with the number in 1939, while the number of fellows from Latin America was five times larger in 1940 than in 1939.

Projects were aided in three other foreign countries outside of Europe. At the University of Buenos Aires assistance was given to the Institute of Physiology under the direction of Professor B. A. Houssay, an outstanding leader in medical education in Argentina. In China help was given for the establishment of a public health teaching center for the use of the West China Union University and the schools of medicine of Cheeloo and National Central Universities, at present operating on the West China campus; and in Canada aid was given toward the development of the teaching of public health in the University of Manitoba.

The Foundation's grants are usually a part, and often only a small part of the total needed for the project aided. Assistance to a new department, division, or new development within a department is intended usually to help the venture over the initial period while it is becoming

stabilized, until it is a well-recognized part of the institution and has become favorably known, when local assistance may be secured, or the University may be ready to take over full support itself. The Foundation aims to encourage and promote intelligent and productive investigation. A special and limited piece of work may be assisted until it is completed. In other cases, new methods or branches of research may be introduced into a department, or may become a new important trend around which a research unit will be formed. In such cases the university usually takes over complete support of the work after an initial period of help, or finds other sources of funds.

The purposes for which funds were provided in the medical sciences during the year 1940 may be classified roughly in the following categories: teaching and research in psychiatry and neurology, \$603,900; teaching and research in psychology and social medicine, \$104,000 (including the grant to the University of Brussels which was canceled); teaching and research in endocrinology, chronic diseases, etc., \$161,334; the teaching of public health and preventive medicine, \$29,-800; scholarships for British medical students, \$100,000; fellowships, \$135,000; and grants in aid, including assistance to refugee scholars, \$165,000.

TEACHING AND RESEARCH IN PSYCHIATRY AND NEUROLOGY

DUKE UNIVERSITY SCHOOL OF MEDICINE

In 1935 the state legislature of North Carolina authorized the governor to appoint a commission to make a study of the care and treatment of the insane and mentally defective in the state mental hospitals and elsewhere, and of the possibilities for improving the care and treatment of such patients. The commission, which was financed by The Rockefeller Foundation, appointed a psychiatrist to direct the survey, and presented an exhaustive report which contained, among others, a recommendation that Duke University should become a center for psychiatric training in the State.

Psychiatry was formerly represented at Duke University by only two staff members in the department of medicine. Plans for a division of psychiatry to be established on a full-time basis within the department developed together with an increasing general interest in psychiatry and its problems, which had been stimulated by the report of the commission. Actual establishment of the division was dependent upon the construction of an additional hospital building which was completed and occupied in 1940, and contains a psychiatric ward of twenty-three beds and out-

patient accommodations for psychiatric patients. In addition, a private hospital at Asheville, with provision for over one hundred patients, has been donated to the School of Medicine for its use for teaching at present and for complete possession in 1944. The division will be directed by Dr. R. S. Lyman, formerly of the Johns Hopkins University School of Medicine. It is planned, in accordance with modern practice in developing a division of psychiatry, that teaching and research will be linked as closely as possible to neurology, and to both internal medicine and pediatrics, and that liaison with the other clinical specialties will be maintained.

The Foundation granted \$175,000, beginning approximately July 1, 1940, to be distributed over a period of seven years, with the expectation that in this period the division will become a strong unit within the University, and a stimulating influence in psychiatry throughout the South and Southeast.

HARVARD MEDICAL SCHOOL AND MASSACHUSETTS GENERAL HOSPITAL

The service which the psychiatric unit, established in 1934 under the direction of Dr. Stanley Cobb, Bullard professor of neuropathology of the Harvard Medical School, renders to the Massachusetts General Hospital, and through

teaching and research to the medical school, is now regarded as a permanent and necessary part of each institution. In 1940 the Foundation continued its aid by a grant of \$106,000; \$96,000 to Harvard Medical School over the two-year period beginning September 1, 1940, and \$10,000 for the first year only to the Massachusetts General Hospital, which will thereafter carry the whole of its share of the cost.

While selected cases of many different types and degrees of mental disease are studied in the psychiatric service, and through consultation in the other services, the special characteristic of the unit, both in its approach to teaching and to research, is the emphasis it places on those milder cases of mental difficulty for which treatment and attention have seldom been adequate. One group of such cases are those who suffer from various physical symptoms, such as pain, shortness of breath, or a rash on the skin, for which no physical basis can be found, and who, baffled, often go hopelessly from one doctor to another. Another such group suffers from conscious mental distress which causes much unhappiness to the victims by reducing their working efficiency and disturbing their personal relationships. When the connection of a frustration, a deeply rooted anxiety, or emotional problem to physical symptoms or social disability can be pointed out to the pa-

tient, and possibly help be given in adjusting mental attitude to the problems of life and correcting the bad posture of the mind, symptoms and social maladjustments usually disappear.

HARVARD MEDICAL SCHOOL: RESEARCH IN EPILEPSY

In epilepsy the electrical currents or waves from the brain, registered through the technique of encephalography, show a certain abnormality or disorder in rhythm, especially during seizures, which may be called "cerebral dysrhythmia." Further, a study of the close relatives of such patients shows that twenty persons have abnormal brain waves and consequently predisposition to epilepsy for every one who actually has the disorder. The research unit under Dr. W. G. Lennox at the Harvard Medical School and the Boston City Hospital, which has been gathering this data concerning epilepsy, is using the encephalographic method also to study schizophrenic patients and their relatives, and children with behavior disorders. Parallel with the encephalographic studies, investigations are being made of chemical factors which may be concerned in the production of abnormal electrical waves. A new drug, sodium diphenyl hydantoinate, for the control of seizures has been developed, and further studies in this direction are going on.

To encourage research in this little worked field, the Foundation in 1940 continued its aid by a grant of \$57,000 to Harvard Medical School, to be expended over the three-year period beginning July 1, 1940.

INSTITUTE OF THE PENNSYLVANIA HOSPITAL

With the release of Dr. Earl D. Bond from administrative duties and his appointment as medical director of research, and with the appointment in December 1939 of a full-time chemist, the development of research has been increasingly important in the program aided by the Foundation at the Institute of the Pennsylvania Hospital since July 1, 1934.

The research funds received from the Foundation have been applied chiefly toward studies of the neurones by means of the oscillograph, of migraine and of involutional melancholia, studies in the chemical laboratory, and a study of the emotional factors in physical disease at the Hospital of the University of Pennsylvania with which the Institute is affiliated. The work of the chemical laboratory has been supplementary to clinical studies of treatment by insulin, metrazol, and more recently by electric shock, and is now including studies of brain respiration. In research on migraine intramuscular injections of vitamin B-1 have been used.

Six psychiatrists who hold fellowships provided by Foundation funds, and other junior members of the staff, are receiving the psychiatric training which was originally the principal feature of the Foundation's aid.

In 1940 the Foundation granted \$75,000 toward the development of this research and training program, to be distributed over the three-year period July 1, 1941, to June 30, 1944.

THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE: DEPARTMENT OF PSYCHIATRY

To assist in building up a center where advanced students can be trained for careers of research and teaching in psychiatry, the Foundation has aided since 1933 the Pavlovian and Psychobiological Laboratories of the Department of Psychiatry at the Johns Hopkins University School of Medicine, and since 1934 clinical research and teaching in child psychiatry. A two-year grant for these three activities expires June 30, 1941; in 1940 \$36,650 was appropriated to extend the combined aid for another year.

At present the Psychobiological Laboratory is studying self-regulatory activities, such as the relation of taste and appetite to food cravings and the body's nutritional needs; the correlation of electrical skin resistance to mental states; and fatigue and catalepsy. The Pavlovian Laboratory

is linking the conditioned reflex technique increasingly with clinical studies; and in child psychiatry clinical research along broadly psychobiological lines continues to attract the usual number of advanced students.

THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE: SUBDEPARTMENT OF NEUROLOGY

Development of the subdepartment of neurology established in the Department of Medicine of the Johns Hopkins University School of Medicine in 1936, with Foundation assistance, proceeds upon the basis that cooperation with, and assistance to, other departments will at the same time help neurology to grow in competence and significance. In the Johns Hopkins Hospital neurology has no ward of its own, but patients in the medical and other services are visited in consultation. As a subdepartment of medicine, its relations with that service are naturally very close; it also secures close cooperation from the departments of psychiatry, neurosurgery, and pediatrics, as well as urology and ophthalmology. Members of the neurology staff have appointments on the medical service of the city hospitals where neurological cases, both acute and chronic provide an abundance of material for both teaching and research. The teaching aims specifically to secure through lectures, discussions, and clini-

cal conferences an effective correlation of theoretical and practical work. In the building up of research clinical and experimental physiology are chiefly emphasized.

The continuation of aid in the amount of \$23,000 which the Foundation granted in 1940 covers three years beginning July 1, 1940, and provides \$3,000 in the first year for much-needed experimental equipment. The support toward salaries and consumable supplies decreases yearly, with the expectation that the School of Medicine will maintain the present total of the budget for neurology by increasing its share of the cost.

WORCESTER STATE HOSPITAL: RESEARCH IN SCHIZOPHRENIA

The modern attitude toward schizophrenia is that this aggregation of symptoms probably represents more than one distinct disease. It is one of the main objectives of the research unit at the State Hospital at Worcester, Massachusetts, to try to discover more definite and clear-cut cleavages in the total symptom picture at present comprehended by the term schizophrenia. The unit is observing the responsiveness of patients to various forms of treatment, such as the use of insulin, metrazol, and endocrine preparations, and differences in physiological, psychological, and psychiatric reactions between those

who respond to treatment and those who do not. Previous studies of metabolism and physiological functions have shown that the schizophrenic tends to have a slower and lessened physiological reaction than normal persons; for instance, to metabolic stimulation by thyroid, and to stimulation of the central nervous system. The withdrawing of the schizophrenic, therefore, appears to be physiological as well as psychological. Further studies of the reaction of the schizophrenic to the administration of hormones are being carried on.

Under the direction of Dr. R. G. Hoskins of the Harvard Medical School, director of the Memorial Foundation for Neuro-Endocrine Research, the unit also serves to train younger men. In 1940 the Foundation continued aid begun in 1934 by an appropriation of \$37,500 to be paid in yearly decreasing amounts over the three-year period beginning July 1, 1940.

**AMERICAN PSYCHIATRIC ASSOCIATION:
TEACHING CONFERENCES FOR PERSONNEL OF
STATE HOSPITALS**

As a means of stimulating interest in research in state hospitals, and toward developing them as places for the teaching of psychiatry, as well as to counteract the physical isolation and intellectual loneliness of most physicians in men-

tal hospitals, the Committee on Psychiatry in Medical Education of the American Psychiatric Association planned and conducted in 1940 two institutes, or teaching conferences. These conferences were held specifically for the personnel of state hospitals, one at the Agnews State Hospital, Agnews, California, and the other at the Central State Hospital, Lakeland, Kentucky. They serve something of the purpose of postgraduate or refresher courses, and furnish an opportunity for an exchange of experiences to men who have similar problems. To give a general reorientation clinical psychiatry, psychotherapy, and neurology were emphasized at the first institute; and a systematic review was provided of material covered in the examinations of the American Board of Psychiatry and Neurology, including psychobiology and psychopathology. Such general problems facing state hospitals were discussed as hospital administration, legal psychiatry, the function of a psychopathic hospital, child guidance, and the question of services to the community. Approximately one hundred current books on psychiatry and neurology were provided by the National Committee for Mental Hygiene, and exhibits of complete case studies were loaned by several outstanding clinics. About a dozen able and authoritative lecturers conducted the courses and discussions.

For intensive teaching conferences to be held during the years 1940, 1941, and 1942, the Foundation appropriated in 1940 \$12,500 to cover the cost of general organization, and expenses and honoraria for the lecturers.

UNIVERSITY OF EDINBURGH: RESEARCH IN PSYCHIATRY, NEUROLOGY, AND NEUROSURGERY

A research unit which is particularly suited in organization and purpose to present conditions has been formed at the University of Edinburgh, Scotland, under the leadership of Professor D. K. Henderson and Mr. Norman Dott, who direct the psychiatric and neurosurgical activities respectively. The University has had under consideration since 1930 a scheme for the association of research in psychiatry with research in neurology and neurosurgery in a closely knit organization, particularly for the purpose of studying organic brain damage from such causes as injury, abscess, and tumor. At present the University is cooperating with the Department of Health for Scotland and the Medical Services of the Army, Navy, and Air Force in providing facilities for both neurosurgery and psychiatry at a special emergency hospital for both civilian and military cases outside of Edinburgh. As these departments, especially neurology and neurosurgery, have developed considerably since 1930, and in many instances the interests of neurology and

psychiatry already are overlapping, they are ready to take advantage of the unusual opportunity for the formation of an intimate relationship which is presented by the emergency facilities. The principal work will be done at the new unit, but the regular facilities provided by the University and affiliated mental hospitals will be a part of the general plan.

The Foundation has given assistance to the department of surgery since 1936 toward the development of research in neurology and neurosurgery; and indirectly, through the Medical Research Council of Great Britain, toward research in psychiatry during the years 1935 through 1938. To help the University of Edinburgh to take advantage of this opportunity, when reductions in usual sources of income make the financing of research difficult, the Foundation granted \$18,250 to provide £4,500 for the year beginning October 1, 1940.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE: DEVELOPMENT OF NEUROLOGY AND NEUROSURGERY

The new Neuropsychiatric Institute built by the Illinois State Department of Public Welfare on the campus of the College of Medicine of the University of Illinois in Chicago presents the Department of Neurology and Neurological

Surgery with greatly enlarged facilities for teaching and unusual advantages for further development in research, since besides providing space and care for fifty-four neurological and neuro-surgical cases, and ninety-six psychiatric cases, the Department of Public Welfare has completely equipped a laboratory for neurophysiological research related to both neurology and psychiatry.

The new quarters were ready to be taken over by the Department of Neurology about January 1, 1941. However, no funds had been provided in the University's budget to cover the considerably increased expenses of operation of the expanded Department, since the building was unexpectedly completed before the date on which the State made biennial appropriations for the University. To enable the staff to begin work at full capacity without delay, and to help to establish and assure a prompt and close working relationship between the College of Medicine and the mental hospital system of the State of Illinois, the Foundation appropriated \$8,000 for a period beginning not earlier than December 1, 1940, and ending August 31, 1941.

TUFTS COLLEGE MEDICAL SCHOOL: DEPARTMENT OF NEUROLOGY

It is coming to be recognized that neurology as well as psychiatry is a subject which has a close

and important relationship to the other medical subjects. A pioneer in the biological attitude toward neurology, Professor Kurt Goldstein, formerly professor of neurology in the University of Berlin, has evolved a psychosomatic orientation toward the problems of nervous diseases. His investigations emphasize the biological factors affecting these problems and the psychophysiological method of diagnosis.

It is the desire of the authorities of Tufts College to promote this conception of teaching and research in neurology, not only for the purpose of developing its Department of Neurology, but, through suitable cooperation, to stimulate and broaden the interests of other departments, for instance, the Departments of Pathology, Anatomy, and Psychology. It is hoped that this attitude toward neurology may be considerably extended through the training of graduate students in Dr. Goldstein's laboratory.

To assist this program the Foundation granted to Tufts College in 1940, \$25,000 over the five-year period beginning about April 1, 1940.

TUFTS COLLEGE MEDICAL SCHOOL: RESEARCH IN BRAIN CHEMISTRY

With a view to discovering the role of the lipoids in the brain and nervous tissue and their possible bearing on mental and nervous diseases,

Dr. S. J. Thannhauser, clinical professor of medicine at Tufts College Medical School, is working on a new method of isolating these substances, particularly the sphingomyelins and cerebrosides, from the organs in which they are found. He is studying especially the processes of fermentation by which these substances are broken down and the problem of constructing them in the laboratory. Material from cases which come to autopsy in the hospital is analyzed and checked with the clinical observations made of these cases and with the laboratory studies.

Small grants in aid for Dr. Thannhauser's research in lipoids were first given in 1932 while he was still director of the Medical Clinic of the University of Freiburg. The appropriation in 1940 of \$30,000 to Tufts College Medical School for a period of five years beginning April 1, 1940, is a continuation of assistance given through grants in aid for the same purpose since 1936.

TEACHING AND RESEARCH IN
PSYCHOLOGY AND SOCIAL MEDICINE
HARVARD UNIVERSITY:
PSYCHOLOGICAL CLINIC

The Psychological Clinic at Harvard University, directed by Dr. Henry A. Murray, has been devoted to dynamic psychology, or an attempt to

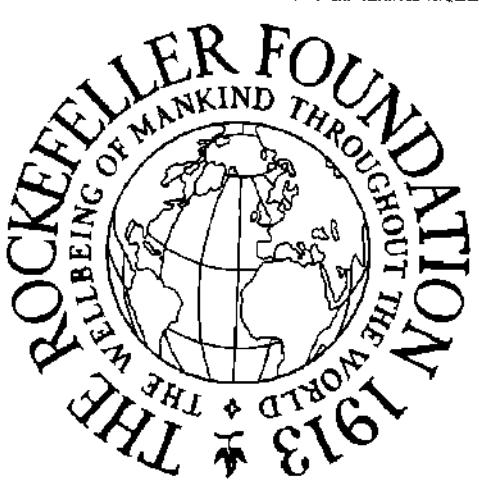
understand personality by the study of social relationships. Such factors are studied as the activity of relationships, for instance, between parent and child, employer and employee, enemies and friends, their balance or one-sidedness, the role of values currently attached to them, and conduct which leads to their destruction or continuity. For this approach to understanding of the personality Dr. Murray and his associates have devised many new methods and techniques, especially the study of fantasies, and the "apperception test," through which it appears possible to relate fantasies to actual life experiences and character traits. The Clinic is attempting to bring psychology into active relationship with physiology, medicine, psychiatry, and hygiene. Dr. Murray applies whatever methods and techniques appear to contribute to the development of his objectives, such as the techniques of behaviorism, psychoanalysis, Gestalt psychology, and various other schools, besides the usual procedures of internal medicine.

To assist the work of this Clinic for a period of five years beginning September 15, 1941, the Foundation appropriated \$60,000, the amount to be available in any one year not to exceed \$12,000. Previously small grants in aid have been given for equipment, technical assistance, and special studies.

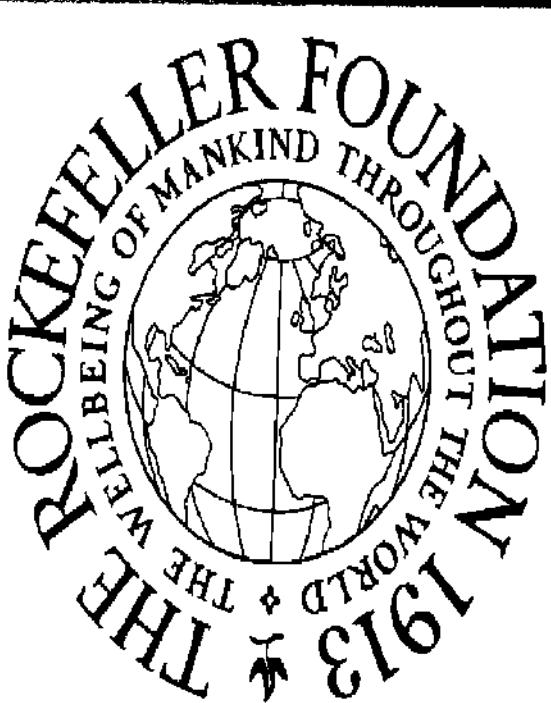
HARVARD UNIVERSITY: RESEARCH IN INDUSTRIAL HAZARDS

For some years the Foundation has aided a research and teaching project in the Harvard Graduate School of Business Administration, designated by the term "research in industrial hazards," which seeks to use a number of avenues of approach to the investigation of administrative and industrial problems. An outstanding feature is the clinical attitude which this group attempts to infuse into its research and teaching, whether physiological studies of high altitude on aviators, or psychological studies among administrators and workers are concerned.

In view of the importance of social relationships today, and the fact that social changes are going on which require highly adjustable and well-balanced minds in positions of authority, Professor Elton Mayo, the director of the psychological side of this work is anxious to train young persons who may enter teaching or administrative positions, in the clinical attitude toward industrial psychology. Both inside and outside the University the increasing interest shown in this work has made demands for instruction and advice which tax the present staff. To meet the requirements for instruction, and at the same time, to carry out an adequate research program, additional personnel is necessary.



Photograph Excised Here



Photograph Excised Here

Institute of Neurology and Neurological Surgery, University of Illinois. Right: (above) Psychiatric Clinic, Johns Hopkins University, (below) Institute of the Pennsylvania Hospital

Research and teaching in psychiatry and neurology are being aided by the Foundation at these institutions.

Two of the more timely research problems which are being undertaken are: a study of changing standards of living in areas where distress is not obvious; and a study of the problem of executive authority in a democratic system, to involve a consideration of the interaction between the purposive controls of central authority and the more diffuse and less highly organized peripheral controls, especially during and following times of stress.

Although the Foundation provided a yearly decreasing grant in 1937 which will be available until 1942 for the general project, \$30,000 in addition to this assistance was granted in 1940 for the special needs of the work in psychology, to be used over the two-year period beginning July 1, 1940.

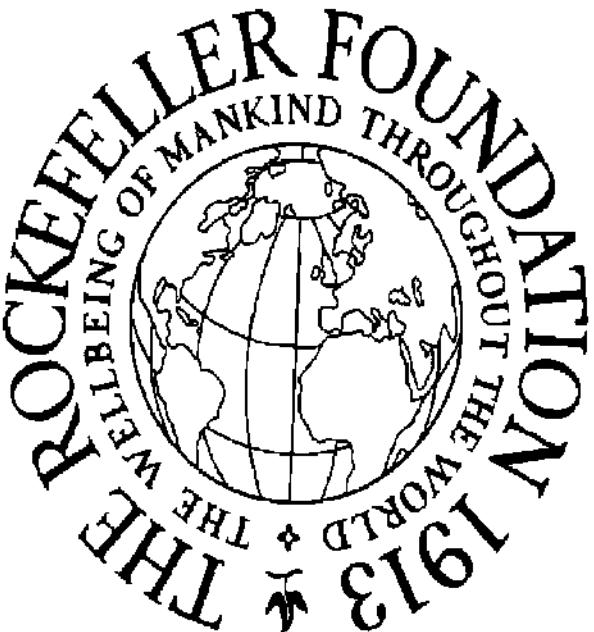
UNIVERSITY OF BRUSSELS:
INSTITUTE OF SOCIAL MEDICINE

Early in 1940 as a result of the outbreak of war in Europe and almost complete mobilization in Belgium, trade relations between Belgium and other countries were disturbed or disrupted, and the economic situation was greatly disorganized. Effects on medicine and health were widespread. Forty-five per cent of the people were frequently unable to pay for medical care, and private hospitals were almost empty.



Photograph Excised Here

College of Physicians and Surgeons, Columbia University. Operating room where hypophysis is being removed from monkey.



Photograph Excised Here

Brain chemistry laboratory, Tufts College Medical School.

Previous to this crisis the University of Brussels had planned an Institute of Social Medicine to be composed of the Departments of Social Medicine, Psychology, Physiology of Labor, Physical Education, Pathology, Hygiene and Preventive Medicine, Psychiatry, and Legal Medicine, to be housed in a building which was well under way, in close proximity to the school of medicine. The departments were already working together in the broad conception of social medicine comprehended by this aggregation of disciplines, and had formed affiliations also with departments of the medical faculty, and welfare organizations. The government had proposed various measures to remedy the medical situation, and authorities of the government and of the University came to the conclusion that advantage should be taken of the impulse toward rapid development in social medicine to bring to completion the more permanent project of the Institute of Social Medicine.

Between 1920 and 1935 the Foundation had contributed large sums toward a plan of reorganization and development of medical education and research in the University of Brussels which had just achieved its greatest effectiveness, and which formed a stable background for the Institute. In April of 1940 the Foundation granted \$14,000 (to provide 400,000 Belgian

francs) toward general budget expenses of this venture but, in view of the war situation, limited the period of aid to the academic year 1940-1941 only.

On May 10, hardly a month after the grant was made, Belgium was invaded, and Dr. René Sand, secretary general of public health, who was to have been the director of the Institute, fled to France with other government officials and professors of the University of Brussels. In August Dr. Sand wrote that he was returning to Brussels to devote himself entirely to teaching and research in social medicine. The present control of Belgium by Germany and the continuing state of war in Europe preclude the use of the funds for the purposes for which they were granted.

TEACHING AND RESEARCH IN ENDOCRINOLOGY, CHRONIC DISEASES, ETC.

COLUMBIA UNIVERSITY SCHOOL OF MEDICINE: RESEARCH IN ENDOCRINOLOGY

The Foundation has given aid since 1931 to research at Columbia University School of Medicine on the endocrine glands and their interrelationships, particularly the effect of the pituitary on the reproductive system, either indirectly from funds supplied through the National Research Council's Committee for Research in

Problems of Sex, or directly by appropriation to the University. In 1940 the Foundation continued assistance by a grant of \$42,000 for the two-year period beginning July 1, 1940. The Foundation's funds are used chiefly for the salaries of assistants, and for the purchase of monkeys for the laboratory.

The endocrine studies are carried on by Professors P. E. Smith, E. T. Engle, and A. E. Severinghaus in the Department of Anatomy. At present much attention is being given to the effects of the administration of hormonal preparations. Contact with the clinic is growing, particularly as actual therapeutic uses become practicable, and is especially active with the Department of Obstetrics and Gynecology.

This group plays an active part in the post-graduate program of the University. Graduate students from other departments, especially medicine, gynecology, and urology, as well as workers on fellowships from various funds, candidates for Ph.D. degrees, and visitors from foreign countries receive training in this laboratory.

RESEARCH COUNCIL OF THE DEPARTMENT OF HOSPITALS OF NEW YORK CITY

As with the encouragement of research in state hospitals for mental diseases, the encouragement of research in New York City's Welfare Hospital

for chronic patients serves to help in establishing an activity and form of cooperation which may stimulate interest and provide an example for similar action by other municipalities and universities. The Research Service of Welfare Hospital for Chronic Diseases, First Division (formerly the Research Division for Chronic Diseases) began work in 1936. The staff is nominated by and under the control of the School of Medicine of Columbia University; laboratories and the care of about sixty selected patients for clinical study are provided by the city; and funds are administered by the Research Council. The participation of other medical schools of the city in research units of the same type is expected gradually to be put into effect.

Laboratory research with the use of experimental animals and biochemical techniques is carried on parallel with clinical observations and tests. This attack on a group of diseases which has been eschewed by voluntary hospitals and treated with only routine care by most public hospitals already has yielded new information of much interest, and of hope for the future. The investigations have been centered on cirrhosis of the liver, Bright's disease, high blood pressure, hardening of the arteries, rheumatoid arthritis, pulmonary insufficiency, and the effect of a lack of vitamins in chronic disease.

In 1940 the Foundation continued aid begun in 1938 by a grant of \$73,334 over a period of three and one-third years beginning March 1, 1941. Besides the laboratory and clinical facilities which the city provides, it supplies \$28,800 a year toward the salaries of the medical and technical staff connected with this First Division of the Research Service.

LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE: RESEARCH IN KIDNEY DISEASES

Research under Dr. Thomas Addis, professor of medicine in the School of Medicine of Stanford University, showed that in chronic kidney disease, or glomerular nephritis, many patients appeared to have a normally functioning kidney over a long period of years, even though laboratory tests indicated that kidney tissue was constantly being destroyed by the disease.

In experiments with rats the chief cause of change in the amount of kidney tissue appeared to be the amount of protein taken in food. Through methods devised to measure the osmotic work done by the kidney, and the amount of protein in the body and in each of its organs, the exchange of protein within the body and its effect on the "work" of the kidney is being studied. Clinical studies, also, are made on patients, some of whom have been under systematic ob-

servation for periods of five, ten, fifteen, and a few even for twenty years.

Continuing aid begun in 1937 (under the division of natural sciences), the Foundation granted in 1940 \$21,000 to be used over the three-year period beginning July 1, 1940.

UNIVERSITY OF BUENOS AIRES: INSTITUTE OF PHYSIOLOGY

The Institute of Physiology of the University of Buenos Aires, directed by Professor B. A. Houssay, gives courses in physiology, biochemistry, and biophysics to nearly a thousand medical, dental, and pharmacy students, and provides, besides, graduate courses and the supervision of research workers and junior staff who are being trained for academic posts. Research in the Institute has been devoted chiefly to the role of the pancreas, hypophysis and adrenals, the thyroid, and liver in diabetes and carbohydrate metabolism; the mechanism and therapy of hypertension of renal origin; cardiology; and problems of nutrition, including mineral metabolism and the vitamin content of native foods. The Institute has made an outstanding contribution to medical education in the training of men. Professor Houssay's pupils fill many important posts in physiology and biochemistry in Argentina.

The principal needs of the Institute at present are for scientific apparatus, which would be purchased chiefly in the United States, and salaries for additional research assistants. The grant of \$25,000 which the Foundation made in 1940 for these two purposes covers a three-year period beginning approximately January 1, 1941.

TEACHING OF PUBLIC HEALTH AND PREVENTIVE MEDICINE

YALE UNIVERSITY SCHOOL OF MEDICINE

A distinction between preventive medicine and public health is underlined at Yale University School of Medicine through the establishment of a section of preventive medicine in the Department of Internal Medicine. The director of the section, Professor John R. Paul, holds also a professorship in the Department of Public Health. Through this provision for liaison, the clinical attitude is brought into closer contact with public health, and the true relationship between preventive medicine and public health is maintained. Public health in its more general interpretation deals with large groups, with statistics, and generalizations therefrom; it operates chiefly through governmental units, and by means of regulations which can be applied to all people alike; whereas preventive medicine in the stricter

sense deals with small groups and requires a more intimate type of study. The purpose of clinical preventive medicine is to consider the sick person not as an isolated case of some particular disease, but in relation to his immediate environment, his family, community, or the group within which he works. The practitioner of preventive medicine deals with "clinical epidemiology" as distinguished from the more general epidemiology of public health.

While this development at Yale University should broaden the educational program for undergraduate and graduate students, it will also, through the instructorship provided in the section of preventive medicine, afford an opportunity for the training of future teachers and leaders in preventive medicine. Toward the instructorship and general expenses of the section, the Foundation granted in 1940 \$9,000 to provide \$3,000 a year for three years beginning July 1, 1940.

UNIVERSITY OF MANITOBA: TEACHING OF PREVENTIVE MEDICINE

The authorities of the University of Manitoba have evolved a plan whereby the teaching of public health shall begin in the first of the two years of premedical study, and extend throughout the whole of the medical course. The teaching of those subjects which may be applied

directly to personal hygiene and the students' own welfare will occur in the early years of the course. The subjects are to be given in the following order; public health in relation to the citizen and his environment; public health statistics; nutrition and personal hygiene; epidemiology and immunology; the physician in relation to the public; and in the final intern year, the student will be required to prepare a thesis on a current problem in disease prevention.

While this plan of instruction outlines the whole field of public health and preventive medicine, it includes the viewpoint emphasized by the new section of preventive medicine at Yale University in the close relationship to be maintained with the department of medicine, and the teaching in the third year medical course, which includes study of the sick individual in relation to sociological, economic, and other influences and environmental factors.

To assist in the additional expense of this undertaking over a three-year period beginning July 1, 1941, the Foundation appropriated in 1940 \$10,800. A full-time assistant professor of preventive medicine and public health, in addition to the present part-time head of the department, is needed to give many of the lectures and carry on the more intimate work with the students and liaison with the other departments.

WEST CHINA UNION UNIVERSITY: UNIVERSITIES' PUBLIC HEALTH COUNCIL

The large numbers of people, including those attached to the Central Government agencies, who have moved into the western provinces of China under the impact of invasion, and the numerous problems created by this sudden influx into a section of the country which has had comparatively little contact with Western civilization, make the training of young public health leaders and public health workers an imperative measure.

Two refugee schools, Cheeloo University (from Tsinan) and National Central University (from Nanking), are conducting their medical work in cooperation with that of West China Union University on the latter University's campus at Chengtu, in Szechwan Province. A Universities' Public Health Council has been formed, and an arrangement has been made between the public health departments of the three schools for collaboration in teaching. A public health practice field has been established in the county of Wenkiang, west of Chengtu, in cooperation with the Provincial Department of Health. The professor of public health of the National Central University School of Medicine, who is also chairman of the Universities' Council, and the director of the Provincial Health Department have both studied

public health in the United States under fellowships from the Foundation.

In 1940 the Foundation appropriated \$10,000 toward the budget of the practice field, to be expended over a period of three years beginning July 1, 1940. Part of the funds provided for the first year will be applied toward new equipment and supplies. In 1938 the Foundation assisted West China Union University in the building and equipment of an outpatient department to be used for the clinical teaching of the three medical schools.

SCHOLARSHIPS FOR BRITISH MEDICAL STUDENTS

In December 1940 the Foundation appropriated \$100,000 for undergraduate scholarships for British medical students to study in America during the year 1941. This appropriation is an emergency measure, and a departure from the customary policy of providing only postgraduate fellowships. Its purpose is to help to preserve the excellence of British medical education by making possible training in the United States and Canada for medical undergraduates whose studies in England might be interrupted or badly disorganized through the bombing of buildings or the absence of teachers called to special military or civilian duties.

Contingent on the making of suitable arrangements for travel, and with the universities where the men are to study, the plan is to bring to America some twenty-seven specially selected students who will be distributed among about twenty-five medical schools in the United States and Canada. It was expected that collaboration with the officials of the British schools could be arranged so that American training would be accepted in place of the British courses; and that the deans of the Canadian and American schools would administer the scholarships in their jurisdiction, under the supervision of the officers of the division of medical sciences of the Foundation. The tuition and living expenses of the student are to be paid from Foundation funds for not more than three years. The student is expected to provide his own traveling expenses to and from the place of study.

From 1923 to July 1, 1940, under its postgraduate program for the training of young medical men for academic positions in teaching and research, the Foundation aided, through the Medical Research Council of Great Britain, advanced students in medicine from Great Britain to study in the United States; and conversely has provided fellowships for similarly trained young medical men from the United States to study in Great Britain. This exchange of advanced stu-

dents has helped to develop an understanding and esteem among many of the younger leaders in each country for medical education in the other country, and has paved the way for the present emergency assistance.

FELLOWSHIPS

Under world conditions in 1940, the division of the medical sciences found it impossible or inadvisable to arrange for American fellows to study in any European country, and equally unfeasible to award fellowships to Europeans. As the proportion of fellows appointed from European countries in the past few years has ranged from 50 to 60 per cent, and a varying proportion of those appointed in the United States studied in Europe, the cessation of this interchange inevitably caused a very considerable reduction in the fellowship program of the medical sciences. A fund of \$50,000 was provided in the latter part of 1939 for the year 1940, and an additional \$15,000 was appropriated in 1940. The total fund of \$65,000 represented a reduction of about 46 per cent as compared with the provision for each of the preceding two years. For the year 1941, an initial fund of \$50,000 was again provided, with the understanding that, if necessary, additional appropriations might be considered during the year.

The thirty-seven fellowships administered directly by the division of the medical sciences during 1940 represented a reduction of about 38 per cent as compared with the number in 1939. Nineteen fellowships began during the year, and eighteen were continued into 1940 from the previous year. The fellows, all of whom studied in the United States, were appointed from eleven different countries. The countries of origin and the numbers from each were as follows: Argentina, six; Chile, Colombia, Haiti, and Mexico, one each; Canada, three; Netherlands, two; Finland, Philippines, and Switzerland, one each; and the United States, nineteen. Latin American fellowships, which were two in 1939, increased to ten in 1940. Of the four European fellowships, one was renewed, and three were continued from 1939.

Of the total of thirty-seven individuals, nine devoted their fellowships to studies in psychiatry; thirteen to neurology and allied subjects; two studied chest surgery; two, microchemistry; five, preventive medicine and public health teaching, including one who studied also virus research; and one each worked in endocrinology, experimental cytology, pharmacology, cancer research, tuberculosis, and hospital administration and methods of nursing education.

From funds provided by the Foundation in

1937, the National Research Council, which awards fellowships to citizens of the United States and Canada, administered twenty fellowships in the medical sciences, of which eight were begun in 1940 and twelve were continued from the previous year. All of these fellows worked in the United States during 1940, except one who studied at the University of Stockholm, Sweden, until April 1940.

It seems unlikely that medical schools will have in the near future the financial resources to increase the present comparatively small number of positions which provide training in research and teaching for junior staff. At the same time a critical period in medical education is approaching when a very large number of professors who were appointed during the time of the largest expansion of American medicine will be retiring from active service. Support of the National Research Council's program of graduate fellowships in the medical sciences was continued, therefore, for the two-year period beginning July 1, 1941, with a grant of \$70,000.

Immediately after the outbreak of war in September 1939, the appointment of further research fellows by the Medical Research Council of Great Britain was deferred indefinitely. The grant for fellowships which the Foundation made to the

Council in 1937 expired on June 30, 1940, and no further funds have been provided. One fellow who was already in the United States and whose appointment began in the fall of 1939 continued his studies into 1940.

GRANTS IN AID INCLUDING ASSISTANCE TO REFUGEE SCHOLARS

Although the fund of \$125,000 provided for grants in aid in the medical sciences for the year 1940 represented an increase of \$35,000 over the previous year, this sum did not suffice to meet the needs of the program occasioned by emergencies. During the year an additional \$40,000 was voted, which brought the total provided to \$165,000. For the year 1941 \$125,000 was again appropriated, with the expectation that additional funds would be supplied later, if necessary.

One of the emergency uses of the grant in aid funds was a program for the assistance of refugees who had been displaced from their positions before the war or whose flight from Europe was imperative or advisable. In the division of the medical sciences eleven institutions in the United States were assisted in financing the salaries of eleven such refugees for periods of one or two years, and transportation from France to Argentina was provided for one scholar and his family.

A total of sixty-three separate grants, including

those for refugees, were allotted in the medical sciences from the grant in aid funds and from the balance of the fund previously used to assist scholars displaced from positions in their own countries because of race or political opinions. The smallest amount given was \$250, and the largest, \$7,500; the total of allotments was \$169,475. Over 71 per cent of the grants were for a period of one year; the shortest period covered was two and a half months, and the longest, three years.

Forty-two of the grants, including the assistance given six refugees, were for subjects in the regular program of the medical sciences: twenty-three for research and teaching in the various branches of neurology, nine in psychiatry, nine in endocrinology, and one in public health. Other subjects aided were cardiology, forensic medicine, and the physiology and psychology of reproduction, one each; microchemistry, pharmacology, physiology, and studies of growth and development of school children and adolescent boys, two each, a total of eleven grants, which included aid to five refugees. Two grants were for the protection of medical literature and laboratories in England, and one for the traveling expenses of a refugee scholar and his family. Seven other miscellaneous grants were: for the microfilming and for the distribution of medical literature in China,

one each; for equipment and instruments for teaching and research in China and in Mexico, one each; for emergency aid to the budget of the Library of the New York Academy of Medicine, toward administration of the National Committee on Maternal Health, and toward a research bureau to furnish information to medical officers of mental hospitals in England, one each.

The assistance represented by these grants was distributed among the following countries: the United States, twenty; China, three; Canada and Palestine, one each; in Latin America: Argentina, six; Chile, two; Mexico, one; in Europe: Great Britain, seven; Sweden, six; France, five; Netherlands and Denmark, three each; Switzerland and Belgium, two each; and Finland, one. Of the nine grants made in Latin American countries, four were in the fields of interest of the division of the medical sciences. Since the development of subjects other than those in the limited fields of interest is important in Latin America, some departure from the strict program may be advisable in this region.

In the early part of 1940 twenty-four grants were made in European countries by the Foundation's European office, which was at that time in France. Of the seven countries in which these grants were made four, France, Belgium, the Netherlands, and Denmark are now occupied.

No payments were made on three grants, and in other cases payments were made only in part, and cannot now be resumed. Payments on the grants to the two neutral countries, Sweden and Switzerland, and to England have either been completed or are continuing as funds are needed. After the occupation of France grants were made in England, Finland, Switzerland, and Palestine directly from the United States.

THE NATURAL SCIENCES

THE NATURAL SCIENCES STAFF

During 1940

Director

WARREN WEAVER

Associate Director

FRANK BLAIR HANSON

Assistant Director

H. M. MILLER, JR.

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THE NATURAL SCIENCES

THE Rockefeller Foundation appropriated \$2,188,180 during 1940 to promote research in the natural sciences. Most of the grants were for work in experimental biology, the field of natural science in which, at the present time, the Foundation feels that the best opportunities for service lie.

The purpose of all biological investigation is a better understanding of life processes. Early workers in this field were concerned with the observation and description of gross anatomical features and physiological operations in plants and animals. But as it became evident that every biological process is the result of the functioning of many individual cells and that the interpretation of biological phenomena depends upon the understanding of the behavior of cells, emphasis shifted to the study of cellular biology. The inner processes and mechanisms of the cell long remained a mystery to the biologist, since he lacked the instruments and techniques for exploring its minute submicroscopic structure. In recent years, however, the cooperation of the physicist and the chemist has enabled him to undertake this task of microanalysis, since some of the delicate apparatus and accurate methods developed in the physical and chemical labora-

tories for investigating the molecule and the atom have been found applicable to the study of the living cell.

The Foundation is interested in furthering the use of physical and chemical techniques in the study of biological systems and in helping to extend collaboration between the biological and the physical scientists. Many of the year's appropriations discussed in the following pages were made for this purpose.

EXPERIMENTAL BIOLOGY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY: DEVELOPMENT OF BIOLOGICAL ENGINEERING

An important step toward bringing the principles and techniques of the physical sciences into more general use in experimental biology has been taken at the Massachusetts Institute of Technology through the establishment of a training and research program in biological engineering. One feature of this program is a new curriculum which gives the student preparing for work in the life sciences the advantage of simultaneous study in biology, the physical sciences, and certain engineering subjects, together with practice, from the outset of his course, in pooling the concepts and instrumental procedures of other disciplines for attack on biological prob-

lems. The plan is somewhat analogous to one carried out at the Institute over fifty years ago, when the authorities, realizing the vast opportunities that existed in the application of chemistry to industry, introduced certain lines of training which led to the development of the profession of chemical engineering.

The Institute has had a long and active record of interests which reach down into basic biology and, at the same time, reach out to practical ends. Their tradition in applied biology goes back more than fifty years, when Professor William T. Sedgwick made some of the first applications of bacteriology in the fields of public water, milk supplies, and sewage treatment. At the Institute there were offered the first courses in America in general bacteriology and industrial hygiene, and also the first courses in the world in sanitary engineering, industrial biology, and food technology.

The new curriculum in biological engineering includes a five-year undergraduate course providing integrated training in biological subjects, chemistry, physics, mathematics, and applicable engineering work; and graduate courses leading to the master's and doctor's degrees. Correlated with this curriculum is a research program, at present including the production and use of radioactive materials, vitamin studies, investi-

gations on the kinetics of enzyme action, synthesis of sex hormones, studies of radium poisoning, quantitative measures of fatigue, and research on reduction of hazards of explosion during anesthesia.

To assist the Institute in developing this project in biological engineering The Rockefeller Foundation is providing \$200,000 toward staff salaries, equipment, and supplies during the seven-year period which began July 1, 1940.

UNIVERSITY OF CALIFORNIA: CONSTRUCTION OF A GIANT CYCLOTRON

Among the instruments of the modern physical laboratory which have opened up wide opportunities for research in microbiology is the cyclotron, a machine for imparting enormous velocities to certain minute particles, such as the central core, or nucleus, of hydrogen or helium atoms, thus converting them into powerful projectiles with which to probe inside other atoms and investigate their make-up.

The substance to be studied is placed in a target chamber in the wall of the cyclotron tank. The hydrogen or helium nuclei are released in the center of the cyclotron. Powerful electric and magnetic forces imposed by the machine cause them to circle in constantly enlarging orbits, at ever-increasing speeds, until they emerge in a

steady beam moving at velocities that may exceed one hundred thousand miles a second. When the projectiles hit the atoms in the target chamber, fragments of these are broken off. From a study of the fragments and what is left of the atoms, knowledge can be gained of the atomic structure of the target material.

In the process of this type of atomic research various practical applications of the cyclotron have appeared. For example, physicists have found that its high-speed particles may be used to create artificial radioactivity in nearly all elements, enabling them to give off rays like those coming from naturally radioactive compounds. Atoms of various elements thus tagged with artificial radioactivity may be used by biologists and physiologists to follow the progress and utilization of these elements in plant, animal, and human bodies. Also, beams of neutrons which the cyclotron turns out may be applied directly to living organisms to study their effects on the various organs and vital processes.

The cyclotron was first developed ten years ago by Professor E. O. Lawrence of the University of California but since that time has been greatly improved by him and his associates. The essential parts of the instrument are: (1) a large electromagnet containing many tons of steel and copper, which generates the magnetic forces that

bend the paths of the moving particles into circles; and (2) a huge oscillator, similar to but larger than the power installation of a radio broadcasting station, which furnishes the pulsating electrical force that accelerates the particles to ever higher speeds.

There are various ways of stating the size of a cyclotron. It is usual to give the diameter of the pole face of the great magnet, or to state the tonnage of steel and copper in the magnet, for these quantities definitely limit the output of the machine. The voltage of the emergent beam is also mentioned. Professor Lawrence has built a sequence of cyclotrons, increasing in pole-face diameter and in weight. Of the two he is now operating, one has a pole-face diameter of 37 inches and produces a beam of 9,000,000 volts; the other has a 60-inch pole-face diameter and a beam of 16,000,000 volts. Having solved the problems involved in expanding the instrument to such size, Professor Lawrence and his co-workers then began the design of a greatly enlarged cyclotron powerful enough to make a frontal attack on the remaining mysteries of atomic structure. This machine — the "giant cyclotron" — is to have pole pieces of 184-inch diameter, to contain over 4,200 tons of steel and copper in its magnet, and to produce a beam whose voltage will be more than six times as

powerful as any previously produced, ranging from 100,000,000 to perhaps 300,000,000 volts.

To make possible the construction, housing, and installation of this giant machine at the University of California, The Rockefeller Foundation made a grant of \$1,150,000 to the University during the past year.

UNIVERSITY OF COPENHAGEN: BIOLOGICAL STUDIES WITH RADIOACTIVE ATOMS AS TOOLS

For several years The Rockefeller Foundation has given assistance to a group of scientists at the University of Copenhagen interested in the physics of preparing artificial radioactive elements, in the chemistry of their combination into molecules, and in the biology of their metabolism and other functional utilization in the living body. This aid included contributions toward the building and installation of a cyclotron. The machine, completed in the fall of 1939, has assured quantity production of atoms tagged with high energy radiation for use in a number of studies which form part of a closely integrated research program. The Foundation continued aid to the cooperating group during the past year by a grant of \$8,400.

The central figure in this cooperative project is Professor Niels Bohr of the University's Institute of Theoretical Physics, who has been

instrumental in interesting and organizing leaders of various disciplines in group discussion and cooperative experimentation. In the experimental aspects of the project Professor George Hevesy leads both the physics and chemistry groups, while Professor August Krogh directs the physiological research. Associated with these men and their groups are numerous workers in other institutions interested in applying cyclotron products and other tools of the physical sciences to various lines of biological study. Among these are Professor K. Linderstrøm-Lang of the Carlsberg Laboratory in Copenhagen, who is working in the field of protein and enzyme chemistry; Professor John Runnström of the University of Stockholm, cell physiologist; and Dr. O. Chievitz of the Finsen Institute, Copenhagen, who is investigating medical problems involving calcium metabolism.

A radioactive isotope of any element has all the chemical properties of the ordinary element, and therefore will combine with any atoms with which the ordinary element will unite and will form the same compounds. But there is one physical difference: every now and then the isotope emits a ray in much the same manner as does radium. This activity can be detected by a device known as a Geiger counter. Thus artificially induced radioactivity constitutes a

marker whereby atoms can be identified wherever they may be in an organism. Therefore, by feeding plants and animals with foodstuffs containing atoms tagged in this way, the progress of the atoms through the organism may be followed, determining how they are taken into the tissues, how long they are used, and when they are discarded. Artificially induced radioactivity is short-lived, harmless to living organisms, yet lasts long enough to permit of conclusive tests being carried out.

As an illustration of the work being done with radioactive isotopes at the University of Copenhagen, studies of phosphorus metabolism may be described briefly. An animal under study receives food containing radioactive phosphorus; later one of its teeth is shielded off from other tissue and the detector is employed to discover when the tagged atoms appear in the tooth. Investigations of this kind show that the phosphorus in a meal goes quickly into the teeth and bones and that these give up the same amount of this substance that they take in. Apparently the exchange is rapid, for the teeth and bones promptly take up the tagged atoms from the blood stream and discharge into it their own untagged phosphorus. Studies with chickens and goats have shown how phosphorus is utilized in the formation of eggs and milk.

UNIVERSITY OF CHICAGO: USE OF SPECTROSCOPY IN THE STUDY OF BIOLOGICAL PROCESSES

The spectrograph, an optical instrument that identifies the chemical elements present in a substance by analyzing and photographing its spectrum, is another product of the physical laboratory which the biologist is using to study the submicroscopic details of cell structure and function in living organisms.

No two substances yield the same spectrum; therefore the chemical nature of any substance can be determined by examining its spectrum. If light waves of a given frequency impinge upon an atom or molecule which has vibrations of the same frequency, the light waves are absorbed; in general this absorption can be so controlled that no material change occurs in the atom or molecule. With the aid of an absorption spectrograph, the investigator can form the absorption spectra of biological material, detect the substances present in various tissues, determine their purity by analytical studies, and in conjunction with other evidence draw conclusions concerning their composition and structure.

For several years The Rockefeller Foundation has been contributing to the University of Chicago for studies in which spectroscopy has been applied to the examination of biological substances under the direction of Professor T. R.

Hogness. In the past year a grant of \$55,000 was made for the continuance of these researches during the five-year period ending June 30, 1945.

In these studies attention is being concentrated upon the group of chemical substances known as enzymes, which are instrumental in promoting the chemical reactions involved in metabolic changes in the body cells. Considerable numbers of enzymes have been isolated, purified, and studied from the point of view of their structure and role. There remain, however, far greater numbers of unidentified enzymes whose properties and functions must be understood before it will be possible to explain certain biological phenomena.

One group of enzymes governs the steps in the complicated process whereby oxygen is taken up from the air, utilized by the living body in various ways, then eliminated. Professor Hogness and his associates now are working on problems concerning these respiratory enzymes. One of the important properties of enzymes is that involving a marked change in the absorption spectrum during the process of oxidation. Thus by using the absorption spectrograph it is possible to determine which enzymes play a part in the respiration process and their actual significance. By gross chemical methods it is only possible to determine the total process, while

with the spectrograph the individual steps of the procedure may be followed.

UNIVERSITY OF UPPSALA: RESEARCH ON THE PHYSICOCHEMICAL PROPERTIES OF PROTEINS

The myriad cells of plant and animal bodies are composed largely of heavy colloidal particles—the giant protein molecules. An understanding of the properties and behavior of the proteins is therefore of utmost importance to the biologist. One of the principal laboratories of the world for the study of these substances is the Institute of Physical Chemistry of the University of Uppsala, Sweden, directed by Professor The Svedberg. The Rockefeller Foundation has contributed toward the work of this Institute since 1932. The 1940 appropriation of \$11,250 was for aid during 1941.

During the late 1920's and the early 1930's Professor Svedberg developed a centrifuge of high speed (the ultracentrifuge) for separating colloidal particles out of solution and determining their size and weight. The efficiency of a centrifuge in throwing down 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 can they be sedimented. If particles of different weights are present each one settles at its own rate.

The most readily available heavy molecules upon which Professor Svedberg could test his ultracentrifuge technique were the proteins, with which he carried out extensive studies. Observing, by means of photographs taken during centrifugation, the rate of settling of molecules of various kinds, he was able to determine their weight and dimensions. Results of his work indicate that only a limited number of molecular weights is possible among proteins. This led to the hypothesis that the weight of a protein molecule is a multiple of some unit molecular weight.

Professor Svedberg's work was gradually extended to include research on the structure of protein molecules, their physicochemical properties, and their behavior under the action of light, heat, magnetic fields, and electric forces.

Observation of the reaction of proteins in an electric field led one of his associates, Professor A. Tiselius, to develop the electrophoresis technique, a method of determining the electrical properties of molecules by studying the way in which an electric force causes them to move through a liquid. From measurements by this technique, data of great importance for the characterization of proteins have been collected.

In addition to work with the proteins, Professor Svedberg has for some time been studying

the polysaccharides in unchanged states, as found in potatoes and other plant material. Recently he has begun research on virus problems.

**CALIFORNIA INSTITUTE OF TECHNOLOGY:
RESEARCH IN THE CHEMISTRY OF NATURAL
PRODUCTS**

The study of protein structure forms part of a broad program in the chemistry of natural products being carried out in the Crellin Laboratory of Chemistry of the California Institute of Technology, under the direction of Professor Linus Pauling.

Professor Linus Pauling and co-workers are attacking the problem of protein structure through x-ray study of more simple but related substances: the amino acids and the peptides. In the field of serology, Professor Pauling is investigating the structure of antibodies and the nature of the process of their formation.

Professor László Zechmeister, who two years ago discovered the existence of isomers of carotenoids, the forerunners of vitamin A, is gathering information about the distribution of these isomers in nature, with the aim of ultimately finding a structural explanation of isomerism: the existence of a chemical compound in two or more forms, which differ in physical

properties but which are identical in chemical composition.

Professor Carl Niemann is investigating the nature of the fatty substances in brain and nerve tissue, and the chemistry of thyroxin, the active iodine compound existing normally in the thyroid gland. He is also interested in the development of reagents for use in amino acid analysis.

Professor A. J. Haagen-Smit is studying traumatic acid, a plant wound hormone, and in collaboration with Dr. Joseph B. Koepfli is attempting the isolation of the physiologically active substance in marijuana. Dr. Edwin R. Buchman, working on vitamin B₁ analogues, is obtaining information which throws considerable light on the nature of the physiological action of the vitamin.

The program is receiving support from The Rockefeller Foundation through an action of the trustees in December 1937 authorizing the Executive Committee to appropriate to the Institute sums totaling not more than \$300,000 during the six-year period beginning July 1, 1938, for the development of chemistry in relation to biological problems, the amount to be available in any year of the period not to exceed \$70,000, it being understood that an adjustment of the amount payable should be made as income is received by the Institute from a fund of

\$1,000,000 provided by the Foundation and the General Education Board in 1939 as endowment for the natural sciences. Two appropriations of \$70,000 each were made under this authorization, one in 1938 and one in 1939. During the past year a grant of \$45,000 was made for the year ending June 30, 1941.

KAROLINSKA INSTITUTE: STUDY OF NUCLEIC ACID — PROTEIN RELATIONS

One means by which scientists are adding to their knowledge of the proteins is the study of the relation between these substances and nucleic acid. For a number of years research of this kind has been in progress at the Karolinska Institute in Stockholm, under the direction of Professor Einar Hammarsten. The Rockefeller Foundation has contributed toward this work and allied studies at the Institute since 1931, the appropriation for 1940 being \$5,330.

Nucleic acid is a complex phosphorus-containing substance which combines with the basic proteins histone or protamine to form nucleoproteins, the most important protein constituents of the cell nucleus. Nucleic acid is built up of units known as nucleotides.

The program of Professor Hammarsten and his associates at the Karolinska Institute involves several lines of study. Under the leader-

ship of Torbjörn Caspersson the relation of the nucleoproteins to the problems of chromosome composition and structure is being investigated. This work has already made substantial contribution to the understanding of the make-up and behavior of the chromosomes and has given new direction to studies of protein synthesis.

In collaboration with Professor Astbury in Leeds and Professors Svedberg and Tiselius in Uppsala, Professor Hammarsten is studying the structure of the nucleic acids and is investigating the nature and amount of nucleotides in biological material. In this work it has been demonstrated that certain nucleotides are able to link protein units together in such a manner that the huge protein molecules result.

DUKE UNIVERSITY: STUDIES IN THE PHYSICAL CHEMISTRY OF PROTEINS

The molecular weight of proteins, as determined by the sedimentation method of Svedberg and the osmotic pressure methods of Adair and others, is an important criterion for the characterization of any given protein species, but it is not an unequivocal test. Investigators have found, for instance, that proteins of the same molecular weight may differ from one another in respect to electric charge, dielectric properties, and so forth.

There are indications that the shape of protein molecules may be an important determining factor in species characterization. It is known that the apparent shape of macromolecules frequently reflects their intrinsic structure; and quantitative measurements of the shape factors of proteins may, therefore, furnish information on the way these substances are put together and on their molecular kinetic properties. Such measurements may likewise throw light on the nature of the structural changes in proteins under the influence of denaturing and dissociating reagents.

At Duke University during the past two years Hans Neurath and his associates have carried out diffusion and viscosity measurements of protein solutions. By determining the diffusion constant and the relative viscosity of solutions of crystalline tobacco mosaic virus protein, they have been able to establish the molecular shape and weight of this protein. They have also employed diffusion and viscosity measurements for determining the molecular shape and weight of denatured serum albumin. They have found that denaturation of this protein results in an enormous increase in the molecular dissymmetry, the ratio of the molecular axes increasing from about 4 to 20.

To enable these workers to extend their research during the next three years, the Founda-

tion made a grant of \$9,000 to Duke University to be available until June 30, 1943, for the salaries of research assistants and to provide equipment and supplies.

PRINCETON UNIVERSITY: STUDIES IN PROTEIN AND HORMONE SYNTHESIS

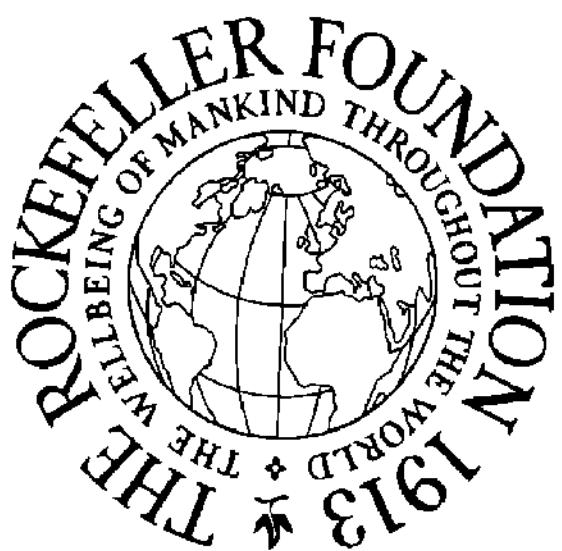
Princeton University received a Rockefeller Foundation grant of \$40,000 in 1940 toward the support of research in the Frick Chemical Laboratory on problems of biological significance. This sum will provide research assistants over a five-year period for Professors Eugene Pacsu, E. S. Wallis, and Henry Eyring.

Professor Pacsu has recently made important new advances in the field of protein chemistry. Proteins are built up from a great number of nitrogen-containing units known as amino acids, and natural proteins contain associations of these in large numbers, in arrangements as yet unknown. Professor Pacsu has demonstrated that a compound containing three constituent amino acids (a tri-peptide) can double up and form a six-peptide, which in its turn can give a twelve-peptide, and so on. The work already carried out indicates that molecules containing ninety-six of these constituents with a molecular weight as great as five thousand can be prepared. This is the first time that the chemist

has been able to synthesize a compound which even approaches natural proteins in form and complexity.

Professor Wallis is studying the naturally occurring hormones—chemical substances secreted by certain glands within the body and carried to other organs upon which they exert specific stimulating or controlling effects. He is concerned with the chemical constitution of hormones and with the naturally occurring plant and animal materials from which they may be produced by processes of reorganization and synthesis. His program involves studies of methods for the laboratory preparation of corticosterone, the hormone secreted by the adrenal cortex. This hormone provides the cure for Addison's disease and is sometimes useful in preventing surgical shock. The configuration of this particular compound is known, and already important steps have been achieved in the building up of the molecule in the laboratory.

Professor Eyring's work centers around the problem of the way in which a plant, aided by chlorophyll, utilizes the available carbon dioxide and water vapor and synthesizes the various sugars and starches which it uses as food. Recent analysis of this problem by Professor Eyring and John L. Magee suggests a mechanism for building up these complex products which differs from



Photograph Excised Here

Crellin Laboratory, California Institute of Technology.
Electron diffraction apparatus used for the study of the
structure of gas molecules.



Photograph Excised Here

Present status of construction of giant cyclotron magnet,
University of California.

that formerly postulated, in that formaldehyde is no longer considered one of the stages of the process. The newly proposed intermediate stage consists of the formation of a keto acid. Such an intermediate suggests a mechanism whereby not only carbohydrates can be built up but also the amino acids which are the constituent units of plant proteins. Professor Eyring plans to initiate a program of photochemical research designed to test how far, from postulated intermediates in the process of photosynthesis, the synthesis may proceed in the direction of amino acid formation, and what is the fate of such amino acids in the production of plant proteins.

UNIVERSITY OF WISCONSIN: RESEARCH ON THE BIOCHEMISTRY OF NITROGEN FIXATION

Photosynthesis is perhaps the most important chemical reaction in nature. Second only to this process in its importance to life is the fixation of atmospheric nitrogen. Nitrogen is usually the limiting factor in the development of plants, hence indirectly of animals. Because of the high solubility of its salts, it is readily lost from the soil through leaching. Moreover, many soil microorganisms act on combined forms to liberate nitrogen in the free state.

Nitrogen may be fixed for purposes of soil fertilization either by chemical or by biological



Photograph Excised Here

Library building (circle), Marine Biological Laboratory,
Woods Hole.



Photograph Excised Here

Ryerson Physical Laboratory, University
of Chicago. High intensity tungsten
light source for absorption spectra.

methods. The present chemical production of fertilizer nitrogen in this country is about 0.35 million tons, which is an extremely small part of the annual consumption. The biological methods of fixation are of two types. One is carried on by certain free-living bacteria; but these independent producers can be controlled but little by man. The other type, known as symbiotic nitrogen fixation, is the cooperative work of leguminous plants and certain species of bacteria called the *rhizobia*. These microorganisms invade the roots of legumes, forming tubercles or nodules. In these nodules the bacteria are supplied room and board by the host plant and in return furnish it with nitrogen through fixation of the free element. The highly important fact about the latter process is that man has been able to control it, to a certain extent, through choice of legume and development of new varieties of leguminous plants for certain areas, by artificial inoculation of seed with pure line strains of the bacteria, and by ordering the environment so that increased efficiency may be reached. Although much has been accomplished in the way of control over the symbiotic nitrogen fixation process, there is every reason to believe that there are possibilities of its greater utilization in the future when it is more thoroughly understood.

For a number of years the mechanism of symbiotic nitrogen fixation has been under investigation at the University of Wisconsin, with biochemists, biophysicists, bacteriologists, and botanists cooperating in the work, which has been directed by Professor P. W. Wilson, of the Department of Agricultural Bacteriology. Definite advance has been made in knowledge of several aspects of the process: notably, (1) the physiology of the bacteria concerned in the fixation, especially with respect to their need for accessory food factors, such as vitamins B₁ (thiamine) and B₂ (lactoflavin) and possibly biotin, in addition to carbohydrates and minerals; (2) the relationship between the photosynthetic and nitrogen fixation processes in leguminous plants; (3) the characteristics of the enzyme systems concerned with fixation; and (4) the mechanism of the fixation process, especially the mode of invasion of the plant by the bacteria and the possible course of the chemical reactions which result in fixation. Professor Wilson and his co-workers now plan further exploration of the fields opened for investigation by these researches, particularly intensive study of the physics and chemistry of the fixation process. To assist the University in providing additional research personnel for work along these lines during the five years ending June 30, 1945, the

Foundation has provided \$22,500. The special apparatus and equipment required for the micro-techniques which must be employed in this research are available in the University laboratories; and various methods of microanalyses have been developed.

CATHOLIC UNIVERSITY OF AMERICA: RESEARCH ON STEROLS

The past twenty years have seen the development of a new branch of chemistry dealing with a group of substances, called sterols, which play an important part in life processes. The molecules of these substances are composed largely of carbon and hydrogen, with a few atoms of oxygen occurring here and there. The atoms are arranged within the molecule in closed loops or rings.

The commonest member of this group, cholesterol, occurs in practically every cell in our bodies and is important in our metabolism. It makes up an appreciable part of the brain tissue. Other substances belonging to the group are progesterone, a female sex hormone; androsterone, one of the male sex hormones; vitamin D, the antirachitic vitamin which regulates the metabolism of the bone; and the recently discovered carcinogenic hydrocarbons, which promote growth, but in an uncontrolled way, when they effect entrance into an injured cell.

Research on these important substances is being carried out in laboratories throughout the world. But the work is only at the beginning stage, and many of the most fundamental questions are still unanswered. In 1940 The Rockefeller Foundation contributed toward researches in this field through a grant of \$28,000 to the Catholic University of America for the support of investigations to be carried out under the direction of Professor F. O. Rice over a five-year period.

Professor Rice is working on the synthesis of sterols. He has developed a method of building up compounds at high temperature instead of at approximately laboratory temperature. He has found that certain small units, if passed through a tube heated to either a red or a white heat, cling together as they leave the tube. If suitable units and conditions are selected a carbon skeleton, or group of rings of carbon atoms, can be obtained similar to that found in the sterols. With this technique he has made a multitude of compounds containing carbon skeletons. Through these experiments Professor Rice is attempting to learn how nature itself carries out organic reactions and to discover the natural and presumably simple processes which brought about the genesis of the various chemical products that constitute living matter.

UNIVERSITY OF TEXAS: WORK ON GROWTH-PROMOTING SUBSTANCES

One of the notable scientific achievements of the year 1940 was the synthesis of the vitamin pantothenic acid, a member of the important group of food factors known as the vitamin B complex, originally believed to be one vitamin and later found to consist of a number of vitamins all necessary to the normal maintenance of life's economy.

The newly synthesized vitamin, popularly called "the acid of life" was found by Professor Roger J. Williams (earlier at Oregon State University, now at the University of Texas) to exist in all forms of living cells and to be essential for normal growth. The vitamin isolated by Professor Williams in 1939 was synthesized during the past year through two lines of investigation, one carried on by him at the University of Texas and the other by scientists at the Merck Research Laboratories in Rahway, New Jersey.

Tests have shown that pantothenic acid has a remarkably stimulative effect on growth. A single isolated yeast cell, for example, normally grows very slowly; but within wide limits, any desired rate of growth has been secured by the addition of pantothenic acid. Similar effects have been shown with green plants, animals, and bacteria.

In man and the higher animals pantothenic acid is stored in various tissues, particularly the liver. Among the ten known vitamins only this one has been proved to be an essential compound in the machinery of living matter and universally present in all cells. Thiamin (B₁, the antineuritic vitamin), riboflavin, and nicotinic acid (the pellagra-preventing vitamin) are thought to be essential substances, but extensive proof of this has not been offered. Vitamins A, C, D, E, and B₆ have not been shown to be present in all types of living cells.

The Rockefeller Foundation has contributed toward Professor Williams' work on pantothenic acid since 1936. Through a grant of \$15,000 to the University of Texas in 1940 it will assist him in further research on the potentialities of the vitamin during the next three years.

COLUMBIA UNIVERSITY: STUDIES OF PLANT GROWTH SUBSTANCES

Within the past five years it has been demonstrated that vitamins are as necessary for the development of plants as they are for the growth and well-being of animals. Some plants, especially certain bacteria, yeast, and molds, require an external supply of vitamins.

Since vitamins perform the same or similar functions in both plants and animals, the dis-

coveries concerning their effects in plants can frequently be applied to animals. Thus the study of their relation to plant development promises to throw light on many puzzling and fundamental problems in animal biology, and to furnish material assistance in increasing our knowledge of the way in which they accomplish their function.

During the past two years The Rockefeller Foundation has contributed toward studies of plant growth substances under the direction of William J. Robbins, professor of botany at Columbia University and head of the New York Botanical Garden. Through a recent appropriation of \$25,000 to Columbia University support of this work will be continued until January 31, 1946. This aid will provide Professor Robbins with research assistance, equipment, and supplies necessary for further research on vitamin deficiencies of various microorganisms and excised roots, and for the study of the significance of vitamins in such fundamental phenomena as hybrid vigor, sexual reproduction, and polyploidy—the condition in which chromosomes are trebled or quadrupled.

UNIVERSITY OF PENNSYLVANIA:
STUDIES OF CELL PHYSIOLOGY

There has been much productive research in recent years on the mechanism and behavior of

living cells, yet many important problems of cell physiology remain unsolved. Some of these problems are associated with processes occurring at cell surfaces, where the exchange of materials between the cell and its surroundings is regulated; and where is located the chief activity of the electrical charges that accompany and give visible evidence of such important vital processes as, for example, the conduction of the nerve impulse.

Because of the theoretical and practical importance of this field, studies have been made of the surfaces of various types of cells by many different methods. This work has been handicapped, however, by the impossibility of separating action at the surface of the cell from the bewildering variety of processes occurring simultaneously in its interior. Professor M. H. Jacobs of the University of Pennsylvania has found that this difficulty may be largely overcome by using the red blood cell for cell surface studies. The red blood cell is unique in providing a highly characteristic cell surface with a minimum of internal complications. Simplicity of structure, ease of procurability, the convenience and quantitative accuracy of the methods available for its study make this cell an almost ideal type of material for the investigation of the physiological properties of cell surfaces.

To assist Professor Jacobs in extending his studies, particularly on the permeability of the cell surface to various dissolved substances under natural and experimentally modified conditions, The Rockefeller Foundation has provided \$10,000 for his use for research assistance and supplies over the four-year period ending June 30, 1944.

A circumstance which makes studies of this kind especially desirable at the present time is the fact that the recent work of Langmuir and others on the properties of artificial molecular films has now reached a point where its application to biological problems is becoming possible. Of all cellular structures to which such applications may be made, the surface membrane of the red blood cell is one of the most promising, estimates of its thickness being of the order of magnitude of from one to several layers of large molecules. Numerous striking resemblances have recently been reported between the behavior of artificial films of known composition when exposed to substances which penetrate, destroy, or in various ways change their physical properties, and that of red blood cells under similar conditions. The scientific advantages of bringing together two lines of work, one biological, the other nonbiological, which have hitherto run parallel with few points of contact, are obvious.

STATE UNIVERSITY OF IOWA: STUDIES OF GROWING EMBRYONIC CELLS

The gaps in our knowledge of the mechanism of the normal cell have been a serious hinderance to an understanding of the abnormal behavior of cells and organisms.

To shed light on the fundamental processes of normal growing cells, both because of the scientific interest of these phenomena in themselves and because of their possible practical significance in helping to clear up the problems of pathological cells, Professor J. H. Bodine of the State University of Iowa has for some time been studying the structural and physiological properties of the developing cells of the grasshopper embryo. The reasons for the choice of this embryonic material for basic cellular studies are the relative simplicity of the organism, its lack of hormone or other disturbing factors, the comparatively large size of its cells, and the fact that the organism is a cold-blooded one so that temperature control is an easy matter.

It has been possible to standardize the normal course of development of the grasshopper embryo and to form an accurate picture of the cellular behavior from the time of the fertilization of the egg until hatching. Thus practically all important problems of cellular biology are

possible of attack in a quantitative manner in this material.

Nature has so arranged the sequence of the activities of the cells that at a certain definite stage in their development they "block," or more or less cease division, and remain in this state for some time, quite independent of their external surroundings. This natural block in cell activity enables the investigator to study the various physiological mechanisms in the same cells when they are dividing and when they are at rest. The information obtained concerning cell block shows rather a clear distinction between the mechanisms employed by the cell during the process of cell division and growth, and during the periods of rest or block.

The Rockefeller Foundation has assisted the State University of Iowa in the support of Professor Bodine's work since 1934, appropriating in 1940 \$24,000 for the continuance of this aid for an additional five years. During this period Professor Bodine will study such phenomena as the electrical properties of embryonic cells, the origin of the electromotive force and associated phenomena in these cells, the action of x-rays and other irradiations on the physical and physiological properties of the normal embryonic cell in different physiological states, and the behavior of enzymes during development.

SWARTHMORE COLLEGE: RESEARCH ON RESPIRATION

The need of oxygen is man's most insistent requirement. If he is deprived of this necessity for as long as a minute his suffering is extreme, if the period of deprivation is slightly extended he loses consciousness and soon dies. Most warm-blooded animals resemble man in inability to survive for longer than this brief time without oxygen, but there are certain diving animals which can remain under water without breathing at least ten times as long as is possible for man, despite the fact that their storage capacity for oxygen seems to be about the same as his. These divers are not confined to a single group but include such various animals as the seal, the whale, the muskrat, the beaver, the hippopotamus, and the otter, as well as birds of several orders.

For some time Professor Laurence Irving of Swarthmore College has been studying the respiratory mechanism in diving animals in order to determine what it is that enables them to survive submergence. He has found that their endurance seems to result from an adjustment which they make to conserve a major part of their limited oxygen reserve for the use of the tissues which are most sensitive to the lack of oxygen, namely the brain and possibly the heart. The adjustment is brought about by a change in

the circulation which reduces the flow of blood through the muscles and increases the flow through the brain. It has been observed to take place within ten seconds after breathing is interrupted. Thus, it seems clear that the redistribution of the blood during diving and the regulation of the processes of recovery are the essential adjustments which make diving possible. This control of circulation is not peculiar to diving animals, but is common to man and other animals. It is more effective and more conspicuous in the divers and can be observed over a longer period. And since it is merely an exaggeration of the protective devices operating during asphyxia in all mammals, it offers unusual opportunities for the investigation of respiration phenomena in the entire group.

The Rockefeller Foundation made an appropriation of \$10,500 to Swarthmore College in 1940 toward the support over a three-year period of further studies by Professor Irving on the mechanism of respiration in diving animals, and of other studies which he is making on oxygen transport in fish. The properties observed in the blood of fish are common to the blood of all vertebrates, therefore these studies will be useful in determining the basic chemical attributes which give the blood its peculiar usefulness in respiratory transport.

IOWA STATE COLLEGE: RESEARCH IN GENETICS

Though much has been learned in recent years about the problems of inheritance and variation, there still remain many questions to puzzle the experimental biologist. Two of these questions—the basis of hybrid vigor and the causes of change in virulence of disease bacteria in relation to the host—are being investigated at Iowa State College under the direction of Professor E. W. Lindstrom and Professor J. W. Gowen. The Rockefeller Foundation is contributing \$21,000 over the three years ending June 30, 1943, toward the provision of facilities and research assistance for this work.

General well-being or vigor has a marked dependence upon past heredity and ancestral matings. When a population of animals or plants is inbred, as in the formation of resistant and susceptible lines of mice, a marked loss of vigor, reproductive ability, and disease resistance is generally observed. When such inbred lines are crossed, a recovery of this lost physical vigor often occurs plus an additional increase as high as 300 per cent, if vigor is measured quantitatively, as in reproductive capacity. Thus wild drosophila with an average production of fifty eggs per day, when inbred for ten generations suffer a loss of 46 per cent in productivity. However, intercrosses

between such lines increase reproductive vigor, the progeny giving as high as eighty eggs a day per female. When various strains of corn are inbred for a number of generations, both the corn stalk and the ear of corn become progressively shorter year by year until both the plant and the ear become dwarfs in size. However, when two long-inbred strains of this sort are intercrossed, the first generation hybrid plants are much taller than the parent varieties were before they were reduced in size through inbreeding; and the ears of corn produced are likewise greatly increased in size over anything found in the parent strains. In these hybrids the uniformity of height of the corn plants and the uniformity of length of the ears are most striking. All plants and all ears are practically duplicates of each other, in contrast with ordinary corn, which produces small, medium, and large ears and stalks. This phenomenon is called hybrid vigor.

Two major explanations of this enhanced vigor of crossed races have been suggested. The first is that inbreeding leads to a fixation of some unfavorable inheritance. The second is that the cytoplasm of the cell which is continually concentrated toward a particular type is in some way detrimental. Critical experiments to test the correctness of one or the other of these hypotheses constitute one of the two main lines

of research on which Professors Lindstrom and Gowen are at present engaged.

The other special field of study of these workers is the nature of disease resistance. When an epidemic starts, a chain of events occurs which enables a particular pathogen to sweep through a species. The investigators aim to particularize these events. If host and pathogen are in close association, one must change in susceptibility or the other in invasive power if epidemic disease proportions are reached. Irwin's and Schott's experiments with mouse typhoid gave one of the first proofs that, after twenty-five generations of controlled breeding, the extremes of the host strains differ in susceptibility by 7,000 times—from the most susceptible, in which 5,000 bacteria of a standard culture will kill half the hosts, to the most resistant, where it takes 35,000,000 bacteria. Inheritance intimately affects the distribution of the differences in resistance. But inheritance works too slowly in the host population to explain completely the rise of epidemics. The immediate origin seems rather in mutations of the pathogen's virulence, and the selective forces isolating these invasive types, coupled with certain environmental conditions. Through experiments making use of pure strains of maize and of mice, the Iowa investigators are trying to analyze the genetic mechanisms and the environ-

mental factors which combine sometimes to produce no change and sometimes to produce an almost explosive increase in virulence of a pathogen.

ROSCOE B. JACKSON MEMORIAL LABORATORY: EFFECT OF INTERNAL ENVIRONMENT ON GERM PLASM

One of the most important concepts of the science of genetics has been that of the relatively unchanging nature of the germ plasm when it is exposed to an altered environment. This theory has conditioned a great part of genetic research during the present century. However, a dozen years ago the work of Muller and others demonstrated that external agents such as x-rays, radium, and to a lesser extent ultraviolet light, markedly change the germ cells both of animals and of plants, so that the resulting progeny through successive generations show altered hereditary characters.

But germ cells also have an internal chemical environment which undoubtedly varies considerably from individual to individual and even more so from strain to strain and from race to race. Recently, at the Roscoe B. Jackson Memorial Laboratory, under the direction of Dr. C. C. Little, the technique of transferring ova from the Fallopian tubes of one animal to those

of another animal of different internal environment has been developed to a point where successful transfer is sufficiently frequent to enable a large number of animals to be produced by this method. This opens up a broad field of investigation of the effects of varying internal chemical constitutions upon the developing egg.

Dr. Little now has preliminary evidence which shows that mice descended from transferred ova behave very much like first generation hybrids in that they will grow tumors which originate in and are peculiar to the foster mothers as well as tumors which originate in and are peculiar to the strain to which they first belonged. This is an extraordinary and unexpected result, and affords the first opportunity to measure by means of further transplantation studies the nature of the foster mother influence. To enable the Laboratory to expand its work in this field The Rockefeller Foundation appropriated \$13,500 for the salaries of research assistants for Dr. Little during the three years beginning July 1, 1940.

INDIANA UNIVERSITY: STUDIES IN CYTOLOGY AND GENETICS

In 1940 the Foundation appropriated \$20,000 over a five-year period toward the support of research in cytology and genetics at Indiana Uni-

versity under the direction of Professor R. E. Cleland, head of the Department of Botany, and Professor T. M. Sonneborn of the Department of Zoology.

Professor Cleland has given many years of study to the cytology and genetics of the genus *Oenothera*, the evening primrose. The chromosomes of various species of this genus have been found to be arranged in a peculiar ringlike structure quite different from the usual chromosome configuration. The connection between this deviation from the ordinary chromosome arrangement and the peculiarities of inheritance and mutation observed in species of this genus is the problem which Professor Cleland is now investigating.

Professor Sonneborn's studies are in the field of protozoology. He is working with the slipper-shaped protozoan, the *Paramecium*, which affords excellent material for genetic analysis. His program for the next few years includes: clarification of the normal genetic phenomena in the Protozoa; a study of the role of the environment in the determination of genetic characters; a study of the mechanism of gene action in the development of characteristics; and investigation of the nature of the gene.

The Foundation grant will provide the salaries of research assistants for Professors Cleland

and Sonneborn during the period July 1, 1940, to June 30, 1945.

McGILL UNIVERSITY: STUDIES IN CYTOLOGY AND GENETICS

Through an appropriation of \$11,000 to McGill University, the Foundation will provide Professor C. L. Huskins, head of the Department of Genetics, with research assistance, equipment, and supplies for studies in cytology and genetics during the four years ending June 30, 1944. An important feature of this program will be three lines of interrelated work involving studies, in plants, fruit flies, and mice, of the genetic processes of cell division in the parent organisms by which the germ cells are formed. Investigations will also be continued on the steps between gene action and the display of the characters common to a given group.

Professor Sheldon Reed, an associate of Professor Huskins', has devised a technique which permits transplantation of the outer layer of an embryo to new-born mammalian hosts. The grafts become completely functional and are excellent material for studies of the development of coat color. Grafts have also been made of outer embryonic layers which have been maintained for some time in tissue culture upon agar plates on ice, or upon the chorioallantoic membranes

of the chick. This experimental work is of fundamental significance in embryology as well as in genetics. It provides the most accurate means of measuring the time of embryonic determination of diverse characters which has up till now been devised.

In the field of plant genetics Professor Huskins recently completed studies of chromosome mutations in wheat and oats which he began in 1924. These studies involved growing some three to six thousand plants and examining from one hundred to three hundred of these cytologically each year.

CONNECTICUT AGRICULTURAL EXPERIMENT STATION: THE GENETICS OF PLANT GROWTH

The Connecticut Agricultural Experiment Station is in possession of unusually favorable maize lines for research on the action of chromosomes on growth. Investigations of this kind are conducted there by Professor Donald F. Jones. The Rockefeller Foundation has appropriated \$17,500 to provide research assistance, equipment, and supplies for this project during the five years beginning July 1, 1941.

The maize material which will be used in the studies is the result of a long-continued investigation of the effects of inbreeding and cross breeding, beginning in 1904. Lines of maize have

been self-fertilized until they have been brought to a high degree of uniformity and constancy. In these lines small changes are easily seen and can be measured statistically. So far nearly all variations observed have been degenerative, making the plants less able to survive. But one change has been noted that is distinctly favorable. It is proposed to find more changes of this type by growing a large number of progenies; to compare any changes, however slight, with the original form; and to discover the nature of the change as far as possible by genetic and cytological analyses of the variant types. Changes are also being induced by treatment with physical agents, such as x-rays, ultraviolet light, and alternating temperature extremes. It has already been shown that chromosome rearrangements effected in this way have a profound influence upon growth.

CALIFORNIA INSTITUTE OF TECHNOLOGY: SEROLOGICAL GENETICS

The study of the immunological properties of the blood has led to the development of one of the most precise and delicate techniques in biology. The application of this technique to bacteriological and clinical problems has produced results of great practical and theoretical importance and advances in the chemical analysis of the phenomena concerned.

Here and there serological techniques have been successfully used in other biological fields, but these wider possibilities have been imperfectly explored. One of the promising fields for further investigation is the application of the techniques of immunology to genetics. The results already obtained have led Haldane in England and Irwin at the University of Wisconsin to suggest that antigens may be rather direct gene products; and thus it seems possible that in this field lies the best hope of attacking the general problem of gene action. In any case, the kinds of specificity with which the geneticist and the immunologist deal are so similar that use of the techniques of both on the same material seems certain to yield valuable results.

At the California Institute of Technology a beginning has been made in the study of serological genetics in the Department of Biology under the direction of Professor A. H. Sturtevant. To assist the Institute in providing equipment and supplies for this work during the three years beginning July 1, 1940, The Rockefeller Foundation made an appropriation of \$12,000.

Some years ago Professor F. R. Lillie, at the University of Chicago, called attention to the parallelism in specificity of serological reactions and fertilization, studying the agglutination of sperm by egg water in an attempt to push

this analogy further. Recently, Professor Albert Tyler of the California Institute of Technology has been studying this phenomenon and related matters with promising results. In certain cases sperm may be agglutinated by water in which eggs of the same species have stood. Extracts of sperm may lyse the membranes of eggs of the same species; and mixtures of sperm extracts and egg water may lead to a precipitation reaction. Thus three of the chief indices of serological reactions are present. The assistance provided by the Foundation's grant will enable Professor Tyler to push forward his work.

COLUMBIA UNIVERSITY: CYSTINURIA STUDIES

Cystinuria is a disease of man in which, because of some hereditary defect of metabolism, an abnormal amount of the amino acid cystine is secreted. The disease is characterized by the presence of cystine crystals in the urine and by cystine calculus (stone) formations in the kidney. Cystine and another amino acid, methionine, are the body's chief sources of sulphur supply and probably the forerunners of its sulphur compounds.

Cystinuria is of interest to the biochemist from the standpoint of sulphur metabolism, and to the geneticist because of its hereditary nature. There

are several family histories in which it can be traced through three and four generations. Urologists are interested from the point of view of stone formation.

Until recently experimental studies of cystinuria were impossible as no laboratory animals showed this defect of metabolism. About five years ago, however, Professor Erwin Brand of the Department of Biochemistry of the Medical School of Columbia University discovered the disease in two pedigreed Irish terriers. In collaboration with Professor George F. Cahill of the Department of Urology, Professor Brand began in 1936 to breed these two dogs with their nearest kin and to inbreed the offspring of these unions for the purpose of establishing a pure-breeding race of cystinuric dogs in which to study the genetics, the biochemistry, and the urological manifestations of the metabolic disease. To aid in providing the equipment, supplies, and laboratory assistants necessary for this project the Foundation made three grants to Columbia University—\$5,000 in 1936, \$12,200 in 1938, and \$11,800 in 1940.

The establishment of the desired strain required a longer time than had been expected, but by the close of 1940 there were on hand about seventy Irish terriers of the cystinuria line descended from the two original males. Curiously,

no female dog with the metabolic defect has yet appeared.

MARINE BIOLOGICAL LABORATORY, Woods Hole: LIBRARY ADDITION

The Marine Biological Laboratory at Woods Hole, in addition to being the world's foremost marine laboratory, has become a great international research institute in all fields of modern biology. Increasing numbers of geneticists, virus workers, endocrinologists, general physiologists, embryologists, biophysicists, and biochemists are taking advantage of its excellent facilities. During the summer months some five hundred workers in all fields of biology are gathered at the Laboratory for intensive research and training.

The Laboratory has one of the largest biological libraries in the country. At present, it shelves nearly forty-five thousand bound volumes, of which some six thousand are nonserial books. The reprint collection involves over a hundred thousand items, and the current-journal list has over thirteen hundred titles. The library shelf capacity, however, is insufficient to handle further intake satisfactorily, necessitating additional space. To assist the authorities in constructing and furnishing a wing, which will be an addition to the main building, and which should accommodate the normal expansion of the li-

brary for thirty years, The Rockefeller Foundation has made an appropriation of \$110,400 to the Laboratory.

There should be, somewhere in the United States, a practically complete library covering all the needs of biological workers, situated where it will be most accessible to the largest number of workers. Woods Hole is the only center in the country where five hundred or more biologists gather for work yearly, making it the logical location for a full collection of biological literature. The library not only meets the needs of a great number of resident workers during the summer months, but also will lend literature throughout the school year to any biologist requesting it. And many biologists must depend on this library to keep up with the literature of their subject, as only a few of the larger universities can subscribe to as many as thirteen hundred journals in biology and closely related fields.

FELLOWSHIPS

In the natural sciences, as in its other fields of activity, the Foundation was obliged in 1940 to curtail its fellowship program because of war conditions. However, it supported and administered thirty-seven fellowships in experimental biology and related disciplines during the

year. Of these, seven were new grants, twenty-nine were carried over from previous years, and one was a second fellowship. The holders of these grants represented eleven countries: fifteen were citizens of the United States, eight were from Great Britain, four from Denmark, two from the Netherlands, two from Latvia, and one from each of the following countries—Bulgaria, Canada, Norway, Peru, Sweden, and Switzerland. They worked in seven different countries: twenty-four in the United States, four in Sweden, three in England, two in Denmark, two in Switzerland, one in the Netherlands, and one in both Canada and the United States. Thirteen carried out studies in plant or animal physiology; nine in biochemistry; three in genetics; two each in biophysics, embryology, organic chemistry, and the relation of isotopes to biological research; and one each in nuclear physics, physical chemistry as applied to biology, photobiology, and the logic and methodology of science.

In addition to granting fellowships to individual workers, the Foundation contributes funds to the National Research Council to enable it to maintain a fellowship program in the natural sciences. In 1939 the Foundation made a grant of \$180,000 to the Council to be used for this purpose during the period July 1, 1940, to June 30, 1943. In 1940 the Council supported

forty-three fellowships from this fund, eighteen of them new fellowships and twenty-five continued from previous years.

GRANTS IN AID

The Foundation appropriated \$270,000 to finance grants in aid in fields of the natural sciences during 1940. Sixty-nine contributions of this kind, ranging in amount from \$500 to \$7,500 and totaling \$247,235, were made during the year, fifty-two of them to give short-term assistance to certain promising investigations or to projects for the advancement of research, and seventeen to aid institutions in the United States and other countries, for one year or in some instances for two years, in providing stipends for distinguished refugee scholars from Europe whom they had invited to their staffs and whose salaries they will meet from their own budgets at the termination of the Foundation's assistance.

The fifty-two grants for research aid were distributed among eleven countries: the United States received twenty-five; England eleven; Scotland and Canada three each; Denmark, France, and Sweden two each; and Argentina, Finland, Netherlands, and Switzerland one each. One of these grants went to the Service de Documentation, Centre National de la Recherche Scientifique, Paris, for the purchase of a

microfilm machine and important foreign journals to serve the needs of scientists who had been regrouped in centers where there were no scientific libraries; one went to the Massachusetts Institute of Technology for assistance in connection with the completion of an improved differential analyzer for scientific computations; one toward the support of a symposium on growth and development held in June 1940 at Salsbury Cove, Mt. Desert Island, Maine; and the remainder for studies in the following fields: biochemistry, sixteen; plant or animal physiology, ten; embryology, five; genetics, five; application of physical and mathematical techniques to biological study, five; organic chemistry, three; biophysics, two; nutrition, two; and ecology, one.

Of the seventeen refugee scholars for whom assistance was provided, seven are French, four German, three Polish, two Austrian, and one Italian.

GENERAL PROGRAM

CORNELL UNIVERSITY: RESEARCH IN PHYSICAL CHEMISTRY

Included in the Foundation's appropriations for projects in the natural sciences in 1940 were a few grants toward the support of undertakings

outside the scope of its program in experimental biology. These grants were in the nature of emergency aid to enterprises of significance for the entire field of the natural sciences. One of the grants, amounting to \$17,000, went to Cornell University toward research over a three-year period by Professor Peter J. Debye, a Hollander, formerly director of the Kaiser Wilhelm Institute of Physics in Berlin-Dahlem.

Professor Debye came to the United States to deliver the Baker lectures at Cornell University, and since circumstances prevented his return to Europe the University took advantage of the opportunity to secure him as a permanent member of its faculty. It will assume full responsibility for the support of his work at the termination of The Rockefeller Foundation's present grant.

Professor Debye received the Nobel Prize in chemistry in 1936 for his contributions regarding molecular structure. He is now working in those fields of molecular and crystal structure which are of the greatest significance for the emerging science of molecular biology. His most notable investigations relate to electrical and optical properties of matter, the thermodynamic properties of solutions, and the determination of molecular structure by the scattering of x-rays and electrons in gases.

AMERICAN INSTITUTE OF PHYSICS: PUBLICATION PROGRAM

History records many discoveries whose value to society was temporarily lost because the discoverer failed to give his results adequate publication. For some years now the principles have been generally admitted that a research project is not complete until its findings have been published and that the costs of the publication should be treated as a proper and integral part of the costs of the research itself. Despite this recognition, however, many of the journals in the pure sciences have led a hand-to-mouth existence, carrying chronic deficits, and dependent on outside help to keep afloat. With the coming of the depression the situation became acute and led to a search for means to finance the publications on a business basis.

In the field of physics the following plan was put into effect: four separate societies of physicists were federated into a central agency, the American Institute of Physics, with headquarters in New York. Considerable overhead expense was saved by consolidating the offices of the several journals of these societies into one business office, and by establishing uniform standards of printing and management. It was decided that the problem of financing the publication of a study should be referred directly to

the institution responsible for the study. After an article was accepted for publication, set up in type, and run off in proof, a bill stating the charge for publishing it in the journal (about one-fourth of the actual cost) was submitted with the proofs. The bill specified that if the university or other organization should be unable to accept the charge as part of the expense of research, the American Institute of Physics would meet the cost out of a special fund.

During the first two years of this experiment the special fund was provided by an anonymous donor, and beginning in 1932 by The Rockefeller Foundation. The Foundation's grant in 1932 was \$15,000, being supplemented by \$6,000 in 1935, which carried the plan to 1939. By that time about 90 per cent of the articles published in *The Physical Review* and the other physics journals were being paid for by the institutions from which the articles came, and there was good reason to hope that the problem of financing publication of research in physics had been solved. But the war upset this situation for three reasons: first, over one-third of the subscriptions of the journals published by the Institute are foreign, and this important source of income has been seriously reduced; second, the restriction or suspension of European publishing media has already increased by a factor of three the

amount of material submitted for publication from foreign research laboratories; third, several hundred pages annually are currently being devoted to publishing articles written by physicists who have come to the United States from Europe. To assist the Institute in adjusting the expenses of its publication program, the Foundation made an emergency grant of \$20,000 for use during the period ending December 31, 1941.

Despite the temporary setback which its publication plan has suffered through war conditions, the Institute has made a valuable contribution to the management of scientific publication and has furnished a pattern of economy and business efficiency in this field.

NATIONAL RESEARCH COUNCIL: PUBLICATION OF MATHEMATICAL TABLES

In theoretical work in all branches of science the complicated mathematical formulae involved make the task of computing numerical results arduous and time consuming. Any measure, therefore, which helps to make these complicated formulae available for practical use aids not one special problem or one special field, but the whole range of quantitative scientific analysis.

For some years the National Research Council has maintained a Committee on Bibliography

of Mathematical Tables and Aids to Computation, which keeps in close touch with the many present activities in the field of numerical computation, both in the United States and abroad, and serves as an effective means of correlating and controlling all these widespread activities.

The Committee has found that a real service can be rendered to scientific research by the publication of certain important numerical and other mathematical tables already in existence. There is every reasonable expectation that, in most cases, the returns from the sale of these tables will pay for their publication.

The National Research Council felt that it was advisable to set up a revolving fund to be used by the Committee to finance the publication of important mathematical tables, aids to computation, and bibliography of such material. To enable the Council to carry out this plan The Rockefeller Foundation made a grant of \$15,000 during the past year. The Committee's estimates indicate that such a sum will assure the publication, over a long period, and probably permanently, of numerical and other mathematical tables which will effectively serve all fields of science.

THE SOCIAL SCIENCES

THE SOCIAL SCIENCES STAFF
During 1940

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JOSEPH H. WILLITS

Associate Director

SYDNOR H. WALKER

Assistant Directors

TRACY B. KITTREDGE

STACY MAY¹

Consultant

ANNE BEZANSON

¹On leave since June 13, 1940.

THE SOCIAL SCIENCES

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THE SOCIAL SCIENCES

DURING 1940 The Rockefeller Foundation appropriated \$1,499,000 for support of its program in the social sciences. Of this, about one-fourth, \$358,500, was voted for the support of economic research of diverse kinds. Institutions receiving assistance in this category were the Institute for Advanced Study at Princeton, the League of Nations' Economic, Financial, and Transit Department, the University of Delaware, University of Alabama, University of Minnesota, the University of Pennsylvania, and the University of Oxford.

The sum of \$300,000 was voted to the Social Science Research Council for studies in the economic history of the United States. This support was for a period of over four years. The project is an attempt to integrate the work of economists, historians, and statisticians.

For research and training in government, especially public administration, grants totaled \$240,500. In this field funds were appropriated to the Social Science Research Council, the Pacific Northwest Council of Education, Planning, and Public Administration, the School of Government of the University of Southern California, the University of Minnesota, and the National Institute of Public Affairs.

For studies of international problems, the grants totaled \$240,000. These studies will be carried on by the Institute of Pacific Relations, the New School for Social Research through its Graduate Faculty of Political and Social Science, the Swedish Institute of International Affairs at Stockholm, the Food Research Institute of Stanford University, and the American Committee for International Studies.

The Foundation appropriated the sum of \$50,000 for its own fellowship program, designed to develop able young workers in the social sciences in Europe and the United States. Both the number of fellows and the amount of funds provided in 1940 were reduced by one-half as compared with the previous year. The Social Science Research Council received an appropriation of \$75,000 for the fellowship program which it operates in this country.

Finally, \$235,000 was appropriated for grants in aid to be administered by the Foundation. Grants in aid are relatively modest sums given to universities or organizations for individual scholars who are working on a wide variety of topics. They permit, for example, the furnishing of an interim support, during temporarily abnormal circumstances; they supply small sums to complete minor but worth-while projects, and to make exploratory investigations into problems

which may subsequently be found to be desirable for support through regular appropriations. In 1940 the fund was used to perform the added function of bringing to this country outstanding European scholars whose work had been interrupted and who were in personal danger.

INSTITUTIONAL GRANTS

SOCIAL SCIENCE RESEARCH COUNCIL

Research on the Economic History of the United States. At the suggestion of a group of economic historians, a grant of \$300,000 to extend over a period of four years and five months beginning February 1, 1941, was made to the Social Science Research Council, for the support of research on the economic history of the United States, the islands, and the nearby territory. Most of the work in social sciences supported by the Foundation emphasizes present events. For genuine understanding of the causes, course, and significance of the processes of change in the economy of the United States, it is important to study the long flow of economic and social events, so that light may be thrown upon gradually developing structural and secular changes. The study integrates the work of economists, historians, and statisticians.

Four areas of research are stressed: (1) studies

of American enterprises; (2) study of a decade for which reliable data covering chronologically the chief economic activities of the nation are being collected; (3) promotion and guidance of local and regional economic and social histories; and (4) a study of authority in American economic life.

A committee appointed by the Council is closely supervising the program.

Public Administration Committee: Fluid Fund. A fluid fund of \$15,000 was appropriated for organizing exploratory studies, conferences, and small projects in the field of public administration. New administrative problems presented by war and the defense program are being studied by the Committee and opportunities for collaboration with the Federal Government are being explored. This fluid fund, available from January 1, 1941, to June 30, 1942, was granted to enable the Committee to continue this type of research activity.

Committee on Social Security; Fluid Fund. The fluid fund technique was also utilized in the \$15,000 grant to this Committee for organizing exploratory studies, conferences, and small projects in the field of social security, for the period of approximately one year from November 1, 1940. Besides studying the implications of the present emergency upon unemployment insurance and employment service programs, old age

and survivors' insurance, etc., various regional and general conferences, and cooperative arrangements at selected universities are being developed.

NATIONAL BUREAU OF ECONOMIC RESEARCH: RESEARCH IN FISCAL POLICY

As a national center for economic research, the Bureau has for over twenty years cooperated with governments, learned societies, universities, and individuals in conducting exact and impartial investigations in the field of economic, social, and industrial problems. The present project, for which \$20,000 was granted over a three-year period, was developed by an exploratory committee, now the Conference on Research in Fiscal Policy, composed of members of the faculties of economics in seven universities; government officials, and experts in banking and business. Central emphasis is placed upon the economic effects of fiscal policy.

The three studies now under way are: (1) An investigation of the nature of and the reasons for the divergences between taxable net income and net income as determined by the various methods accepted by accountants for use in preparing reports for stockholders and the public; (2) an extensive analysis of the prevailing relation of federal public borrowing to commercial and cen-

tral banking; (3) development of a classification of federal expenditures on an economic basis that will provide basic data useful for research into the effects of expenditures on the economy, and reveal what government expenditures are actually used for, more clearly than available data now do.

INSTITUTE FOR ADVANCED STUDY, PRINCETON

Work in Economics. New approaches, new concepts, new ways of working are of importance in any scientific field; but nowhere are they more important than in the social field. In extending its activities to this area, the Institute for Advanced Study has made possible an important contribution to philosophy and methodology in the social sciences. A grant of \$105,000 was made toward the support of work in economics at the Institute, to cover a three-year period to begin on July 1, 1940. The work concentrates at present upon the role played by finance in the organization of modern society. This includes the study of credit problems in both national and international aspects and as manifested in a period of emergency financing.

American Committee for International Studies. This Committee, formerly the American Co-ordinating Committee, originated as a member organization of the International Studies Con-

ference. The following organizations are members of the Committee: The Council on Foreign Relations, the American Council of the Institute of Pacific Relations, the Foreign Policy Association, and the National Committee of the United States on International Intellectual Cooperation. There is also at present a rotating membership selected from the faculties of nine universities, as follows: California, Harvard, Duke, Columbia, Chicago, Michigan, Wisconsin, Brown, and the Institute for Advanced Study.

The Committee is focusing its interests on the problems and policies of the United States in the developing world situation. Three fields in particular impress it as demanding intelligent long-term decisions: (1) the military position of the United States; (2) the question of hemispherical solidarity, and (3) the basic policies in the totalitarian nations and their implications for America. The Committee does not make the studies. Its function is to activate and organize, to survey the field, outline the questions, and select the institutions or persons to carry out the research tasks.

A grant of \$40,000 was given for a two-year period, beginning January 1, 1940, for the Committee's research activities.

This grant was originally made to the Council on Foreign Relations as fiscal agent for the Com-

mittee, but was subsequently transferred to the Institute for Advanced Study where the new chairman of the Committee's research program is located.

LEAGUE OF NATIONS: ECONOMIC, FINANCIAL, AND TRANSIT DEPARTMENT

Ten members of the Economic Section staff are now in Princeton and a half dozen others are working in Geneva. It is proposed to proceed with the more important research projects, chiefly with the aid of the members of the staff in Princeton. Since the outbreak of the war, the Department has continued its regular statistical reviews and analyses in so far as data have remained available. Nine publications have been issued, and a volume on European trade is in the press. It will be followed by a volume on the trade of the rest of the world, especially of North and South America and the British Commonwealth of Nations.

The studies proposed will be carried out in collaboration with many of the leading American specialists. The group is recasting its studies dealing with international economic and financial problems of the past. It hopes to elucidate certain of the lessons of past failures and successes which may be a useful guide for future action. A grant of \$50,000 has been awarded for this

research program for a two-year period ending in December 1942.

UNIVERSITY OF DELAWARE

The present grant of \$18,000 over a two-year period, beginning January 1, 1941, was for a study of individual income distribution for the years 1925-1935. An analysis of the returns over this period would provide a study of incomes during a "normal" time, a "boom" time, the depression of 1930-1933, and the recovery period 1934-1935. The study is possible because the requirement of the State of Delaware that all persons over twenty-one years of age file an income tax return has served to build up the only body of information available on the distribution of individual income according to size for years prior to 1939 for a complete group of income recipients.

Measures of income distribution by size not only are of great practical value in the study of many problems, but are necessary for a study of consumption and savings, and for a determination of the factors that influence changes in propensity to consume and propensity to save under varying economic conditions.

The study will be undertaken by members of the staffs of the University of Delaware and of the State Tax Department.

INSTITUTE OF PACIFIC RELATIONS

Pacific Council. The Institute of Pacific Relations is an unofficial international organization, with eleven constituent national bodies or councils. The work of the governing international body, the Pacific Council, is carried on by a small secretariat with no fixed headquarters other than a publications department in New York. Its program comprises studies, publication, and periodic conferences where results of research are discussed. The activities of the national councils have necessarily been altered as the war has spread. The study meeting held at Virginia Beach in November 1939, in spite of wars, was attended by representatives from Australia, Canada, China, France, Great Britain, Germany, India, Italy, Japan, New Zealand, the Philippines, and the United States.

The principal undertaking of the Council is a study of the issues which will be faced in the Far East when either a temporary or permanent peace settlement is negotiated. Studies of its regular research program are centered on: (1) the economic and social development of Southwest China; (2) studies of Southeast Asia and the South Pacific; and (3) transport and communications in the Pacific area.

A grant of \$89,000 was made toward its gen-



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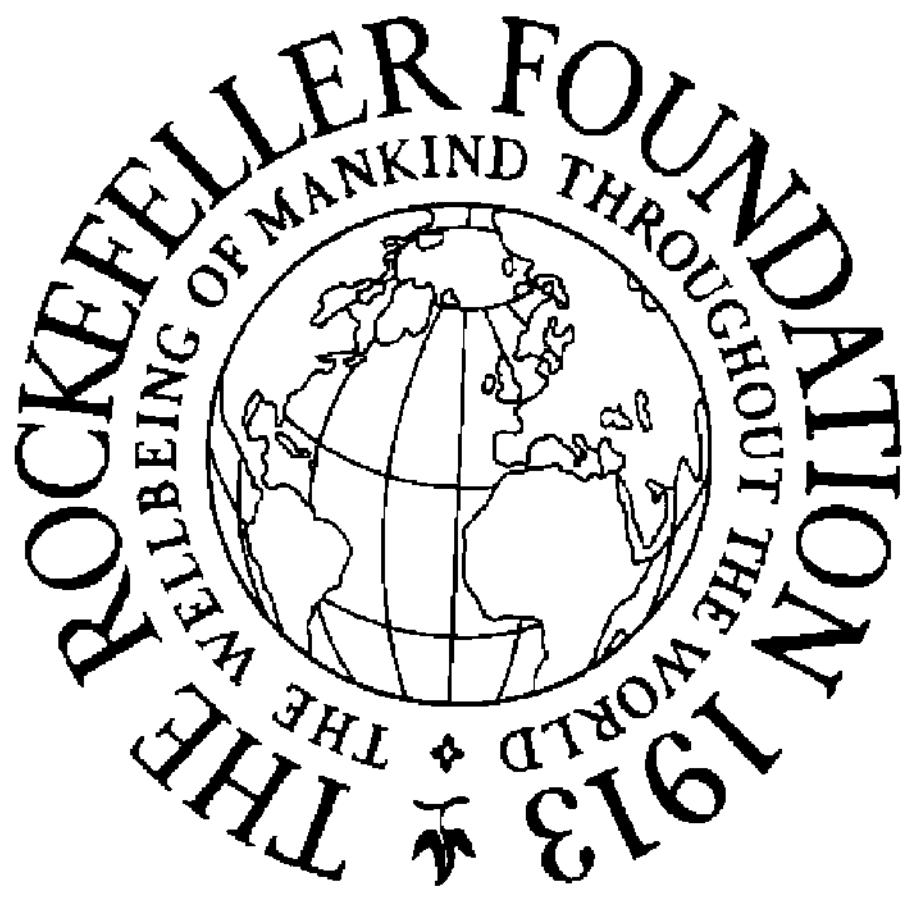
Members of the Economic, Financial, and Transit Department of the League of Nations at their New World headquarters at the Institute for Advanced Study, Princeton, New Jersey.

eral expenses and research program for a two-year period beginning January 1941.

American Council. As one of the national members of the Institute of Pacific Relations, the American Council has developed a program of research, education, and publication in the United States, and has assumed responsibility for the International Secretariat and the biennial conferences. The Council operates offices in New York, Honolulu, and San Francisco, at each of which there is some permanent staff, a library and information service, and a regional committee. There are also regional officers in Chicago and Southern California.

The Council's principal channel for presenting the results of research is its publication *The Far Eastern Survey*, with a distribution of approximately three thousand copies each fortnight. In 1940 the Council published a series of pamphlets, e.g., *Deadlock in China*, *America Holds the Balance in the Far East*, and *Our Far Eastern Record*, — thus making available to teachers, writers, and adult education groups some of the Institute's long-term studies.

As part of the Council's educational program, six regional conferences were arranged last year, and round-table discussions were held in Honolulu, San Francisco, Chicago, Los Angeles, and



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Fritz Henle
Publications, Institute of Pacific Relations.

New York. Teachers' seminars have been organized in Chicago, New York, and California.

The Foundation made a grant of \$30,000 toward its general expenses over a two-year period, beginning January 1941.

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

For a number of years, the Foundation has been interested in displaced European scholars, and through the Graduate Faculty of the New School for Social Research, has contributed toward the salaries of such persons. The Graduate Faculty now numbers over twenty-six persons, and since the outbreak of the war in Europe has been engaged in research upon the probable economic and social conditions which will constitute the background of the peace which will follow the war. The first-hand experience of men from the various European countries combined with a detachment due to present academic life in the United States, should provide certain insight into the problems of peace and reconstruction not common in groups either in Europe or in the United States.

A grant of \$10,000 was made for a period of a year, in order to facilitate some studies which were already under way, by providing the salaries of six persons, American citizens and Euro-

peans, having special qualifications as research assistants, for the study of certain aspects of the general problems of peace as applied to central Europe.

SWEDISH INSTITUTE OF INTERNATIONAL AFFAIRS, STOCKHOLM

The Institute was founded in January 1940, as a reorganization of the Swedish Committee on International Information. Its directing board includes many of the scholars in Sweden who have been leaders in studies of international problems in the four universities of the country, or who have played a part in determining Swedish policy. Progress has been made in awakening public interest and in making available for the public information concerning the relations of Sweden to other countries and to world problems.

After the occupation of Denmark and Norway, the Swedish Institute undertook not only to continue the Swedish part of a cooperative research program, but to take over other projects and to endeavor to maintain contacts with scholars in Norway and Denmark who might continue their own research studies.

The Institute hopes to be able to maintain its organization, staff, and previous activities and serve as a center in Scandinavia for research and for policy discussion in relation to European

and world problems, and keep contacts with leading persons in all the Northern countries. The Foundation has contributed \$11,000 to provide 45,000 Swedish crowns toward the Institute's general budget for the calendar year of 1941.

UNIVERSITY OF OXFORD: SOCIAL STUDIES RESEARCH COMMITTEE

The program in social sciences at Oxford under the Social Studies Research Committee was begun in 1936. Objectives included the strengthening of undergraduate instruction in the social sciences, the provision of a statistical laboratory for training and research purposes, the facilitation of several types of research, and the provision of a specialized graduate training. A program of research focused upon various problems of the business cycle was likewise subsequently developed.

A new wartime research committee administers all funds available for research in the field of social studies and approves programs of work upon wartime problems originating in the University. The new Foundation grant of \$24,000 to provide £6,000 for a one-year period, will permit the continuation of the previous activities and the new wartime research program. The funds will be used toward support of the Institute

of Statistics, of the economics and politics research groups, and of related activities.

LELAND STANFORD JUNIOR UNIVERSITY: FOOD RESEARCH INSTITUTE

The Food Research Institute, since its establishment in 1921, has concentrated upon intensive and extensive studies of agricultural commodities and the international policies related to them. A grant of \$60,000 has been made by the Foundation over a three-year period, beginning July 1, 1940, for studies which will build upon the Institute's regular program.

The world's experience in international commodity agreements, especially those in grains and fats, including past and present efforts to establish and implement several international commodity agreements and of the experience under such agreements, with special reference to the place of such devices in the pre-1940 world and the prospective postwar world, will be the chief subject of study. There is already available extensive documentation on four agreements,—rubber, tin, sugar, and wheat.

UNIVERSITY OF MINNESOTA

Two separate grants were made to the University of Minnesota during the year,—(1) A one-year grant of \$11,500 beginning July 1,

1940, for the preliminary planning of a study of employment and unemployment in St. Paul; and (2) \$39,000 over a four-year period, beginning July 1, 1941, toward the support of its public service training program. In each of the last two years the University is to provide one dollar for each dollar contributed by the Foundation, in addition to the University's basic provision of \$15,000 a year for the full period.

The unemployment study contemplates a study of the labor market in St. Paul, and also a history of the occupational adjustment of a sample of employed and unemployed from 1931 to 1940. The public agencies in St. Paul had discovered that a rise in the percentage of the total population gainfully employed as compared with 1929 had not led to any significant diminution of the need for relief. To have some careful objective examination of the facts, they turned to the Social Science Department of the University of Minnesota, whose previous studies of employment and unemployment furnished excellent background material for a follow-up study.

The Minnesota public service training program is now in its fifth year. All but three of the thirty-three who graduated from this program in its first three years were in government employment, and the exceptions were in closely allied occupations.

Preservice students are given a year of intensive graduate work, followed by a year of supervised internship in some appropriate government agency. Both in-service and preservice students are provided with graduate fellowships or part-time research assistantships.

Collateral activities include: (1) Information and guidance concerning career opportunities, and assistance in making application for civil service examinations to students from all divisions of the University; (2) the maintenance of a special laboratory of materials in the field of public administration for use by graduate students, faculty, and public officials; (3) publication of results of research by students and members of the staff.

UNIVERSITY OF PENNSYLVANIA: INDUSTRIAL RESEARCH DEPARTMENT OF THE WHARTON SCHOOL

A grant of \$105,000 over a three-year period from July 1, 1940, toward the support of the Industrial Research Department was made on the following basis: \$15,000 a year outright; \$20,000 a year on condition that the University provide one dollar for each dollar contributed by The Rockefeller Foundation. The Foundation has been interested in this Department for a number of years, because of its research work in

the field of industrial, labor, and social change. The staff carries on its studies in active cooperation with government, industry, and labor groups who use the findings.

The studies of the Industrial Research Department measure and describe the changes in the amount and character of the unemployment and in opportunities for employment in the market. They analyze problems of occupational mobility and of absorption of unemployed workers. They study the interaction of wages, labor relations, costs, productive factors, and technical changes in representative whole industries,—coal, wool, and hosiery. They thus are concerned with the complex flow of changes which characterize modern industrial life.

UNIVERSITY OF ALABAMA: BUREAU OF BUSINESS RESEARCH

A one-year grant of \$10,000 was made to the Bureau of Business Research for a study of commodity production in the Southeast. For the past ten years, the Bureau has been assembling and putting into usable form the basic data dealing with the production of commodities in the Southeast. The comprehensive tables which are available were used during the year beginning February 1, 1940, in making an analytical and interpretive study of commodity production in this

section. Interest in the problem arises from the conviction that sound programs of reform and development must be based upon a knowledge of the economics of the region and, further, that many of the distressing conditions of the South arise from the failure to develop a sufficient productive capacity to maintain a high standard of living. The main lines of the final study include location and trends of commodity production, gross income from production in 1929 and 1935, and detailed factors conditioning commodity production in this area.

PACIFIC NORTHWEST COUNCIL OF EDUCATION, PLANNING, AND PUBLIC ADMINISTRATION

Two grants totaling \$57,500 were made to the Pacific Northwest Council: (1) \$50,000 toward general expenses over a period of two years from July 1, 1941, and (2) \$7,500 for research and publication for one year beginning July 1, 1940.

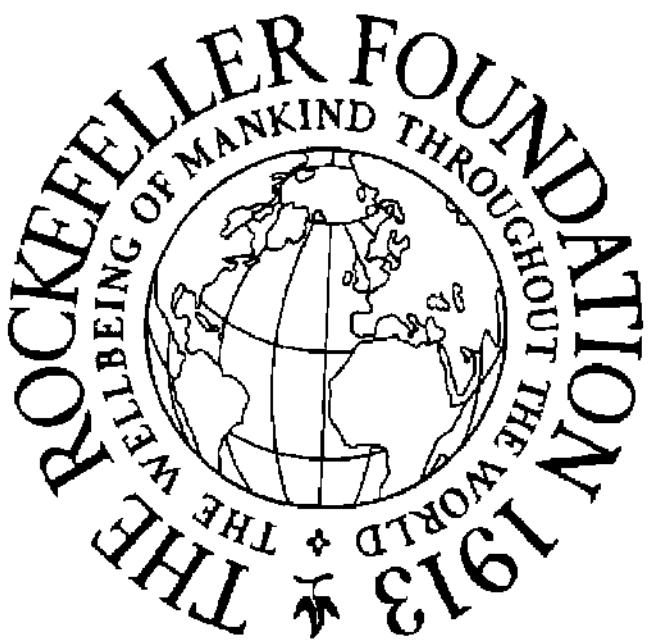
Assistance to the Council began in 1938. The Council was set up to treat some of the problems of the region comprising Washington, Oregon, Idaho, and Montana in a broader way than is provided for by agencies within each state. It promotes interest in research, use of the results of research, fosters training, and holds conferences on regional issues of interest to educational and governmental agencies.

The Council plans to continue its publication program which supplies aids to teachers and students in understanding the resources, opportunities, and development of the Pacific Northwest. The \$7,500 research and publication fund, available until the expiration of the current grant for the general program, will permit the completion of "A Study of Labor Relations as they apply to Industrial Development in the Pacific Northwest," and the development of several pending projects.

UNIVERSITY OF SOUTHERN CALIFORNIA: SCHOOL OF GOVERNMENT

In 1938 the Foundation became interested in the developing program of the School of Government. At that time, the School had had ten years of experience in the training of personnel for the needs of the state and local government in its own area, and endeavored gradually to expand and improve the teaching of public administration in Southern California.

Part of the instruction is designed for undergraduates preparing for entry into public service, part for public employees who can carry one or two courses. Instruction is given by the regular faculty of the School of Government, supplemented by lectures in specialized or technical



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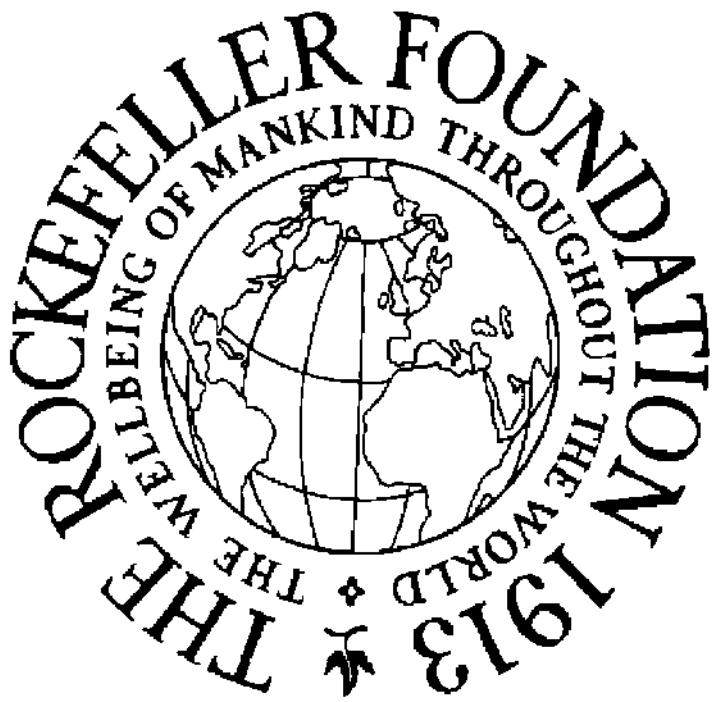
SCHOOL OF GOVERNMENT, University of Southern California. Police officers participating in course of instruction.

courses from among the public officials and businessmen in the Los Angeles area.

A study carried on under the previous Foundation grant is ready for publication, — "Research Methods in Public Administration." Two subsidiary manuscripts of a second study, one complete and the other in process of writing, are reported under the titles of "The Use of Work Units and Measured Production in Clerical Operations" and "Supervision of Field Workers." The present grant of \$24,000 over a three-year period from September 1941 is to be used to complete the work now in progress and for further improving the training in public administration.

NATIONAL INSTITUTE OF PUBLIC AFFAIRS

The Foundation continued its support of the National Institute's experimental program of recruiting and training personnel for the Federal Services by a grant of \$105,000 for the three-year period from October 1, 1941. For the past five years, the program has involved the annual placement of approximately fifty graduate students preparing for public service careers, in agencies of the Federal Government for a year of practical apprenticeship. The Institute also serves as a clearinghouse of information and as a liaison agency in matters relating to this recruit-



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Dr. Frederick M. Davenport, general chairman of the National Institute of Public Affairs, in consultation with government interns.

ment and training program. Sixty per cent of its "internes" are now in the Federal Service; several are in state and local or other government services, and a number are continuing graduate study.

The Institute hopes to continue its program directed toward developing a more effective means of recruitment of persons for government service, especially for its influence in improving the relations between the federal authorities and the educational institutions of the country.

FELLOWSHIPS

In 1940 the Foundation appropriated \$50,000 for the support of fellowships in the social sciences during the year 1941. It administered twenty-nine fellowships in this field from funds which had been allocated previously. Of these, eleven were new appointments in 1940, and eighteen were carried over from the previous year.

Conditions of war have affected the fellowship program not only in belligerent countries, but through interference with travel and other causes in neutral countries as well. The countries represented by the men and women who worked in the social sciences under the fellowship program, the fields in which they pursued their research,

and the countries in which they studied are summarized below:

<i>Subject of Study</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>
International Relations.....	11	Australia.....	1	Australia.....	1
		Denmark.....	1	South American Countries.....	2
Economics.....	8	Great Britain.....	2		
Industrial Relations.....	1	Mexico.....	2	United States.....	26
Sociology.....	4	Netherlands.....	1	—	—
Social Psychology.....	1	Norway.....	2		29
Public Administration.....	4	Sweden.....	2		
		Turkey.....	1		
		United States.....	16		
	—	Yugoslavia.....	1		
	29		—		
			29		

During the year 1940, from funds provided by the Foundation for fellowships over the period April 1, 1938, to March 31, 1941, the Social Science Research Council administered twenty-two postdoctoral research training fellowships and thirty-six predoctoral field fellowships. In 1940 the Foundation provided \$75,000 for the period from April 1, 1941, to March 31, 1943, for fellowships to be administered by the Council. Formerly the postdoctoral fellows usually studied in Europe, and the predoctoral fellows in American institutions or centers. Since under present conditions study in Europe is no longer possible, the Council proposes to appoint an increased proportion of predoctoral fellows.

Of the Council fellowships, fifty-two were granted to citizens of the United States and six

to Canadians. These fellows received research training in various fields of study in the United States and foreign countries, as is shown in the following tabulation:

<i>Fields of Study</i>	<i>No. of Fellows</i>	<i>Country of Study</i>	<i>No. of Fellows</i>
Economics.....	20	United States.....	44
Anthropology.....	7	England.....	1
Sociology.....	8	France.....	1
Psychology.....	3	Poland.....	1
Political Science.....	11	Sweden.....	2
History.....	6	Alaska.....	2
Philosophy.....	1	Canada.....	1
Geography.....	2	Japan.....	1
	—	French West Africa.....	1
	58	Virgin Islands.....	1
		Guatemala.....	1
		Bolivia.....	1
		Argentina.....	1
		Brazil.....	1
		Chile.....	1
		—	
			60*

The total number of persons who have received fellowships in the social sciences from The Rockefeller Foundation and the Social Science Research Council is given in the following table, which lists the new appointments in the years shown:

	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Rockefeller Foundation	214	32	69	78	48	47	40	22	24	29	21	11	635					
Social Science Research Council.....	128	50	44	54	15	14	13	19	12	21	29	29	428†					

* Fellows studying in more than one country account for the discrepancy.

† Includes 107 fellowships in agricultural economics and rural sociology.

GRANTS IN AID

A fund of \$125,000 was provided in 1939 for grants in aid in the social sciences during the year 1940, and subsequently increased by \$110,000 to a total of \$235,000. For the year 1941 a further \$125,000 was appropriated in 1940.

Some of the purposes regularly served by grants in aid have been affected by the war abroad, so that such grants are this year being used to provide for refugee scholars also. Sixty-seven separate grants were made from the current fund and from the balance of a special research aid fund appropriated in former years. These grants were distributed among institutions in nine different countries, as follows: The United States, fifty-three; Switzerland, five; Great Britain, three; and Canada, Mexico, France, Sweden, Norway, and Rumania, one each.

In the United States, twenty of the fifty-three grants were made to the New School for Social Research, toward the salaries of refugee scholars.

The subjects to be studied included the following: the impact of the war on the economy of the Canadian Maritime Provinces; an analysis of the effects of policies of several of the new federal agricultural agencies; analysis of incomes from tax returns of Delaware and of Minnesota; business incorporations from the point of view of forfeitures, extent to which they represent new

business enterprises, and as changing outlets of venture capital, etc.; Anglo-American commercial relations from 1770-1850; social and economic problems of Eastern Europe; the control of radio broadcasting; the analysis of economic trends in New York State, and a bibliographic study of German industrial relations.

Exploratory conferences and microfilming of essential materials of the Economic and Financial Section of the League of Nations which were to be brought to this country, were among the other activities supported through grants in aid.

THE HUMANITIES

THE HUMANITIES STAFF

During 1940

Director

DAVID H. STEVENS

Assistant Directors

JOHN MARSHALL¹

IRVING A. LEONARD²

¹ Appointed Associate Director to serve from October 1, 1940.

² Resigned as of September 1, 1940.

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THE HUMANITIES

FOR 1940 the grants of The Rockefeller Foundation in humanities afford a limited index to the range of possibilities open at home and abroad. During the year war conditions in Europe and Asia continued to disrupt all that humanists live by and produce. At the same time a quickening in this country brought a new appreciation and desire to foster and develop our native scholarship and arts; the opportunities in undeveloped fields of study and for new production through the arts were greater than ever before. Of the participation of the Foundation in these opportunities it can be said that there was even closer reference to contemporary events than in the preceding year.

As in 1939, the grants in humanities centered on the uses of print, film, radio, and drama for the effective communication of free and creative thought, and on the increase of international understanding by these means and by scholarly interchange.

Of the larger grants made during 1940, twenty-one were to organizations and institutions in the United States. Several of these were toward the advancement of Latin American studies in institutions through increase of library resources and of their staff of workers. Other grants were

in support of efforts to realize more fully the possibilities of film, radio, and drama, specifically to meet expenses of gathering the substance of contemporary history from broadcasts, of analysis of content in film and radio, and of technical investigation to improve stage and film production.

There were two grants to institutions in Mexico and the Argentine, both directed toward development of personnel for special tasks of international usefulness and for the supply of materials with which to work. These had added importance in the light of changed conditions in 1940 which strengthened the Foundation's established interest in the increase of understanding with the countries to the south.

An important part of the activity of the year was the selection of individuals to receive smaller grants or fellowships that bore directly on the particular aims of the program. Conferences and surveys contributed also to these purposes through their preparatory outlines for larger grants made during the year.

As before, but in increased amount, emergency aid was applied to the saving of personnel endangered by the war in Western Europe. Those scholars of Western Europe who survive today are wanderers in a spiritual sense unknown to the wandering scholars of earlier times, for they

no longer belong to free nations. To ensure the survival and growth of those cultural elements that we identify with civilization, such workers and their materials must be protected over long periods of time in an atmosphere of freedom for self-expression, that essential to all creative productivity. When that freedom is lost to entire populations, the effects appear in areas far beyond the reach of the destructive force. It is in this sense that the entire tradition of humanism, not merely that part of it represented by the present generation of artists and scholars, is in jeopardy.

Some of these humanists from abroad will have a part in the effort to utilize for better understanding and interpretation the resources of materials in this country's libraries and museums. Others will take their place in the effort to develop further the competence in languages necessary for understanding and interpreting the world in which the United States now is having a more active part. The coming of these scholars, to find the assured protection and the freedom for thought and expression which this country still can give them, is a reminder of what the humanities can be in a nation that feels its participation in the life and traditions of the world and its responsibility for their conservation and development.

Events of the past year have thus posed new responsibilities and opportunities for the scholars of the United States. They are concerned that the development of our institutions and libraries shall be wider in character, and that this country shall possess the men to interpret fully and freely the records of civilization. A strong impetus has been given to plans for control of the languages essential to that result. Evidences of this purpose appear in the newer studies of Chinese, Japanese, and Russian cultures, contemporary as well as traditional, and in the growing interest in all phases of Latin American studies. There is a greater awareness of possibilities within our own country to create and to interpret. It is by assistance to such processes that the further freedom of humanity can be maintained.

DRAMA

NATIONAL THEATRE CONFERENCE: REGIONAL AND NATIONAL PLANS FOR AMERICAN DRAMA

During the years of support from the Foundation the National Theatre Conference has extended its services to schools, colleges, and community groups to a larger degree each year. In 1937 the Conference created its present plan of a limited membership to serve the demands of dramatic institutions and organizations in all

parts of the United States. Its members have given this regional service, and the committees of the Conference have developed specific projects of general value. Since 1940, for example, the Conference has secured reductions in royalty charge on plays from publishers. It has administered a series of fellowships to give advanced training in directing and in technical work. It has canvassed the needs for play texts in all areas of the United States not served by regional libraries. The Conference also has begun its placement work for graduates of various institutions ready to start work as directors. One of the new demands put upon the membership is to give advice in the training camps now being organized by the government.

The Conference has projected a plan for studies and for field work during the coming five years. It intends to publish bulletins and larger works of a nature needed by community and university theatres. Plans are being made to produce a new play each year in some twenty or more houses under direction of members of the Conference. Increased aid for operating its office in Cleveland and for these new services will be required. To meet these needs the Foundation made an appropriation of \$55,000 to be used during the five-year period ending December 31, 1945.

AMERICAN FOUNDATION FOR THE BLIND: DRAMA IN A SPECIAL PROGRAM OF EDUCATION

For many years work with normal children has proved the usefulness of dramatic expression in the development of personality as well as in giving vitality to subject matter of the school curriculum.

Four years ago the American Foundation for the Blind took an interest in the possibility of making dramatic expression a common possession of blind students. Tests of the idea were made in state schools in Minnesota, Maryland, and Ohio, and summer courses for small groups of teachers continued the work. The effect of these efforts created a demand for dramatic training in state and private institutions throughout the country.

The \$30,000 grant of the Foundation is to provide dramatic training of intensive sort in all schools that can be aided during the three-year period ending December 31, 1943. Field workers will spend considerable time at each school in training students and teachers in the techniques of production and in preparing manuals for continuous use after the special training period. The most recent project of the American Foundation for the production of talking books, developed through help of the Carnegie Corporation and the Federal Government, will be of use in providing materials for such teaching.

CORNELL UNIVERSITY

In rural areas of the United States, drama and music have real trial of their values to communities. In three or four states community work in rural areas has developed so satisfactorily that its values are now being transmitted to other parts of the country. One such source is in the western part of New York State.

In this case, the development is due primarily to the careful attention given community work by staff workers from Cornell University. The men doing field work hold conferences in larger communities, train local leaders, and from time to time issue special bulletins on work plans. Resident staff members of the University likewise have contributed to the program of the extension department, particularly in their teaching during the summer. The department of drama has cooperated in rural work of the extension department of the School of Agriculture over a long period.

In 1940 the University increased its staff for community work in western New York State, enlarging the group by adding men for work in music. The experience of previous years is to be applied more intensively and in some new directions. More is to be done in composition of play texts and of music scores, and also in giving outlet for such production at the University and by

broadcasts. The union of drama and music in a rural development under such leadership is to be a demonstration valuable for similar projects in all parts of the country. As the plan develops, the results will be reported in bulletins for general distribution.

The grant of the Foundation for this purpose supplies \$20,000 during the three years ending on December 31, 1942. It provides those funds for the extension work in drama and music that Cornell University will need to supplement its own expenditures and the cooperative help of the State Department of Education on its general program for rural life.

LELAND STANFORD JUNIOR UNIVERSITY: ADVANCED TRAINING IN DRAMA

The continuing growth of dramatic studies at Stanford University gives a twelve-month cycle of activities that enlists the cooperation of many departments. Plant facilities and staffs at Stanford are adequate to requirements of advanced students in nearly every field of research or production. The University therefore has unusual possibility to define the place of the arts in a liberal education and to prepare the teachers to give effect to that definition.

At present the University is entering upon a program that unites several departments of the

liberal arts college and its School of Education in support of work toward higher degrees. The requirements include work in the history of classical and modern drama, in esthetics, social history, music, dance, and the graphic arts. The department of drama gives technical training in play composition and in all phases of production. These varied approaches to the arts, historically and practically, are to be open during summer sessions in full scope for the benefit of teachers, without interference with the longer schedules for students in the graduate school leading to higher degrees.

The grant of the Foundation to Stanford University gives general support to the work in drama for three years, to September 1, 1943, in the total amount of \$25,000. It continues aid for this purpose begun in 1936 through contributions to the Memorial Theatre building and to annual budgets over the same period of time.

YALE UNIVERSITY: TECHNICAL STUDIES OF THEATRE LIGHTING

By a grant to Yale University the Foundation is assisting an investigation into new forms of light control that began on the Pacific Coast under direction of Mr. George C. Izenour. His work had started in the shops of the Pasadena Playhouse under encouragement of its director, Gilmor

Brown, and installations at the San Francisco Exposition carried the experiments still further.

The purpose of the work at Yale by Mr. Izenour, under general direction of Professor Allardyce Nicoll and Professor Stanley McCandless, will be to complete technical studies of light control for theatrical use. Light has all the values of sound to determine the artistic quality of stage presentation. Since it is an element that playwrights and directors have been unable to control adequately, the results of this investigation are expected to be of aid to all community and university theatres in serving the demand for flexible lighting at moderate cost.

A fund of \$19,500 for the two years ending June 30, 1942, is provided by the Foundation toward this project.

LIBRARIES

THE FOLGER SHAKESPEARE LIBRARY, WASHINGTON, D. C.

The destruction of books and manuscripts is recognized as a common consequence of war. An effect less well known is that economic distress forces the sale of such material during and immediately after the close of war. This process began in England during 1939. Trustees of the Folger Shakespeare Library of Washington there-

upon started raising a special fund from which to purchase items needed to complete its collection of books printed during the years 1475-1640. The late Henry Clay Folger, founder of the Library, collected not only material bearing on Shakespeare and his time, but literature in every field of English intellectual activity from the dawn of the Renaissance to the Restoration; this collection with the purchases since made, ranking close to the British Museum in content and quality of English books printed before 1640, represents for the people of the United States a national treasure house of our Anglo-Saxon culture in its period of making.

Copies of most of the books now appearing on the market undoubtedly are already in the British Museum or other British libraries. In the case of rare items which authorities consider should more properly remain in England, it is the practice of the Folger Library to give opportunity for one of the British libraries to purchase it. If purchase of unique material eventually falls to the Folger Library, a photographic reproduction is to be deposited in Great Britain for the convenient use of British scholars. The scattering of unique documents and books in remote countries or even in private collections often makes them practically unavailable to the scholar and in some instances they may be completely lost.

The present plan of purchasing desirable books and manuscripts which may appear in the market because of conditions existing in Great Britain, will increase the total amount of such material accessible in one place to scholars throughout the world.

To provide the nucleus of this fund for the purchase and cataloguing of books and manuscripts, the Foundation appropriated in 1940 \$50,000 to the Folger Shakespeare Library, to be paid at the rate of a dollar for every dollar secured in cash from other sources during the period ending July 1, 1941.

THE AMERICAN LIBRARY IN PARIS

Established as a result of the work of the American Library Association in supplying books and magazines to the American Expeditionary Force in Europe during the World War, the American Library in Paris has now more than a hundred thousand volumes, and had before the present war a yearly circulation of about forty thousand volumes. The Library served English-speaking employees of American and English business organizations with establishments in or near Paris, students, newspaper correspondents, and writers, as well as visitors and tourists. It also served French students and teachers of English, French scholars, journalists, and others

interested in American subjects. Through the university exchange system, in time of peace, the Library sent packets of books to provincial universities in France, and to universities and individual scholars in other countries.

After war was declared, in addition to its activities in Paris, the Library established a service to French, British, and other soldiers in France. Books and magazines were donated to the Library for this purpose. Circulating libraries also were prepared for canteens and evacuation centers, and free cards were issued to all men in uniform in Paris. These war activities necessarily were carried on by volunteer workers, since the normal operations of the Library fully engaged the regular staff.

In April 1940 the Foundation granted to the American Library in Paris \$25,000 to be paid at the rate of \$5,000 a year over the five-year period beginning April 15, 1940, for general expenses, with the understanding that in the event that war adversely affected the work, payment could be made at the discretion of the officers. The Foundation had previously aided by a grant of \$35,000 for a three-year period beginning in 1930.

THE NATIONAL CENTRAL LIBRARY, LONDON

The scheme of the National Central Library has served to pool the book resources of Great

Britain, and to make them available to borrowers all over the country. The National Central Library is able to draw upon most libraries in England and Wales, and a number of libraries in other parts of the British Isles. It supplies on loan to libraries, to groups of adult students, or in exceptional cases to individuals, books for study which cannot conveniently be obtained in any other way; it acts as a clearinghouse for mutual loans of such books between other libraries. Its usefulness as a center of bibliographical information was recently increased when The Rockefeller Foundation in 1937 made possible the creation of the Bureau of American Bibliography, a section containing bibliographical information on American titles catalogued by the Library of Congress. With a comparatively small number of volumes of its own, the National Central Library, through the many libraries which are associated in this scheme, has available for circulation some twenty-one million volumes.

Because of the present drain on Great Britain's finances, normal grants have been reduced at a time when the Library's work has increased under stress of war conditions. The Library is making every effort to meet both special research and general cultural needs. To enable the Library to carry on its work without serious curtailment, the Foundation made an emergency appropria-

tion in 1940 of \$8,500 for the year beginning March 1, 1940.

FAR EASTERN STUDIES

CORNELL UNIVERSITY: AID FOR THE DEVELOPMENT OF RUSSIAN STUDIES

In the past few years The Rockefeller Foundation has aided the development of Far Eastern studies in the United States, in order to give them a standing more nearly comparable with European and classical studies in this country. Progress has been steady, particularly in work on China. Less has been possible in advancing first-hand research and effective teaching in Japanese subjects, but former fellows of the Foundation have made contributions of value in Japanese economics and history. In Russian subjects, the state of American scholarship has been limited by scarcity of men fully competent in use of the language with assured positions in university departments of history, philosophy, economics, or political science. Recently, however, there has been an encouraging growth of interest in Russian subjects in a number of centers.

At Cornell University, the appointment of Professor Philip E. Mosely in the Department of History led in 1936-37 to the offering of a half-year course in Russian history. This was elected

by eighteen students. In 1937-38 a year course in this subject was elected by thirty-eight students, and some twenty students expressed an interest in having a course in the Russian language. To provide for these growing demands, the University wished to add to its library collection of Russian literature in English translation and to secure the services of an instructor in Russian language and Russian literature. In 1939 the Foundation made a grant in aid to the University for book purchases and toward the salary of a faculty appointee in Russian subjects. In the past year it appropriated \$14,000 for continued aid for these purposes during the five-year period beginning July 1, 1940.

During the academic year 1940-41 the University is offering a course in Russian literature in English translation and two courses in the Russian language, one for beginners and one for advanced students. The language work is planned to give a reading knowledge and some facility in speaking and to prepare students for work with contemporary source material.

**ORTHOLOGICAL INSTITUTE OF CHINA:
PREPARATION OF MATERIALS FOR TEACHING
ENGLISH AS A SECONDARY LANGUAGE**

Since 1933 the Foundation has aided the work of the Orthological Institute of London and the

Orthological Institute of China in preparing teaching materials for use in the educational system of China, with a view to advancing international communication through a more readily acquired command of English as an auxiliary language. Grants to the China organization have totaled \$55,600, of which amount \$9,600 was appropriated during the past year.

During the eighteen months before the outbreak of hostilities in China, an international group of scholars in Peiping was organizing, under the auspices of the Orthological Institute, a general plan to improve methods of teaching English in China. The program gave contact for young people in middle schools with trained teachers of English and with modern methods of communication through the effective channels of film, news print, and radio. Chinese, British, and American scholars in the unit were under the direction of Dr. I. A. Richards, who spent ten months with them during the period 1936 to 1937. After June 1937 it was necessary to restrict work in Peiping to the preparation of texts for middle schools. Some of the staff of the Orthological Institute moved to Tientsin, where, in controlled classes of the French Jesuit École des Hautes Études, they tested and revised the English lessons of the first two years. Others of the staff went to West China to work with the pro-

vincial government of Yunnan while awaiting opportunity to resume the general program.

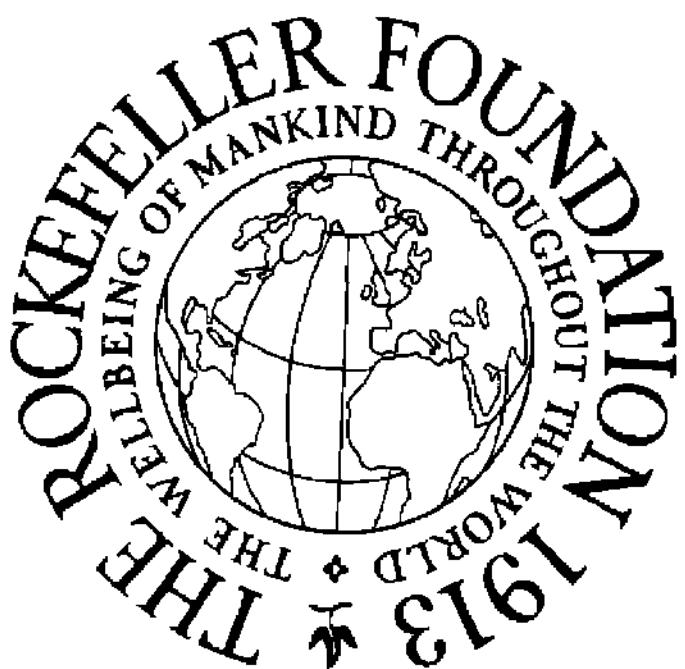
The Commissioner of Education of Yunnan asked the cooperation of the Orthological Institute in the establishment at Kunming of a training school for teachers of English for the junior middle schools of the Province. He agreed to provide a building and equipment for the school and guaranteed part of the operating expenses. It was planned to admit to this school selected students who had completed the work of the local senior middle schools and to give them a two-year course in teaching methods. Some of the texts from Peiping are in use in Kunming as the material for the first courses.

The Foundation's grant will provide support for the Institute's program up to June 30, 1942.

LATIN AMERICAN INTERESTS

ARGENTINE-NORTH AMERICAN CULTURAL INSTITUTE

Since 1937 the Foundation has awarded four fellowships for candidates from Argentina sponsored by the Argentine-North American Cultural Institute. These fellowships were for study in the United States: two for training in librarianship, one in methods of teaching English, and one for work in drama.



Photograph Excised Here

Argentine-North American Cultural Institute. Celebrating inauguration of Children's Library,
September 1939.

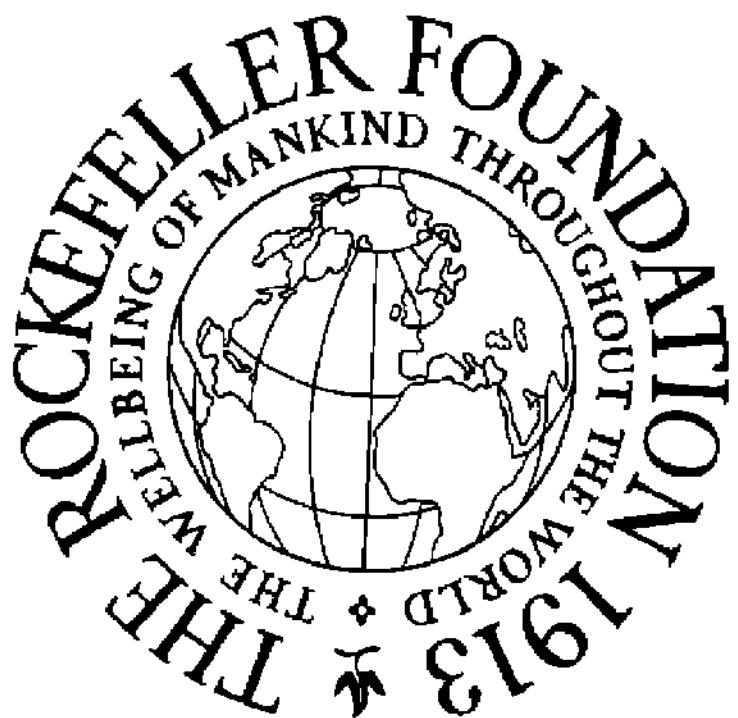
The Argentine-North American Institute is a nongovernmental agency organized in 1927 in Buenos Aires by a group of Argentineans and Americans for the purpose of promoting cultural understanding between Argentina and the United States. Its activities include the teaching of English, production of North American plays, the giving of lectures, and the publication of bulletins and special monographs in Spanish and English.

In 1939 there were 3,600 persons enrolled in the English classes of the Institute and the enrollment is still increasing. Direct methods of instruction are proving successful for teaching spoken English, especially to children. The Institute is improving its instruction still further by the use of teachers trained in the United States for language instruction.

The Foundation in 1940 appropriated \$15,000 to this Institute for the development of its program of teaching English, drama, and creative arts during a three-year period.

NATIONAL INSTITUTE OF ANTHROPOLOGY AND HISTORY, MEXICO

This National Institute of Anthropology and History was created about a year ago in Mexico City as an independent institution with annual contributions from the government. Its three main divisions concern pre-Hispanic monuments,



Photograph Excised Here

Listening Center, School of Public and International Affairs, Princeton University.

colonial monuments, and the National Museum. The section dealing with pre-Hispanic monuments is responsible for archeological explorations, excavations, and restorations of sites all over Mexico, and for such carefully organized museums as the one in Oaxaca, in which are displayed the remarkable jewels and objects discovered in the tombs of Monte Alban. The section in charge of colonial monuments has under its jurisdiction buildings and objects of the colonial period and certain museums whose materials are mainly of historical concern. The National Museum is not only a museum but a center of research and instruction, with its own press, publications, library, and similar instruments of diffusion. In addition, it is a place of exhibition of objects connected with Mexican archeology, ethnology, and history, and also of objects pertaining to the cultures and civilizations of other parts of the world.

The Institute has developed a program of research and teaching. Recently the teaching staff, including men from the University of Mexico and the Polytechnic Institute, has been enlarged by the appointment of younger members from the United States scientifically trained in linguistics and phonetics. The program of studies now provides three years of work in history, anthropology, archeology, and the lan-

guages of North and Central America. The plans have approval of the Mexican Government. They represent the outcome of many years of scientific work by Dr. Alfonso Caso, director of the Institute, which was created under his guidance.

The Institute has received from The Rockefeller Foundation \$20,000 toward the development of its program for three years. A part of the grant is applied to increasing the number of scholars in residence at the Institute through awards to research associates from the United States and selected fellows from Central America. Another part of the fund is used to increase the resources of the Museum library for more effective teaching. Development of the program is to be under direction of a committee of three persons, including the Director and an adviser from this country.

PAN AMERICAN UNION: INTELLECTUAL COOPERATION

The function of the Division of Intellectual Cooperation of the Pan American Union of Washington, D. C., is to serve as a center of international cooperation and for the dissemination of information on common interests of the countries in this hemisphere. It contributes to a closer and more intelligent relationship between individuals and institutions in these countries engaged in any form of study or investigation.

Types of work promoted by the Division of Intellectual Cooperation include the exchange of teachers and students; the distribution of publications; the promotion of the study of languages, histories, and literatures of the American republics; encouragement of travel by educators, scientists, and professional men; the exchange of exhibitions; and the translation and publication of informative articles.

Since 1929 the Division of Intellectual Cooperation has become a recognized center for the dissemination of information regarding cultural movements in the Americas. The information assembled by this Division is issued in bulletins in English, Spanish, and Portuguese, which are distributed throughout the United States and Latin America. Items appearing in *Correo*, one of the five regular bulletins so distributed, are reprinted in some forty periodicals of Latin America that have come to depend on this service.

Considerable stress has recently been put upon methods for exchange of publications among learned societies and universities of the three Americas, and particularly upon the guidance of students in the choice of institutions for advanced training. In these respects the Pan American Union acts as a clearinghouse for individual inquiries from all American countries. The increase of work requires additional

editors and translators, as well as clerical and research assistants.

The Rockefeller Foundation has appropriated \$12,000 to the Pan American Union toward the expenses of the Division of Intellectual Cooperation over a three-year period. Various bulletins and manuals to be produced under the current grant are intended to quicken exchange of fact on questions in the fields of music, art, literature, history, library administration, and formal education.

**COOPERATIVE DEVELOPMENT OF
LATIN AMERICAN STUDIES IN THE UNITED STATES:
DUKE UNIVERSITY, TULANE UNIVERSITY,
UNIVERSITY OF NORTH CAROLINA**

The growing interest in Latin American studies and the difficulties of acquiring sufficient materials relating to an area so vast and diversified have brought about plans of cooperation at Duke University, the University of North Carolina, and Tulane University. These are among the institutions in the Southeast that have made substantial progress in Latin American studies. The three institutions now have agreed to divide the field on the basis of present library resources and faculty available for advanced work in each of the cooperating universities particularly in the fields of language, literature, history, and bibliography.

Duke University is best equipped of the three centers to promote studies relating to Bolivia, Brazil, Colombia, Ecuador, and Peru. For the same reason, the University of North Carolina is to direct intensive study toward the remaining South American countries. These two neighboring universities, therefore, form a center of research and teaching on South America, while Tulane University emphasizes studies relating to Central America and the Caribbean. All three universities will maintain general courses for undergraduates while stressing these special interests for advanced undergraduate and graduate students.

In support of this new concentration of studies Duke University has received \$25,000 for the purchase of books and other documentation in Latin American subjects over a five-year period. On the same terms the University of North Carolina has received \$25,000 and Tulane University \$18,000.

At Tulane University the Middle American Research Institute has in the past received a considerable amount of aid from The Rockefeller Foundation. During the sixteen years of its existence the Institute has established a museum with an outstanding collection of items pertaining to Latin America, and the staff of the Institute has produced significant works on the

archeology, ethnology, and early history of Central America. Tulane University is now taking steps to supply undergraduate courses and to extend its general texts and standard works of reference to meet the needs of advanced undergraduate and graduate work.

The University Press of the University of North Carolina has in recent years published important studies on various aspects of Latin American history and life and is now issuing an Inter-American series of translations of Latin American histories. Present funds will be used by the University within the next five years to obtain essential current publications in Spanish American language, literature, history, and related fields.

Duke University now possesses large collections of Brazilian books and also special material on Peruvian history and literature. There as well the added library resources will be effective in bringing up to current date the needed series of journals and public documents as well as of new books.

AMERICAN COUNCIL OF LEARNED SOCIETIES: COMMITTEE ON LATIN AMERICAN STUDIES

Grants totaling \$52,000 were made to the American Council of Learned Societies for the support of activities of its Committee on Latin

American Studies and for the general work of the Council in this field for a three-year period. The American Council of Learned Societies has come to be recognized as the international representative in this hemisphere of American scholarship in the humanities and the social sciences. By agreement with the Social Science Research Council, its Committee on Latin American Studies, with a membership of both humanists and social scientists, is responsible for developing Latin American studies in this country and for promoting closer working relations with scholars in Latin America.

The Committee on Latin American Studies has for some years produced a yearly handbook of Latin American studies. This annual guide to contemporary scholarship gives a critical index of production in the social sciences and humanities, with brief digests of important articles and prefatory chapters on scholarly developments in each field. Free copies of the guide are distributed throughout Latin America. The Committee also has sponsored institutes on Latin American studies at the University of Michigan (1939), at the University of Texas (1940), and has projected a third at the University of Chicago (1941). These activities have had Foundation support, and the additional aid now provided will be used partly to extend this type of service.

A part of the Foundation's grant makes it possible for the Committee to appoint a field representative who will spend a considerable portion of his time in the Latin American countries. The Council has selected for this appointment Dr. William Berrien, assistant professor of Romance languages at Northwestern University, who was appointed to its staff for a period of three years. Dr. Berrien is vice-president of the Institute of Ibero-American Literature and Associate Editor of the *Revista Ibero-americana*. Two projects of the Council to be developed under his direction are the organization of staff for a handbook of Brazilian studies and the formation of courses in this country for more intensive teaching of both Spanish and Portuguese.

These grants to the Council enable it to aid materially all plans for improved cultural relations among the countries in this hemisphere. They carry forward ideas of collaboration gathered by the Director of the Council during an extended tour of South America in 1939.

BROWN UNIVERSITY: COLONIAL HISTORY OF THE AMERICAS

The history of the colonial period in the Americas is still to be written on evidence in unique books and manuscripts that are scattered in important libraries throughout this hemi-

sphere. Much of the most important material is in Mexico and South America at points not easily accessible to scholars of the United States or of other American countries. In order that the substance of our history before 1801 may be brought to use, measures must be taken to bring more documents and books to a few centers of study, and to record those held in private or national depositories beyond the reach of investigators through loans.

One of the most advanced collections on the colonial history of the Americas is at Brown University. The John Carter Brown Library has secured over a long period its large stock of general histories, works of travel, pamphlets, and manuscripts on the period before 1801. Its importance for students of early American history and Hispanic culture is shown by a steady increase yearly in the numbers of visiting scholars. Two other special libraries, the John Hay and George Earl Church collections, supplement the resources on the history of the three Americas. The University now proposes to make additions to staff as well as to its collections for work in this field, in order that adequate source materials for teaching and research may be accessible under proper administration to a still higher degree than at present is possible.

To assist in this plan the Foundation granted

to Brown University the sum of \$35,000 toward the expense of increasing its collections of materials on early American history and Hispanic culture during a three-year period ending June 30, 1943. The means of acquisition will be chiefly by microfilming. All the fund will be applied to actual costs of production on film or to purchase of rare items in print or in manuscript.

RADIO AND FILM

AMERICAN FILM CENTER: GENERAL SUPPORT

American Film Center is a nonprofit organization concerned with the production, distribution, and use of motion pictures of educational and cultural value. Since 1938 it has received support totaling \$61,500 from the Foundation, in addition to grants in aid for special purposes totaling \$19,500. In 1940 the Foundation made a further grant of \$50,000 toward the Film Center's general expenses during the years 1941 and 1942.

Since 1938 the Center has had a part in the production of some twenty-seven films and its advice has been sought and utilized in the production of a number of others. Ordinarily the actual work has been undertaken by some production unit working under its supervision.

The Center has also been concerned with the general problem of the distribution and use of films of this type. In cooperation with the Ameri-

can Library Association, it is determining what the libraries of the country can do in handling educational films and in promoting their wider use. It is listing films which can be advantageously used in connection with the programs of the Columbia Broadcasting System's American School of the Air, and arranging for the supply of such films to the schools which ask for them. It answers a substantial volume of inquiries about educational films and refers others to agencies competent to deal with them. It has undertaken a number of special studies, most of which have been printed or made available in mimeographed form. A news letter on educational films, first put out in 1939, has now become a monthly film magazine, *Film News*.

During the next two years the Center plans to continue and to enlarge these various services.

MUSEUM OF MODERN ART: FILM LIBRARY

Since 1935 the Foundation has made grants totaling \$190,000 to the Museum of Modern Art for its Film Library. During 1940 a further grant of \$60,000 was made for the general support of the Library during a three-year period beginning July 1, 1940.

The Film Library was established in 1935 to collect and preserve noteworthy motion pictures of the past and present and printed matter im-

portant to the understanding of the motion picture. The Library also carries on research on the films in its collection and on the history of the motion picture.

Its collection now includes over sixteen hundred motion pictures, or more than seven million feet of film. Recently acquired items include sixteen films produced by Biograph between 1905 and 1912 when D. W. Griffith's work was in the formative period, the bulk of films featuring or produced by the late Douglas Fairbanks, and many educational films. Its collection of printed material on the motion picture is believed to be the world's largest. Many of the films in its collection are available for use by schools, colleges, museums, clubs, and local film societies. In addition its films are shown in a regularly scheduled series in the theatre available for that purpose in the new building of the Museum.

The Library cooperates with other institutions in the development of courses of study, particularly in colleges and universities. Its materials are constantly drawn on by authors, lecturers, and film producers.

Internationally its activities have included the organization of an exhibition on the American film during the Paris Exposition of 1938. It is the American member of the International Fed-

eration of Film Archives, which held its second annual congress at the Library during the summer of 1939.

NEW SCHOOL FOR SOCIAL RESEARCH: MUSIC IN FILM PRODUCTION

The Foundation made a grant of \$20,160 to the New School for Social Research for experimental studies of music in film production during the two-year period beginning February 1, 1940. These studies are under the direction of Dr. Hanns Eisler, a member of the School's faculty and a well-known composer of music for motion pictures. His studies will deal with the possibility of utilizing new types of musical material in film production, with problems of instrumentation, music, and sound effects, and with the more esthetic problem of music in relation to the visual content of the film.

The work will culminate in the preparation and recording of different musical scores for various types of visual content. These recordings will be deposited in the Film Library of the Museum of Modern Art, where they will be available to producers and to students of the motion picture.

An earlier Foundation grant to the Stevens Institute of Technology for research in the control of sound for dramatic purposes deals with the problem of making sound a more effective

medium of dramatic production. The present grant for Dr. Eisler's work recognizes the importance of a similar study of music in motion pictures.

THE LIBRARY OF CONGRESS: RADIO BROADCASTING

The Foundation made a grant of \$23,320 to the Library of Congress toward work in radio broadcasting during the year 1941. This work aims to make the resources and services of the Library available to a wider public than it otherwise could serve. A grant of the Carnegie Corporation has enabled the Library to establish and operate a unit to make and to duplicate phonographic recordings. The present grant of The Rockefeller Foundation provides for the preparation of materials which can be made generally available both through actual broadcasts and in the form of recordings which can be broadcast subsequently by other radio stations or reproduced phonographically for other educational uses.

The preparation of these materials is the responsibility of a broadcasting unit to work within the Library in collaboration with its staff and under the supervision of the Librarian of Congress, Mr. Archibald MacLeish.

This unit in its work will aim to create a wider understanding and appreciation of the Library's

resources, particularly of its holdings of materials on American life and tradition, and of its unique collection of American folksongs, and to provide information services comparable to those offered to users of the Library in Washington. The undertaking is an important step in the Library's effort to render a wider national service.

ROCKY MOUNTAIN RADIO COUNCIL: REGIONAL BROADCASTING

The Rocky Mountain Radio Council was organized in 1938 with headquarters in Denver, Colorado, to plan and produce radio programs of educational and cultural value, particularly designed to meet the needs and interests of the region comprised of the States of Colorado and Wyoming. During 1940 the Foundation made a grant of \$18,500 toward the expenses of the Council during the three-year period beginning August 1, 1940.

In the planning and production of its programs the Council draws on the resources of twenty-seven member institutions, including colleges, universities, state departments of education, and the principal professional and civic organizations of the two states. These programs are made available, for the most part in the form of records, to the seventeen radio stations of the region.

The support of this work comes from earnings

and from foundation grants, including grants from the Boettcher Foundation of Denver. The Council's current programs include interpretations of international affairs, particularly as they relate to the lives and interests of the region, programs on the special problems of the region, and others dealing with its past and current activities.

COLUMBIA UNIVERSITY: RESEARCH IN RADIO

During 1940 the Foundation made a grant to Columbia University for research in radio which led to the establishment of the Columbia University Office of Radio Research under the direction of Dr. Paul F. Lazarsfeld, who previously had been in charge of similar research in the School of Public and International Affairs at Princeton University. As before, this research aimed at answering such relevant questions as: What people listen to the radio? What do they listen to? Why do they listen? and How are they affected by what they hear?

The grant of \$35,400 to Columbia University toward the expenses of research over a period terminating August 31, 1941, provided in the first instance for the formulation of findings previously arrived at. Results of much of the work were summed up in a volume which appeared during the spring of 1940 under the title of *Radio and the Printed Page*. Other findings

were included in a series of pamphlets issued by the Federal Radio Education Committee operating in the United States Office of Education. More technical findings have appeared in various scholarly journals, notably in the *Journal of Applied Psychology*, which has devoted two issues to radio research.

The Foundation's grant also provided for further research, particularly on the effects of radio listening, and the findings arrived at will shortly be published as a book.

In addition a number of grants in aid to Columbia University provided for special investigations by its Office of Radio Research. One such grant made possible an appraisal of earlier research on children's radio listening. Another looked toward the experimental preparation of maps of radio listening in the United States. Two others provided for expenses of methodological studies designed to test the validity of repeated interviews with the same respondents as a means of securing data — the so-called "panel method." Grants of this kind to Columbia University during the year totaled \$5,300.

PRINCETON UNIVERSITY: RADIO LISTENING CENTER

During the first five months of 1940 the School of Public and International Affairs of

Princeton University, with the help of two Foundation grants in aid totaling \$7,500, had been testing the feasibility of recording and analyzing short-wave broadcasts, dealing with the European war, directed toward this country from Europe. A grant of \$25,000 to the University provided for the continuation and development of this work during the year beginning June 1, 1940.

At the Listening Center established in the School a carefully selected sample of these short-wave programs is recorded and transcribed. Copies of all transcripts are deposited in the Princeton University Library, which is ready to make them available in the form of photostats or microphotographic copies.

The staff of the Center utilizes these transcripts for purposes of analysis, and the results of this phase of its work are made available in the form of bulletins, which are sent to students of communication and international affairs and to others specially concerned with the phase of the war they represent. The work of the Center has been more generally reported in articles published both in scholarly journals and in the daily and periodical press. The Center's work thus results in bringing together a systematic body of evidence on the part international broadcasting is playing in the present war.

GENERAL PROGRAM

THE LIBRARY OF CONGRESS: STUDIES OF WARTIME COMMUNICATION TRENDS

This project developed from an experimental study of the trends of wartime communication in Great Britain and Canada by Dr. Harold D. Lasswell. The methods employed in the study had been tested by Dr. Lasswell in earlier historical research, notably in the preparation of his book *Propaganda Technique in the World War*. By utilizing a systematic classification of trends in communication which he had found to be significant in the World War, it seems possible to determine the significant trends in the flow of communication about the present war. Sampling of that flow, properly regulated and constantly checked against defects in method, provides a charting of communication in the present war comparable to that provided after the last war by historical study. The application of these methods in contemporary investigation can thus supply knowledge of the part which communication is playing in the present war while that knowledge can be of practical use.

Dr. Lasswell's preliminary study was financed by a grant in aid from The Rockefeller Foundation, which has now provided a fund of \$20,000 to enable him to continue and extend his work dur-

ing 1941. This further research will be carried out at the Library of Congress in Washington, where needed materials are available or can be readily assembled. Findings will be published in the *Public Opinion Quarterly* and eventually as a book.

PRINCETON UNIVERSITY: STUDIES OF PUBLIC OPINION

Over the past five years, the national polls of public opinion have accumulated a large body of data on the views held by the people of the country on a variety of social and political issues. These data represent basic material for research on the trends and patterns of public opinion in America and on the factors which operate in its formation.

A project for utilizing the material contained in returns of national polls in a study of the movement of public opinion in America during the present critical world period has been undertaken at the School of Public and International Affairs of Princeton University. The study is under the direction of Professor Hadley Cantril and is known as the Public Opinion Research Project. The Foundation aided the Project during 1940 by contributions totaling \$20,000, and it has provided a similar sum for the continuation of the study during 1941.

The work of the Project during the past year

was along three main lines: first, the staff charted significant trends of opinion about the war in Europe to investigate their relation to events; second, it attempted to determine what are the major patterns of opinion about the war and in what groupings of the population they prevail; third, it ascertained, in so far as the technique allowed, the reasons why these opinions prevail in various groups. During 1941 it is proposed to extend the scope of the Project. One need is for more detailed analysis of comments reported by poll interviewers along with the answers to specific questions. As yet these comments have not been systematically investigated, in spite of the fact that they often reveal factors that underlie the opinion held. Furthermore, problems related to the polling mechanism itself should be investigated, particularly those involved in sampling and in wording questions.

The Project is now well equipped to undertake the study of these and similar problems. Its findings are published currently in the *Public Opinion Quarterly*. Eventually they will appear in book form.

THE PAYNE FUND: EXPERIMENTS WITH NEW METHODS OF TEACHING ENGLISH

The Orthological Committee of the Payne Fund has received aid from the Foundation since

1938 for the development and testing of materials and of methods to simplify the teaching of English to foreign-born residents of the United States.

Under the direction of the Committee a small staff has used experimental methods and text materials in thirty adult classes of the State Board of Education of Massachusetts, chosen as representative of various population groups in industrial, rural, and metropolitan areas. Similar test classes have been held in cooperation with organizations in New York City and in Washington. Among these have been five class groups of children.

Materials for a first-year book have been thoroughly tried out with these groups under the observation of special teachers and supervisors of English, and texts have been revised repeatedly in the light of classroom results. In the course of their cooperation in this work the teachers and supervisors have gained the ability to apply the new teaching methods in developing a large number of instructors. It is desirable that experimental work be continued until texts for second-year classes and manuals for teachers have been tested, revised, and brought into form for printing. To enable the Committee to carry out this further project, The Rockefeller Foundation appropriated \$20,000 during the past year.

for the use of the Committee during the period ending June 30, 1942.

Summer sessions for acquainting teachers of Massachusetts with the new methods of language instruction are planned for the next two years by the State Department of Education; and during the school years the Department will use centers in outlying areas of the State to provide training in this work.

The staff of the Orthological Committee shares quarters in Cambridge with Dr. I. A. Richards, who is continuing his researches in language under a grant of the Foundation to Harvard University. The two programs involving theory of language and practical applications are interdependent.

GRANTS IN AID

In the record of 1940 the influence of world circumstances may be readily seen in some of the smaller grants of the humanities division. Such grants are expected to reflect new lines of thought more quickly than larger appropriations since they are often made for the purpose of initiating changes of program that are being formulated for fuller development. Along with aid for purposes as fruitful in 1940 as in more normal years, such as grants for development of microfilm services in library centers, a survey of children's

museums, and a study of new methods of dramatic production in a museum program of community activities, have been others promoted by contemporary events familiar to everyone who follows the daily press. Such grants were those to aid in securing delivery on importation of library materials from Europe, to study public opinion in the United States on questions related to the European war, to record short-wave transmissions from the Far East, and to organize work on the supply of personnel for stage activities in training camps. All of these have their part in a changing program that aims to strike a balance between the new and old in the wide field of culture.

An important expenditure in this part of the division's work for 1940 was of emergency character, for aid to a few of the European scholars whose work has been disrupted by conditions abroad. During the year the division of the humanities aided in securing academic positions in this country for eighteen eminent scholars by grants totaling \$86,150. The specialties of these men and women range from ancient history and philosophy to architecture and the various literatures, some of the individuals having particular competence in areas of work in which American scholars have not as yet developed comparable facility.

Most of the grants were for use in the United States. Those made to institutions in foreign countries were distributed as follows: Netherlands and France, two each; Mexico, three; Argentina, two; Uruguay and Cuba, one each; and China, two.

In December 1939 a minimum fund of \$100,000 was appropriated to provide for grants in aid during the year 1940; and from time to time as needed during the year, to take care of the emergency grants and others stimulated by contemporary events, additional funds were provided up to a total of \$225,000. Eighty-six allotments, including the emergency assistance to European scholars, were made from these funds and from the balance of a fund appropriated in former years to assist institutions to provide places on their staffs for deposed foreign scholars. Many of the grants were for small amounts; they ranged from \$200 to \$7,500, with the largest proportion, 38 per cent, ranging from \$1,000 to \$2,900; and totaled \$234,908.55. For grants in aid in the division of the humanities for 1941, \$125,000 was appropriated in 1940.

FELLOWSHIPS

The fellowships of the Foundation in humanities during 1940 were fewer in number than in other years, partly because of a greater compact-

ness of program, partly by reason of appropriations made to other organizations for fellowship awards. Organizations receiving fellowship funds in humanities from the Foundation in 1940 included the Authors' League of America, which is administering fellowships to playwrights, and the National Theatre Conference, which has a plan of awards to directors and technical workers in community and university theatres in this country. The American Council of Learned Societies similarly had a fund for supplementary fellowships and study aids in special fields. The work of the fellows of the American School of Classical Studies in excavating the Athenian Agora, supported by a grant of the Foundation, was interrupted during the year by the spread of hostilities to southeastern Europe.

The direct awards made by officers of the humanities division in 1940 totaled fifty-three, to cover the cost of which \$65,000 had been provided in 1939. An appropriation of \$50,000 was made in 1940 for fellowships to be awarded in 1941.

The fifty-three fellows studied Far Eastern language and literature, library practice, methods of language teaching, film and radio, and phases of preparation for work in Latin America. Far Eastern language and literature were the area of work of eight Americans who have chosen

to help develop this comparatively new and increasingly important field of learning. One of the four fellowships in film was held by a member of the Department of Educational Cinematography of the University of Nanking, who came to this country to study American methods of film production. Of the thirteen fellowships in radio, five were for studies of audience research, supporting radio research projects of Columbia and Princeton Universities aided by Foundation funds. The Latin American aspect of the division's program was strengthened by eight fellowship awards, including one to a student from Buenos Aires who is acquiring knowledge of American methods of dramatic production for use in her own country, one to a Brazilian teacher of English, and another to a Mexican student of linguistics who will aid in the government program of his country for education in Indian languages. Most of the fellows were from the United States; the other countries represented were: Argentina, four; China, two; and Brazil, Canada, Guatemala, Japan, Mexico, and Puerto Rico, one each.

Adherence to the condition that all fellowship awards of the Foundation carry an obligation to return to work within the sponsoring organization which has applied for this aid, makes likely a fruitful outcome of such study programs.

FORMER PROGRAM

AMERICAN SCHOOL OF CLASSICAL STUDIES, ATHENS: FELLOWSHIPS IN ARCHEOLOGY

An important concomitant of the excavation of the ancient Athenian Agora, or market place, under the auspices of the American School of Classical Studies, has been a routine of fellowships. These enabled young archeologists to work for a period of years, usually three, in research and actual excavation designed to fit them for positions in academic life. It had been hoped that all excavation could be completed, a permanent building erected to house the objects recovered, and all basic reports written by 1940. Excavation was stopped, however, in the summer of 1939 and it was not possible to begin building in 1940 because of disturbed conditions.

The fellows who at present constitute the staff of the Agora project are engaged in research on the objects excavated or in writing up the results of their studies. In order to keep an experienced staff together and to maintain the continuity of work, the Foundation granted in 1940 \$8,800 for stipends of fellows during the year beginning July 1, 1940.

CHINA PROGRAM

CHINA PROGRAM STAFF

During 1940

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

MARSHALL C. BALFOUR, M.D.¹

¹ International Health Division staff member cooperating in China program.

CHINA PROGRAM

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CHINA PROGRAM

SINCE 1935 the Foundation has been aiding under its China program work in rural reconstruction carried on by eight institutions in China. Since 1937 all but one of these institutions have been completely uprooted and, in a hegira perhaps unprecedented for such institutions in all time, moved faculties, students, and where possible, equipment, over hundreds, and in some instances even thousands of miles from their original locations. They made their way inland by transportation of the most diverse and inadequate sort. They came to a region very different from the one in which they had developed. But with courageous optimism and resourcefulness they met all obstacles, re-established themselves, and maintained continuity in their work.

At first it was not possible to know how much could be accomplished in the new environment, which did not even remain stable, but changed under the impact of the newcomers. The sudden arrival of hundreds of thousands of people in the southwest provinces, the lack of sufficient modern roads and vehicles, and the exigencies of war have made transportation so difficult, that it might almost be said to be confined to the most necessary of commodities and the most urgent of

reasons for travel. War and other economic disturbances, both domestic and foreign, have caused a severe decrease in the value of the Chinese dollar, and inflation is another difficulty with which these institutions have to contend.

These and other factors have modified some of the original plans and expectations. The time has now been reached, when it is becoming clearer what can and can not be done in the new setting, at least under present conditions. The several institutions are concentrating upon the most immediate and necessary tasks and at present have little energy or funds for activities not immediately concerned with their continuation in or adaptation to the new environment.

The cost of living has increased from twice to four times the prewar level, depending upon the location. As it appeared that the institutions the Foundation was aiding would find it necessary to increase their budgets, especially salaries and allowances of personnel to meet the increased living costs, the Foundation's representative in China was authorized to make a corresponding increase in payments for the year 1940-1941 up to the limit of United States dollars which had been provided to cover the grant in Chinese currency. All allotments were made on this basis except that for the Commission on Medical Education, in view of the fact that the grant of

\$16,000 Chinese currency for the half year July 1 to December 31, 1940, terminated aid to this project under the China program.

For the year 1940-1941 the Foundation provided a total of \$135,000 in United States currency for the China program, \$60,000 for the eight projects; \$25,000 for grants in aid; and \$50,000 for fellowships, \$27,500 for fellowships for study abroad and \$22,500 for fellowships for study in China. Emergency aid was again given to the Associated Boards for Christian Colleges in China to enable nine institutions to meet their budgets. Allotments amounted to a total of \$65,000, to be applied against budgets for the year 1939-1940.

EDUCATION AND RURAL RECONSTRUCTION

NATIONAL COUNCIL FOR RURAL RECONSTRUCTION

The purpose of the National Council for Rural Reconstruction has been to achieve the conduct of university training and research in rural reconstruction in and with the life of a community. In pursuance of this objective a decision was made early in 1940 to remove the Rural Institute from the county of Tingfan in Kweichow Province and to establish it on a new basis in

Szechwan, in cooperation with the National College for Rural Reconstruction of the Mass Education Movement. The latter part of the year 1939-1940 was devoted to closing the work at Tingfan and making preparations for the establishment of a new institute to be called the Institute of Rural Research and Training at Hsieh-Ma-Chang in Szechwan. A temporary office was established in a nearby city, and construction of an administration building was started on land given for the purpose by the Mass Education Movement.

Although most of the equipment was transferred from Tingfan and work was entered upon energetically during the first half of the year 1940-1941 in the county of Pishan which was to serve as the center for field operations, two adverse factors became apparent and increased rapidly in seriousness. These were inflation and difficulty in transportation. The costs of construction increased alarmingly, and transportation, because of lack of vehicles and gasoline, and consequent restrictions and high cost, became almost impossible. The Institute depends upon the free access to it of the faculties of its member institutions, and the regular participation of graduate and undergraduate students of these institutions in its research and field work. As the constant traveling between the Institute and the

several member institutions which the university-community concept of the Institute's program implies is obviously out of the question at this time, abandonment of the Institute for the present has recently been decided upon.

The efforts of the Institute at Tingfan, while they did not achieve the intended university-community objective in research and field work, have introduced to that county improvements in local administration, in education, in community welfare, cooperation, agriculture, and medical service that it is hoped will be continued under local auspices, and will at least serve as an introduction to future improvements along these lines.

The Foundation's provision for the National Council for Rural Reconstruction in 1940 for the year 1940-1941 was \$200,000 in national currency, or as much as should be necessary, under the conditions already mentioned, up to a total of \$25,000 U. S. currency.

CHINESE NATIONAL ASSOCIATION OF THE MASS EDUCATION MOVEMENT

The greatest efforts of the Mass Education Movement during the last part of 1939 and in 1940 were directed toward establishing the National College for Rural Reconstruction at Hsieh-Ma-Chang in the district of Pa-hsien,

Szechwan. In the face of bombings, a severe epidemic of malaria among the workmen, and inflationary price increases, a building was completed which made it possible for the College to open in October 1940, with fifty students.

The College has at present a graduate division and a junior college division. Fellows in the graduate division must be university or college graduates who have had several years of practical experience. The training is designed to fit them for administrative and technical positions in rural reconstruction in the central government, or in provincial and hsien governments; for positions as administrators and instructors in subjects relating to rural reconstruction in schools and colleges; or as field directors or administrators in rural reconstruction centers. The junior college course of two years is planned to train practical workers for administrative and technical positions in the county reconstruction programs.

The county of Pishan, which was to have been also the practice field of the National Council's Rural Institute, is serving as the training area for the Rural College. Through the general scheme known as "education through organization for reconstruction" a whole village, school children, adolescents, and adults, both men and women, is enlisted in the common objective of community

improvement, especially in education and agriculture.

Active work in rural reconstruction in charge of men formerly associated with the Mass Education Movement is going on in the prefectures of Tachu and Nanchung, where the students of the Rural College have an opportunity to observe and study work in units which include several counties.

In spite of the present severe financial stringency, considerable funds have been raised in China, and \$100,000 Chinese national currency was contributed by Generalissimo Chiang Kai-shek. The Foundation's contribution to the Mass Education Movement in 1940 for the year 1940-1941 was \$50,000 in national currency, or up to a total of \$6,250 U. S. currency.

YENCHING UNIVERSITY: COLLEGE OF PUBLIC AFFAIRS

During the spring semester of 1940, 391 students were registered in the College of Public Affairs. Rural training is being continued at Yenching, with an increase in the number of students in such courses, and research and field work in farming communities in the vicinity of Peiping have been possible. The staff continues research in rural reconstruction and related subjects which is published in the *Yenching Journal of Social Studies*.

The University maintains a field station in Yunnan in cooperation with the National University of Yunnan. This station served in 1939-1940 as the link between Yenching University and the Rural Institute of the National Council for Rural Reconstruction. Two students on fellowships granted under the China program of the Foundation went to Tingfan by way of Yunnan during the year, and two more fellows were expected to go to Tingfan and Yunnan respectively in the summer of 1940. The services of the Yunnan station were made available for training to Yunnan University and the graduates of the Southwest Associated University at Kunming.

The Foundation's grant to the College of Public Affairs for the year 1940-1941 was \$60,000 national currency, or up to a maximum of \$7,500 U. S. currency.

NANKAI UNIVERSITY: INSTITUTE OF ECONOMICS

The headquarters of the Nankai Institute of Economics have been established at Shapingpa, a suburb of Chungking, where postgraduate work is centered, although some undergraduate teaching is also done at Chungking in cooperation with the National Central University. During the year 1939-1940 a full program of graduate training, which had been interrupted by the long

move from Tientsin to Kunming and subsequently to Chungking, was put into effect at Chungking. For the year 1940-1941 an additional number of graduate students have been admitted for graduate work. Most of the undergraduate teaching is carried on in Kunming at the National Southwest Associated University in co-operation with Tsinghua and Peita Universities.

Cooperation with the National Council for Rural Reconstruction was maintained during the year 1939-1940 through the detail of two staff members to Tingfan as heads of the finance and rural cooperation sections of the Council's Rural Service Training Institute.

The Foundation's allotment of funds from the China program for the year 1940-1941 toward the rural reconstruction aspects of the work of Nankai Institute of Economics was \$30,000 national currency, or up to a maximum of \$3,750 U. S. currency.

AGRICULTURAL PROJECTS

UNIVERSITY OF NANKING: DEPARTMENT OF AGRICULTURAL ECONOMICS

The contribution of the Department of Agricultural Economics, directly and indirectly, to the agricultural and economic life of China and the rural reconstruction movement has continued in

Szechwan. In the fall of 1940 the total number of students registered in the University was 539, with 247 enrolled in the College of Agriculture. The Department of Agricultural Economics attracted a large number of these students because of the demand from the many projects in rural reconstruction for men well trained in that subject. Although printing difficulties have sometimes caused resort to publication in mimeograph form, the journal *Economic Facts* has been continued in English, and the *Economic Weekly* in Chinese, and research bulletins reporting on various studies have been issued.

During the year 1939-1940 the Department made a study of Chinese currency and prices and compiled a number of price indices of various cities and localities. Studies were made of the production and marketing of silk in the Santai district of Szechwan and of other farming problems in the province.

The Foundation's assistance to the Department of Agricultural Economics for the year 1940-1941 was \$70,000 Chinese national currency, or up to a maximum of U. S. \$8,750.

NATIONAL CENTRAL UNIVERSITY:
DEPARTMENT OF ANIMAL HUSBANDRY

During the year 1939-1940 the Provincial Bureau of Agricultural Improvement, with which

the project in swine research was cooperating closely, allotted over one hundred thousand dollars in Chinese national currency for the general program. The work was extended to include surveys of feed and hog markets, hog raising in representative districts, and swine shows. The research toward which the Foundation's grant specifically contributed included breeding projects, genetic studies, and feeding experiments.

The Foundation's grant for the year 1940-1941 was \$17,000 in national currency, or up to a maximum of U. S. \$2,125.

The director of this project moved to the Ming Hsien College of Agriculture and Industries, Oberlin in China, in Chintan, Szechwan, in the latter part of 1940.

NATIONAL AGRICULTURAL RESEARCH BUREAU

On the Chengtu plain in Szechwan Province the insect control program of the National Agricultural Research Bureau enlisted students of rural schools to spread information and demonstrate the control of the rice borer. Measures for the control of cotton insect pests, of smut on barley, oats, and wheat, and of red scale on oranges were carried out in the north- and southwestern provinces. Methods of improving the storage of grain were demonstrated and applied.

Research on various practical problems, especially on the efficacy of certain chemical mixtures against the different pests, and experimentation and manufacture of dusters and sprayers were continued.

The work was conducted in cooperation with other agencies of the Central Government and with provincial governments in the general program to increase the production of food and industrial crops in the inland provinces.

For the year 1940-1941 the Foundation contributed \$37,000 in national currency, or up to a maximum of U. S. \$4,625.

MEDICAL EDUCATION

COMMISSION ON MEDICAL EDUCATION

The needs of the Commission on Medical Education are less urgent since the medical schools which have moved into the interior of China have become more or less reorganized in the three centers in which they have been concentrated. The Commission is continuing its administration of local fellowships in medicine and nursing, and is at present trying to assist the schools in obtaining teaching and research equipment.

The compilation and publication of medical books is continuing, and it is for this work that

the Foundation's grant of \$16,000 national currency for the second half of the year 1940 was especially designated.

FELLOWSHIPS

During 1940 seven fellowships were active under the China program for study abroad. Six fellowships were granted during the year, and one was continued into 1940 from the previous year. Three fellows studied the following agricultural subjects: entomology, bacteriology and botany, and agricultural economics. One each studied social and public administration, biochemistry and nutrition, and communicable diseases and public health. Six worked in the United States and one studied prenatal anatomy and developmental physiology at the University of Cambridge.

From China program funds set aside for the purpose, the officers allot sums for fellowships for study in China, chiefly to the institutions with which the China program is cooperating in rural reconstruction. Each institution grants fellowships from these funds for purposes which most closely meet its particular needs. A great diversity in level of education, training, and type of courses taken among the holders of local fellowships naturally results. While these insti-

tutions are all engaged in research, education, and demonstrations in rural reconstruction, the emphasis on each activity varies among the institutions, and they specialize in different aspects of the general program. Some of the fellowships, therefore, are more in the nature of apprenticeship or probationary employment, some are brief training courses, such as those for nurses and midwives, while some are for true post-graduate research study. At this period such diversity seems necessary because the need is so great for personnel in all grades of rural reconstruction work.

For the year 1940-1941 \$22,500 in U. S. currency was provided through the China program for local fellowships, from which \$278,000 has been allotted in Chinese national currency to eight institutions. For fellowships abroad for the same period \$27,500 was provided.

GRANTS IN AID

For the year 1940-1941 the Foundation provided through the China program \$25,000 for grants in aid in China. This fund was previously termed the research and developmental aid fund, but in 1940 was liberalized so that various requests not rigidly research or developmental aid might be considered. A sum was set aside for

traveling expenses of members of medical school teaching or research staff. Early in 1940 the difficulty of transportation increased the expense of the travel of a staff member or prospective staff member from the institution where he was studying to the institution where he planned to work, to such an extent that it was often impossible for either him or the institution to defray the cost. The payment of such expenses in this emergency was ruled to fall legitimately within the purpose of these funds.

EMERGENCY AID FOR FOREIGN COLLEGES IN CHINA

ASSOCIATED BOARDS FOR CHRISTIAN COLLEGES IN CHINA

The group of Christian colleges toward which the Foundation has been giving annual emergency assistance since 1938 began the school year 1940-1941 with the largest combined enrollment in their history. Although enrollment at the beginning of the war in China suffered a marked decrease, in each succeeding year the number of students has increased to the present 4,703 for the nine colleges in the group aided by the Foundation. While the student body has been increasing, disorganization and inflation have decreased aid from Chinese sources.

The colleges are rendering an exceptional service, but they are doing so under great disadvantage, since all but Yenching and West China Union Universities are operating in locations other than their own campuses, in most cases far to the west. At the same time the campuses are being put to emergency uses of various kinds, such as assistance to refugees, work in rural reconstruction, and the operation of middle and primary schools.

To assist these institutions in fulfilling the present heavy demands upon them, the Foundation contributed through the China program in 1940 \$65,000 as a third emergency grant. Allotment to the individual institutions was as follows:

Cheeloo University	\$ 6,000
Fukien Christian University	5,500
Ginling College	4,000
Hua Chung College	3,000
Lingnan University	11,000
University of Nanking	10,000
University of Shanghai	3,500
West China Union University	8,000
Yenching University	14,000
	<hr/>
	\$65,000

OTHER APPROPRIATIONS

OTHER APPROPRIATIONS

REFUGEE SCHOLARS

IN the latter part of 1940, on behalf of European scholars who were not only unable to continue their work, but who were often in extreme personal danger, The Rockefeller Foundation made fifty-six grants totaling \$266,350 to institutions offering positions in America. Of these grants, forty-five were made to the New School for Social Research and eleven to other institutions. The fifty-six scholars represented eleven nationalities, including nineteen Germans, eleven French, seven Poles, five Russians, five Austrians, three Norwegians, two Spaniards, one Belgian, one Czech, one Italian, and one Swiss. Among them were physiologists, biochemists, mathematicians, psychiatrists, neurologists, economists, statisticians, historians, philosophers, and philologists, all of whom had occupied distinguished places in European universities.

By the end of 1940 nineteen scholars had already arrived in this country.

To assist the New School for Social Research in administering the emergency grants the Foun-

dation appropriated in 1940 \$35,000 for the two-year period August 1, 1940, to July 31, 1942.

Emergency Committee in Aid of Displaced Foreign Scholars. The Emergency Committee in Aid of Displaced Foreign Scholars, under the leadership of Dr. Stephen Duggan, has had a long and successful experience with refugee scholars. In order to assist the Committee in the task of placing foreign scholars, the Foundation provided in 1940, \$10,000 for the salary of an assistant, for traveling expenses, and stenographic services over a period of one year beginning approximately October 1, 1940.

Oberlaender Trust. Another institution which has given considerable assistance in establishing German and Austrian émigrés in this country is the Oberlaender Trust, which operates under the auspices of the Carl Schurz Memorial Foundation, Inc., Philadelphia. The specific purpose for which the Oberlaender Trust was founded is to further "a better understanding of the German-speaking peoples by the American people and vice versa."

With the assistance of \$5,000 over a period of three years provided by the Foundation in 1940 from research aid funds, the Oberlaender Trust is undertaking a study of the effect on American life of those recent immigrants who fall in the professional classes: professors, lawyers, doctors,

ministers, rabbis, social workers, scientists, and artists.

As the absorption of European scholars in the United States during the last seven years may be considered a dramatic and accelerated example of some of the processes by which this nation has been formed, it is believed that this extensive transplantation of professional personnel should be studied and its effects recorded while the information is fresh and readily available.

GOVERNMENT OF FINLAND: UNIVERSITY OF HELSINKI

Finland is making a resolute attempt to stabilize all departments of its national life, and to re-establish education at all levels, even though its 500,000 refugees are a heavy burden.

The chief loss among university and scientific institutions was the Polytechnic School in Helsinki, which was completely destroyed by bombs. The University of Helsinki, however, was not seriously damaged. This University suspended all activities in December 1939, and the teaching staffs were placed on leave without pay. Normally it has a faculty of about 120 professors, 140 lecturers, and eighty other teachers, and an attendance of 6,400 students, of whom some 2,100 are women. In its efforts to reopen institutions of higher learning in September 1940, the

government was not able to reinstate more than a limited number of the former teaching staff, or to continue salaries at the same rates, although the cost of living had risen one-third. It was planned, however, to try to carry on as many as possible of the former activities, especially research, and the Finnish Research Council began to collect money for this purpose.

Finland has made a distinguished record in the fields of medicine, the natural sciences, the social sciences, and the humanities, and a number of its scholars have held fellowships from the Foundation or received other aid. For the assistance of the University of Helsinki in maintaining its teaching and research program at this critical period, the Foundation granted to the Government of Finland in 1940 \$25,000 for the period October 1, 1940, to October 31, 1941. These funds may be used for any and all departments, wherever they may be most usefully employed.

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, 1940.

A summary of commitments and funds available for commitment follows:

Outstanding commitments, December 31, 1939

Unpaid appropriations.....	\$21,929,745.48
Unappropriated authorizations.....	965,465.55

\$22,895,211.03

Commitments during 1940

Appropriations

Public Health.....	\$2,750,000.00
Medical Sciences.....	1,285,034.00
Natural Sciences.....	2,188,180.00
Social Sciences.....	1,499,000.00
Humanities.....	1,074,780.00
Program in China.....	200,000.00
Miscellaneous.....	70,000.00
Administration.....	832,503.28

\$9,899,497.28

Less appropriations for which funds were previously authorized.....

45,000.00

\$9,854,497.28

Plus authorizations for later appropriation by the Executive Committee....

152,857.00 10,007,354.28

\$32,902,565.31

LESS

Payments during the year 1940..... \$10,770,047.53

Sum of unused balances of appropriations allowed to lapse (including \$58,423.47 reverting to Principal Fund).....

902,632.66 11,672,680.19

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Outstanding commitments, December

31, 1940

Unpaid appropriations.....	\$20,121,772.56
Unappropriated authorizations....	1,108,112.56
	<hr/>
	\$21,229,885.12

FUNDS AVAILABLE FOR COMMITMENT

Balance, December 31, 1939.....	\$1,756,020.88
---------------------------------	----------------

Add

Income and refunds received during

the year 1940

Income.....	\$7,605,328.31
Refunds.....	7,272.41

Gift received from Mr. Carlos E.

Fernandez.....	14.50
----------------	-------

Lapses during 1940.... \$902,632.66

Less portion which re-	
verts to Principal Fund	58,423.47

844,209.19

Amount transferred from Principal	
Fund to cover appropriation made	
at meeting of April 3, 1940.....	1,150,000.00

9,606,824.41

\$11,362,845.29

Deduct

Net commitments during 1940 as shown on page 361	10,007,354.28
--------------------------------------------------	---------------

Balance, December 31, 1940.....	\$1,355,491.01
---------------------------------	----------------

The balance in Principal Fund, December 31, 1939, amounted to \$146,159,942.09. The sum appropriated from Principal Fund during the year (\$1,150,000), less a lapse of the unexpended balance of prior year appropriation from principal (\$58,423.47), resulted in a decrease of \$1,091,576.53, or a balance December 31, 1940,

of \$145,068,365.56. There was no change in the Reserve for Contingent Projects Account.

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

Balance Sheet.....	Exhibit A
Statement of Principal Fund.....	Exhibit B
Statement of Reserve for Contingent Projects	Exhibit B
Statement of Funds Available for Commit- ment and Disbursement.....	Exhibit C
Summary of Appropriations and Authoriza- tions.....	Exhibit D
Statement of Building and Equipment Fund.	Exhibit E
Statement of Appropriations During 1940, Unpaid Balances as at December 31, 1939, of Prior Year Appropriations, and Pay- ments Thereon During 1940.....	Exhibit F
Statement of Refunds on Prior Year Closed Appropriations.....	Exhibit G
Statement of International Health Division — Designations During 1940, Unpaid Balances as at December 31, 1939, of Prior Year Des- ignations, and Payments Thereon During 1940.....	Exhibit H
Finance Committee's Statement of Transac- tions Relating to Invested Funds.....	Exhibit I
Schedule of Securities on December 31, 1940..	Exhibit J

EXHIBIT A**BALANCE SHEET—DECEMBER 31, 1940****ASSETS****INVESTMENTS**

Securities (Ledger value).....	\$148,948,591.48
(Market value \$141,716,725.01)	

CURRENT ASSETS

Cash on deposit.....	\$19,175,213.99
Sterling on deposit in London £30,343-13-2 @ 3.614.....	109,664.34
Advances and deferred charges...	1,162,871.03
Sundry accounts receivable.....	20,163.26
	<hr/>

BUILDING AND EQUIPMENT

In New York.....	\$58,556.72
In Paris.....	63,726.20
	<hr/>
	\$169,538,787.02
	<hr/>

EXHIBIT A

BALANCE SHEET — DECEMBER 31, 1940

FUNDS AND OBLIGATIONS

PRINCIPAL FUND..... \$145,068,365.56

RESERVE FOR CONTINGENT PROJECTS..... 1,700,000.00

COMMITMENTS

Unpaid appropriations..... \$20,121,772.56

Unappropriated authorizations.. 1,108,112.56

_____ 21,229,885.12

FUNDS AVAILABLE FOR COMMITMENT..... 1,355,491.01

DEFERRED CREDITS..... 40,210.23

ACCOUNTS PAYABLE..... 22,552.18

BUILDING AND EQUIPMENT FUND..... 122,282.92

_____ \$169,538,787.02

EXHIBIT B

STATEMENT OF PRINCIPAL FUND

Balance, December 31, 1939.....	\$146,159,942.09
Add	
Unexpended balance of prior year appropriation (RF 39050) allowed to lapse.....	58,423.47
	<hr/>
	\$146,218,365.56
Deduct	
Amount appropriated to University of California (RF 40036) at meeting of April 3, 1940.....	1,150,000.00
	<hr/>
Balance, December 31, 1940.....	\$145,068,365.56
	<hr/>

STATEMENT OF RESERVE FOR CONTINGENT PROJECTS

Balance, December 31, 1939 (Unchanged).....	\$1,700,000.00*
	<hr/>
* Authorized by the trustees at meeting of April 15, 1936.....	\$500,000.00
December 1, 1937.....	1,200,000.00
	<hr/>
	\$1,700,000.00
	<hr/>

EXHIBIT C

STATEMENT OF FUNDS AVAILABLE FOR COMMITMENT AND DISBURSEMENT

AMOUNTS AVAILABLE

Balance, December 31, 1939			
For unpaid appropriations.....	\$21,929,745.48		
For unappropriated authorizations.....	965,465.55		
Funds available for commitment.....	1,756,020.88	\$24,651,231.91	
Income and refunds received during the year 1940			
Income.....	\$7,605,328.31		
Refunds.....	7,272.41		
		\$7,612,600.72	
Gift received from Mr. Carlos E. Fernandez.....	14.50		
Amount transferred from Principal Fund to cover appropriation made at meeting of April 3, 1940.....	\$1,150,000.00		
Less lapse reverting to Principal Fund — Unexpended balance of appropriation RF 39050.....	58,423.47	1,091,576.53	8,704,191.75
			\$33,355,423.66

DISBURSEMENTS

Public Health.....	\$2,096,323.21
Medical Sciences.....	1,664,670.16
Natural Sciences.....	2,973,445.42
Social Sciences.....	1,924,543.71
Humanities.....	1,008,147.39
Program in China.....	152,526.28

EXHIBIT C — *Continued*DISBURSEMENTS — *Continued*

Miscellaneous.....	\$142,952.10
Administration	
Scientific Divisions.....	544,512.66
General.....	262,926.60
	<u>\$10,770,047.53</u>
Balance, December 31, 1940.....	<u>\$22,585,376.13*</u>
* This balance is available as follows	
For unpaid appropriations.....	\$20,121,772.56
For unappropriated authorizations.....	1,108,112.56
	<u>\$21,229,885.12</u>
Probable payments in the following years	
1941.....	\$12,250,002.12
1942.....	4,550,692.00
1943.....	2,537,456.00
1944.....	661,346.00
1945.....	1,023,075.00
1946.....	111,150.00
1947.....	67,500.00
1948.....	28,664.00
	<u>\$21,229,885.12</u>
Balance available for commitment.....	1,355,491.01
Balance, December 31, 1940, as above.....	<u>\$22,585,376.13</u>

EXHIBIT D

SUMMARY OF APPROPRIATIONS AND AUTHORIZATIONS

Unpaid appropriations and unappropriated authorizations, December 31, 1939

Unpaid appropriations.....	\$21,929,745.48
Unappropriated authorizations.....	965,465.55

Appropriations and authorizations during the year ended December 31, 1940

Appropriations.....	\$9,899,497.28
Less appropriations for which funds were previously authorized.....	45,000.00
	\$9,854,497.28
Plus authorizations for later appropriation.....	152,857.00
	10,007,354.28
	\$32,902,565.31

LESS

Payments during the year 1940.....	\$10,770,047.53
Sum of unused balances of appropriations allowed to lapse (including \$58,423.47 reverting to Principal Fund).....	902,632.66
	11,672,680.19

Balance, December 31, 1940.....

* This balance consists of	
Unpaid appropriations.....	\$20,121,772.56
Unappropriated authorizations.....	1,108,112.56
	\$21,229,885.12

EXHIBIT E
STATEMENT OF BUILDING AND EQUIPMENT FUND

	BALANCE DEC. 31, 1940	NET ADDITIONS 1940	BALANCE DEC. 31, 1940
New York Office			
Library.....	\$16,972.74	\$1,531.61	\$18,504.35
Equipment.....	40,189.50*	137.13 Cr.	40,052.37
Paris Office			
Part interest in building occupied by Paris Office.....	63,793.40	67.20 Cr.	63,726.20
	<hr/> <u>\$120,955.64</u>	<hr/> <u>\$1,327.28</u>	<hr/> <u>\$122,282.92</u>

*After deducting depreciation of \$3,395.66.

EXHIBIT F

APPROPRIATIONS DURING 1940, UNPAID BALANCES AS AT DECEMBER 31, 1939, OF PRIOR YEAR APPROPRIATIONS, AND PAYMENTS THEREON DURING 1940

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS	TREASURER'S REPORT
PUBLIC HEALTH				
International Health Division of The Rockefeller Foundation*				
Prior years (RF 37113, 38103).....	\$1,614,133.77			
1940 (RF 39096).....	2,000,000.00	\$.....	\$1,867,204.21	
1941 (RF 40125).....	2,000,000.00	
Rockefeller Foundation Health Commission (RF 40080).....	250,000.00	38,283.90	
Revolving Fund. To provide working capital (RF 29093).....	200,000.00	
Schools and Institutes of Hygiene and Public Health				
Romania. Bucharest				
Construction and equipment (RF 33078).....	16,970.71	
Health center (RF 33079).....	15,000.00	
Sweden. Stockholm				
Construction and equipment (RF 38099).....	221,642.57	190,835.10	
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	\$1,074,447.05	\$2,750,000.00	\$2,096,323.21	371

* A complete financial statement of the work of the International Health Division for 1940 will be found in Exhibit H, pages 411 to 430.

EXHIBIT F—*Continued*

	PRIOR YEARS	APPROPRIATIONS 1940	1940 PAYMENTS
MEDICAL SCIENCES			
Psychiatry, Neurology, and Allied Subjects			
American Psychiatric Association, New York City			
Conferences for professional personnel of state mental hospitals (RF 40012).....	\$.....	\$12,500.00	\$4,500.00
Catholic University of America, Washington, D. C.			
Teaching and research in psychiatry and child guidance (RF 39026).....	75,000.00	20,000.00
Centre Neurologique de Bruxelles, Belgium			
Research (RF 38007).....	5,257.60	3,413.97
Child Research Council of Denver, Colorado			
Psychological studies (RF 39028).....	17,900.00	2,700.00
Columbia University, New York City			
Study of constitutional aspects of disease (RF 36103, 39005).....	35,115.88	14,000.00
Teaching and research in neurology (RF 38080).....	78,177.38	19,667.14
Cornell University, Ithaca, New York			
Study of reflex behavior in relation to neuroses (RF 38018).....	13,500.00	8,708.22
Dikemark Mental Hospital, Asker, Norway			
Research on mental disease (RF 39044).....	14,791.51	2,294.35
Duke University, Durham, North Carolina			
Teaching and research in psychiatry and mental hygiene (RF 40005)....	175,000.00	12,500.00
Emma Pendleton Bradley Home, Providence, Rhode Island			
Research in electroencephalography (RF 38069).....	7,500.00	5,000.00
Forman Schools, Litchfield, Connecticut			
Studies on apraxia and related phenomena in children (RF 39065).....	44,880.00	9,940.00

Harvard Medical School and Massachusetts General Hospital, Boston, Massachusetts			
Teaching and research in psychiatry (RF 39027, 40006).....	\$34,000.00	\$106,000.00	\$63,000.00
Harvard University, Cambridge, Massachusetts			
Research in epilepsy at Harvard Medical School and Boston City Hospital (RF 37060, 40007).....	8,750.00	57,000.00	18,250.00
Research in industrial hazards (RF 37055, 40064).....	175,811.18	30,000.00	68,373.03
Research in neurophysiology (RF 36125).....	37,500.00	13,045.81
Studies at the Psychological Clinic (RF 40102).....	60,000.00
Institute of the Pennsylvania Hospital, Philadelphia			
Research and teaching in psychiatry (RF 39043, 40129).....	45,000.00	75,000.00	30,000.00
Institute for Psychoanalysis, Chicago, Illinois			
General activities (RF 38021).....	78,750.00	25,584.41
Johns Hopkins University, Baltimore, Maryland			
Development of neurology (RF 36022, 40008).....	4,623.75	23,000.00	8,775.06
Neurological research (RF 37080).....	4,443.62	1,760.30
Research and teaching in psychiatry (RF 39020, 40103).....	53,825.00	36,650.00	35,333.48
London County Council, England			
Research in psychiatry at Maudsley Hospital (RF 38061).....	103,681.25	26,257.13
Massachusetts Department of Mental Health, Boston			
Publication of statistical data on mental disease in Massachusetts (RF 35003).....	13,499.34	9,091.72
Research in psychiatry at Boston State Hospital (RF 39024).....	20,550.00	13,700.00
McGill University, Montreal, Canada			
Research in epilepsy and dementia (RF 38068).....	29,894.92	10,593.76

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>			
Psychiatry, Neurology, and Allied Subjects — <i>Continued</i>			
Medical Research Council, London, England			
Research in endocrinology, psychiatry, neurology, and allied subjects (RF 39002).....	\$42,968.75	\$.....	\$4,574.77
Research in hereditary mental diseases (RF 37056).....	9,235.26	2,510.27
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).....	12,175.00	6,000.00
Special studies (RF 39066).....	10,500.00	5,310.00
Northwestern University Medical School, Chicago, Illinois			
Research in neuroanatomy (RF 37010).....	12,607.40	5,000.00
Royal Medico-Psychological Association, London, England			
Teaching and training in psychiatry (RF 37098).....	4,715.00	1,216.57
Tavistock Clinic, London, England			
Research in field of psychosomatic medicine (RF 39067).....	17,859.38	2,433.14
Tufts College Medical School, Boston, Massachusetts			
Research in brain chemistry (RF 40027).....	30,000.00	6,000.00
Research in neurology (RF 40009).....	25,000.00	5,000.00
Tulane University, New Orleans, Louisiana			
Maintenance of subdepartment of psychiatry (RF 39021).....	25,000.00	10,000.00

University of Brussels, Belgium				
Research in neurophysiology and endocrinology (RF 39068).....	\$24,850.00	\$.....	\$1,704.70
University of Cambridge, England				
Department of Experimental Medicine. Research (RF 37137).....	33,283.00	1,654.88
Department of Experimental Psychology. Research (RF 37079).....	45,875.41	6,081.68
University of Chicago, Illinois				
Psychiatric teaching and research (RF 38016).....	75,000.00	47,194.67
University of Cincinnati, Ohio				
Research in neurology in relation to nutrition (RF 37107).....	22,725.25	7,263.21
University of Colorado, Denver. School of Medicine				
Teaching of psychiatry (RF 39022).....	25,000.00	9,880.00
University of Edinburgh, Scotland				
Research in psychiatry, neurology, and neurosurgery (RF 36054, 40087)	8,732.09	18,250.00	8,600.25
University of Freiburg, Germany				
Neuropsychiatric research (RF 37138).....	8,085.48
University of Helsinki, Finland				
Research in neurophysiology (RF 37099).....	3,452.74	3,452.74
University of Illinois, Urbana				
Teaching and research in psychiatry at the Medical School in Chicago (RF 39023).....	27,500.00	15,000.00
Development of neurology and neurosurgery (RF 40105).....	8,000.00
University of Leiden, Netherlands				
Research in child psychiatry (RF 34145).....	6,453.69	Cr. 26.46
University of Lund, Sweden				
Enlargement of research facilities in neurology (RF 39063).....	27,000.00	8,439.70

EXHIBIT F — *Continued*

		APPROPRIATIONS PRIOR YEARS	1940 1940 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>			
Psychiatry, Neurology, and Allied Subjects — <i>Continued</i>			
University of Oslo, Norway	Research in neuroanatomy and neuropathology (RF 37057).....	\$2,223.69	\$..... \$100.00
University of Oxford, England	Research in brain chemistry (RF 39061).....	12,000.00 2,409.10
University of Toronto, Canada	Research in psychiatry (RF 39001).....	81,218.31 17,631.25
Washington University, St. Louis, Missouri	Research in neurophysiology (RF 38017).....	66,024.25 11,961.16
	Support of Department of Neuropsychiatry (RF 38067).....	75,102.76 49,946.65
Worcester State Hospital, Massachusetts	Research on dementia praecox (RF 37034, 40057).....	9,676.35	37,500.00 15,750.00
Yale University, New Haven, Connecticut. School of Medicine	Development of psychiatry (RF 37114).....	262,500.00 75,000.00
Endocrinology			
Brush Foundation, Cleveland, Ohio	Researches on human ovulation (RF 37032).....	3,000.00 3,000.00
Columbia University, New York City	Researches in endocrinology (RF 37074, 40011).....	11,643.04	42,000.00 21,000.00
Harvard University, Cambridge, Massachusetts	Researches in endocrinology (RF 37078).....	5,000.00 3,500.00

Massachusetts General Hospital, Boston				
Research on the parathyroid hormone and calcium and phosphorus metabolism (RF 38082).....	\$14,000.00	\$.....	\$4,000.00
National Research Council, Washington, D. C.				
Committee for Research in Problems of Sex (RF 37123).....	119,803.24	66,542.74
University of California, Berkeley				
Research on hormones and vitamins (RF 39062).....	67,500.00	14,888.48
Yale University, New Haven, Connecticut				
Research in endocrinology (RF 39003).....	27,000.00	17,798.84
Teaching of Public Health in Medical Schools				
Cornell University Medical College, New York City				
Department of Public Health and Preventive Medicine. Maintenance (RF 36057).....	42,000.00	28,000.00
Dalhousie University, Halifax, Nova Scotia				
Development of teaching in public health and preventive medicine (RF 38081).....	11,191.75	5,933.60
University of Manitoba, Winnipeg, Canada				
Development of teaching of preventive medicine (RF 40061).....	10,800.00
West China Union University				
Support of public health practice field (RF 40063).....	10,000.00	1,355.16
Yale University, New Haven, Connecticut, School of Medicine				
Development of teaching of public health and preventive medicine (RF 40062).....	9,000.00	1,500.00
Fellowships				
Administered by The Rockefeller Foundation (RF 35172, 36144, 37129, 38113, 39112, 40065, 40134).....	256,051.10	65,000.00	63,204.88

EXHIBIT F — *Continued*

	PRIOR YEARS	APPROPRIATIONS 1940	1940 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>			
Fellowships — <i>Continued</i>			
Medical Research Council, London, England (RF 37033).....	\$17,700.72	\$.....	\$1,825.20
National Research Council, Washington, D. C. (RF 37061, 40056).....	42,763.31	70,000.00	24,896.30
Scholarships for British Medical Students (RF 40127).....	100,000.00
General			
Commission on Graduate Medical Education, New York City			
Study of graduate medical education (RF 38010).....	12,000.00	3,121.98
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).....	23,083.73	15,000.01
Dartmouth College, Hanover, New Hampshire			
Research in physiological optics (RF 38083).....	30,000.00	10,000.00
Grants in Aid (RF 35173, 36148, 38109, 39116, 40066, 40094, 40138).....	182,742.90	165,000.00	79,567.87
Harvard University, Cambridge, Massachusetts			
Development of legal medicine (RF 39029).....	12,500.00	2,500.00
School of Dental Medicine. Endowment (RF 39111).....	400,000.00	400,000.00
Johns Hopkins University, Baltimore, Maryland			
Institute of History of Medicine (RF 38022).....	127,500.00	15,000.00
School of Medicine. Research Fund (RF 39004).....	70,000.00	20,000.00
Leland Stanford Junior University, Palo Alto, California			
Researches in kidney diseases (RF 37030, 40010).....	5,470.57	21,000.00	8,000.00

Research Council of the Department of Hospitals, New York City			
Research on chronic diseases (RF 38008, 40104).....	\$24,309.27	\$73,334.00	\$21,707.09
University of Buenos Aires, Argentina			
Institute of Physiology, Research (RF 40128).....	25,000.00	2,000.00
University of Paris, France, Radium Institute			
Division of Biophysics (RF 32076).....	44,256.19	2,749.77
Former Program			
Institute of the Educational Sciences, Geneva, Switzerland			
General budget (RF 35152, 36106).....	3,791.71
Leland Stanford Junior University, Palo Alto, California			
Fluid research fund in medicine (RF 38060).....	55,000.00	15,000.00
National Research Council, Washington, D. C.			
Committee on Drug Addiction (RF 36011).....	33,131.69	15,739.92
Peiping Union Medical College, China			
Allowance for widow of staff member (RF 29034).....	3,562.70
University of Copenhagen, Denmark			
Research on inheritance in relation to blood groupings (RF 34112)....	1,231.00
University of Paris, France			
Support of Department of Parasitology (RF 36056).....	7,764.67	687.44
Washington University, St. Louis, Missouri			
Maintenance of Departments in the School of Medicine (RF 38059)....	341,163.59	39,574.22
TOTAL — MEDICAL SCIENCES	\$3,862,931.54	\$1,285,034.00	\$1,664,670.16

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS	380
NATURAL SCIENCES				
Experimental Biology				
Amherst College, Massachusetts				
Research in genetics, experimental embryology, and growth problems (RF 39104).....	\$32,500.00	\$.....	\$3,600.00	THE ROCKEFELLER FOUNDATION
Brown University, Providence, Rhode Island				
Researches in genetics (RF 39032).....	6,600.00	2,968.86	
California Institute of Technology, Pasadena				
Developments of chemistry in relation to biological problems (RF 39073, 40074).....	35,000.00	45,000.00*	22,709.99	
Researches in serological genetics (RF 40073).....	12,000.00	
Carlsberg Foundation, Copenhagen, Denmark				
Special researches under Professor Linderstrøm-Lang (RF 37024).....	8,759.90	3,472.03	
Catholic University of America, Washington, D. C.				
Researches on decomposition and synthesis of certain polynuclear ring systems (RF 40059).....	28,000.00	2,800.00	
Collège de France, Laboratory of Atomic Synthesis, Paris				
Research on biological problems (RF 37093).....	9,000.00	3,099.85	
Columbia University, New York City				
Researches in Departments of Biochemistry and Urology and in the Presbyterian Hospital (RF 40003).....	11,800.00	5,900.00	

* Appropriation for which funds were previously authorized.

Researches in nutrition (RF 37084).....	\$2,750.00	\$.....	\$2,750.00
Researches on problems of metabolism, with the aid of chemical isotopes (RF 38026).....	51,300.00	14,050.00
Researches on vitamins and related substances in relation to plant growth (RF 40107).....	25,000.00
Connecticut Agricultural Experiment Station, New Haven			
Researches in genetics of growth in plants (RF 40106).....	17,500.00
Cornell University, Ithaca, New York			
Researches on biochemistry of proteins, peptides, amino acids, hormones, and related compounds (RF 38094).....	14,970.72	10,260.36
Researches in nutrition (RF 36029).....	15,022.48	7,499.19
Duke University, Durham, North Carolina			
Researches on physical chemistry of proteins (RF 40076).....	9,000.00	3,000.00
Eidgenössische Technische Hochschule, Zurich, Switzerland. Laboratory of Organic Chemistry			
Researches on constitution and synthesis of physiologically active compounds (RF 38042).....	44,406.60	13,745.42
Fondation Rothschild, Paris, France. Institute of Physicochemical Biology			
Researches in cellular physiology, chemical embryology, and genetics (RF 36067).....	34,449.18	5.74
Harvard University, Cambridge, Massachusetts			
Chemical research to determine the heats of organic reactions (RF 38019). Researches in Department of Physical Chemistry (RF 38038).....	11,502.05	7,750.00
Indiana University, Bloomington			
Researches in cytogenetics (RF 40001).....	75,200.62	14,000.00
	20,000.00	2,000.00

EXHIBIT F — *Continued*

		APPROPRIATIONS PRIOR YEARS	1940 1940 PAYMENTS
NATURAL SCIENCES — <i>Continued</i>			
Experimental Biology — <i>Continued</i>			
Iowa State College, Ames			
Researches in genetics (RF 40075).....	\$.....	\$21,000.00	\$5,500.00
Johns Hopkins University, Baltimore, Maryland			
Researches in biochemistry (RF 39017).....	26,500.00	13,000.00
Researches on the role of certain mineral elements in metabolism (RF 36099).....	9,753.17	6,492.84
Karolinska Institut, Stockholm, Sweden			
Researches in biochemistry (RF 40004).....	5,330.00	5,009.18
Long Island Biological Association, Cold Spring Harbor, New York			
Symposia at Cold Spring Harbor Laboratory (RF 39105).....	10,000.00	10,000.00
Marine Biological Association of the United Kingdom, Plymouth, England			
Building and equipment (RF 38071).....	887.25
Marine Biological Laboratory, Woods Hole, Massachusetts			
Construction and furnishing of addition to library (RF 40037).....	110,400.00	39,776.62
Massachusetts Institute of Technology, Cambridge			
Development of biological engineering (RF 40039).....	200,000.00	20,000.00
McGill University, Montreal, Canada			
Research in cytology and genetics (RF 40072).....	11,000.00
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).....	10,000.00	5,000.00

National Research Council, Washington, D. C.				
Committee on Effects of Radiation on Living Organisms (RF 38072).....	\$178.10	\$.....	\$69.50	
Researches in biophysics (RF 37020).....	39,426.94	18,008.37	
New York University, New York City				
Researches in cellular physiology (RF 38085).....	20,000.00	5,000.00	
Princeton University, New Jersey				
Researches in organic chemistry (RF 37052, 40058).....	2,500.00	40,000.00	6,500.00	
Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine				
Special researches (RF 40024).....	13,500.00	2,250.00	
State University of Iowa, Iowa City				
Researches in general physiology (RF 40022).....	24,000.00	3,000.00	
Research on the normal cell (RF 35050).....	2,250.00	2,250.00	
Strangeways Research Laboratory, Cambridge, England				
Building and equipment of additional wing (RF 37109).....	1,167.76	
Swarthmore College, Pennsylvania				
Researches in general physiology (RF 40002).....	10,500.00	1,750.00	
University of Berne, Switzerland				
Researches in physiology (RF 37054).....	14,183.07	3,403.66	
University of California, Berkeley				
Construction and installation of cyclotron (RF 40036).....	1,150,000.00	
Cyclotron research (RF 39042).....	41,667.00	8,333.00	
University of Cambridge, England. Molteno Institute of Biology and Parasitology				
Research in cellular physiology (RF 35146).....	10,098.65	4,639.36	
University of Chicago, Illinois				
Biological research (RF 38037).....	90,000.00	12,536.99	

EXHIBIT F — *Continued*

		APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
NATURAL SCIENCES — <i>Continued</i>				
Experimental Biology — <i>Continued</i>				
University of Chicago, Illinois — <i>Continued</i>				
Endowment of biological research (RF 38036).....	\$1,500,000.00	\$.....	\$1,500,000.00	
Researches in molecular spectra (RF 39030).....	19,450.00	9,300.00	
Researches in application of spectroscopic methods to biological problems (RF 36081, 40021).....	5,377.45	55,000.00	10,350.00	
University of Copenhagen, Denmark				
Special research in application of methods of physics, chemistry, and mathematics to biological problems (RF 35043, 40025).....	10,114.75	8,400.00	12,026.19	
University of Illinois, Urbana				
Research in biochemistry of amino acids (RF 38039).....	52,500.00	15,000.00	
University of Leeds, England				
Research on x-ray analysis of biological tissues (RF 38041).....	40,690.25	7,493.93	
University of London, England				
Researches on vitamins, sterols, and related compounds (RF 38070)....	48,418.31	4,370.88	
University of Michigan, Ann Arbor				
Research in physiology of respiration (RF 35049).....	2,575.96	2,500.00	
University of Minnesota, Minneapolis				
High-pressure generator, and researches in biology and medicine (RF 37053).....	10,054.14	10,000.00	
Researches in lipid metabolism (RF 39031).....	13,500.00	3,000.00	
Researches on mechanism of osmosis (RF 39056).....	13,750.00	5,500.00	

University of Missouri, Columbia				
Researches in genetics (RF 39041).....	\$17,500.00	\$.....	\$4,988.03	
University of Oxford, England				
Construction and equipment of research laboratory for organic chemistry (RF 39039).....	115,000.00	41,241.88	
Research in application of mathematical analyses to biological problems (RF 35144).....	2,906.25	2,027.62	
Research on synthesis of proteins (RF 36083).....	17,324.34	8,487.81	
University of Pennsylvania, Philadelphia				
Research on influence of minerals and other elements in diet upon resistance to infection (RF 37075).....	1,000.00	1,000.00	
Researches on permeability of red blood cell (RF 40023).....	10,000.00	1,250.00	
University of Rochester, New York				
Research on biological and medical problems (RF 38025).....	18,000.00	11,937.93	
University of Stockholm, Sweden				
Researches under direction of Professor Runnström (RF 37022, 38024).....	27,972.12	10,416.60	
Scientific equipment and materials for researches under direction of Pro- fessor von Euler (RF 37023).....	5,646.73	4,073.37	
Wenner-Grens Institute of Experimental Biology				
Construction and equipment (RF 37021, 38023).....	10,129.30	3,838.07	
University of Texas, Austin				
Researches on growth-promoting substances (RF 40070).....	15,000.00	3,000.00	
University of Uppsala, Sweden. Institute of Physical Chemistry				
Research on physical-chemical properties of proteins and other heavy mole- cules (RF 35044, 40026).....	20,270.30	11,250.00	10,062.19	

EXHIBIT F — *Continued*

		APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
NATURAL SCIENCES — <i>Continued</i>				
Experimental Biology — <i>Continued</i>				
University of Utrecht, Netherlands				
Researches in biochemistry of growth substances (RF 39007).....	\$19,353.44	\$.....	\$2,009.84	
Research in spectroscopic biology and addition to laboratory (RF 37094) ..	26,832.40	4,024.69	
University of Virginia, Charlottesville				
Development of ultracentrifuges (RF37008).....	405.53	
University of Wisconsin, Madison				
Research in immunogenetics (RF 38073).....	18,270.87	5,250.00	
Researches in biochemistry of symbiotic nitrogen fixation (RF 40071)...	22,500.00	1,500.00	
Washington University, St. Louis, Missouri				
Construction of cyclotron in the Institute of Radiology (RF 39069)....	45,000.00	45,000.00	
Research in biochemistry (RF 38074).....	11,516.77	3,915.29	
Research in general physiology and experimental embryology (RF 38040)	35,637.21	10,200.00	
Fellowships				
Administered by The Rockefeller Foundation (RF 36145, 37130, 38114, 39113, 40135).....	243,398.66	50,000.00	69,964.75	
National Research Council, Washington, D. C. (RF 36070, 39070, 39103)..	215,988.02	50,117.84	
General				
American Institute of Physics, New York City				
Adjusting publication program to new circumstances created by the war (RF 40098).....	20,000.00	20,000.00	

American Mathematical Society, New York City			
Establishing an International Review Journal of Mathematics (RF 39071).	\$7,000.00	\$.....	\$5,500.00
Expenses of 1940 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).....	34,800.00	8,780.00
China Medical Board, Inc., New York City			
Peiping Union Medical College, China			
Human paleontological research in Asia (RF 32100, 36137).....	41,757.96	12,176.65
Cornell University, Ithaca, New York			
Researches in molecular structure (RF 40077).....	17,000.00	7,500.00
Grants in Aid (RF 35179, 36079, 36149, 37126, 38110, 39117, 40095, 40108, 40139).....	303,492.86	210,000.00	140,989.35
Massachusetts Institute of Technology, Cambridge			
Construction of differential analyzer (RF 36071).....	4,277.72	4,276.59
National Research Council, Washington, D. C.			
Division of Physical Sciences			
Publication fund for mathematical tables (RF 40060).....	15,000.00	15,000.00
Support of central purposes (RF 39102).....	50,000.00	25,000.00
Former Program			
Harvard University, Cambridge, Massachusetts			
Geophysical research (RF 35194).....	7,500.00	7,500.00
International Commission for the Polar Year 1932-33, Copenhagen, Denmark			
Equipment and expenses (RF 34132).....	12,000.00
Johns Hopkins University, Baltimore, Maryland, Departments of Biological Sciences			
Endowment (RF 39090).....	500,000.00	500,000.00
Research (RF 30005).....	13,750.00	13,750.00

EXHIBIT F — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
NATURAL SCIENCES — <i>Continued</i>			
Former Program — <i>Continued</i>			
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)	728.48	13.40
University of Virginia, Charlottesville			
Graduate research in the natural sciences (RF 34153)	2,500.00
Yale University, New Haven, Connecticut			
Laboratories of Primate Biology, Orange Park, Florida. Maintenance (RF 39008)	164,000.00	46,981.56
TOTAL — NATURAL SCIENCES	\$4,342,038.92	\$2,188,180.00	\$2,973,445.42
SOCIAL SCIENCES			
American Association of Schools of Social Work			
Development of standards for training public welfare officials (RF 38014) . . .	\$9,750.00	\$.....	\$8,250.00
American Statistical Association, Washington, D. C.			
General budget (RF 35197)	1,500.00	1,500.00

American University, Washington, D. C.				
Training program for government employees of Latin American countries (RF 38063).....	\$7,200.00	\$.....	\$5,400.00	
American University of Beirut, Lebanon				
Work in social sciences (RF 35070).....	1,500.00	1,500.00	
Canadian Institute of International Affairs, Toronto, Ontario				
General budget (RF 39033).....	23,621.88	8,475.01	
Canton of Geneva, Switzerland				
Department of Public Instruction				
Graduate Institute of International Studies (RF 29136, 38045).....	520,851.96	83,286.04	
Centre d'Études de Politique Étrangère, Paris, France				
General budget (RF 38046).....	82,666.58	6,874.42	
Columbia University, New York City				
Council for Research in the Social Sciences (RF 30036, 30037).....	35,024.65	25,000.04	
Council on Foreign Relations, New York City				
Research in problems involved in peace settlement following present war (RF 39110).....	33,375.00	33,375.00	
Research program (RF 35189, 38015).....	47,435.79	15,000.00	
Council on Foreign Relations, New York City, and Institute for Advanced Study, Princeton, New Jersey				
Work of American Coordinating Committee of International Studies Confer- ence (RF 40018).....	40,000.00	25,000.00	
Dalhousie University, Halifax, Nova Scotia, Canada				
Program of training and research in public administration (RF 36093).	16,280.27	8,481.25	
Dutch Economic Institute, Rotterdam, Netherlands				
General budget (RF 36076, 39085).....	21,635.28	5,841.94	

EXHIBIT F — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
Fellowships			
Administered by The Rockefeller Foundation (RF 35195, 36146, 37131, 38115, 39114, 40136).....	\$182,002.57	\$50,000.00	\$52,422.42
Social Science Research Council, New York City (RF 37051, 40119).....	142,900.00	75,000.00	73,130.36
Foreign Policy Association, New York City			
Department of Popular Education (RF 37119).....	25,000.00	25,000.00
Latin American Information Service (RF 39074).....	7,500.00	5,000.00
Research Department (RF 38106).....	50,000.00	25,000.00
Geneva Research Center, Switzerland			
Collaborative study of commercial policy (RF 38095).....	24,501.81	10,000.00
General research budget (RF 37068).....	16,753.98	16,753.98
Grants in Aid (RF 36150, 37127, 38096, 38111, 39118, 40085, 40093, 40101, 40140).....	194,909.43	235,000.00	85,650.25
Harvard University, Cambridge, Massachusetts			
Graduate School of Public Administration			
General budget (RF 39109).....	55,000.00	7,500.00
Program of consultants (RF 38062).....	15,382.25	4,813.16
Training in public service (RF 35078).....	17,012.85	10,033.26
Research in social sciences (RF 32032, 35086).....	81,527.43	29,527.43
Harvard University and Radcliffe College, Cambridge, Massachusetts			
Research in field of international relations (LS 993).....	110,469.11	19,258.75

Institute for Advanced Study, Princeton, New Jersey			
Work in economics (RF 40033).....	\$.....	\$105,000.00	\$17,500.00
Institute of Economic and Social Research, Paris, France			
Establishment and support (RF 33072).....	111,085.43	16,104.92
Institute of Economics and History, Copenhagen, Denmark			
General budget (RF 36110).....	2,771.76	976.81
International Relations Section. General budget (RF 38065).....	12,772.53	5,215.72
Institute of International Affairs, Stockholm, Sweden			
General budget (RF 40122).....	11,000.00
Institute of Pacific Relations			
American Council, New York City			
General budget (RF 38108, 40121).....	15,000.00	30,000.00	15,000.00
International Secretariat			
Studies of issues involved in present situation in Far East (RF 38013)...	43,093.23	14,913.57
Pacific Council, Honolulu, Hawaii			
General budget and research program (RF 38107, 40120).....	40,000.00	89,000.00	40,000.00
International Information Committee, Stockholm, Sweden			
Program of research and popular education in international problems in Sweden (RF 38001).....	9,974.59	7,217.21
International Institute of Intellectual Cooperation, Paris, France			
Danubian Economic Study (RF 37118).....	4,000.00	4,000.00
Maintenance and conferences (RF 37117).....	12,439.13	11,759.69
League of Nations, Geneva, Switzerland			
Analytical research work of the Financial Section and Economic Intelligence Service (RF 33023, 37116).....	98,902.39	46,672.78
Economic, Financial, and Transit Department, Princeton, New Jersey (RF 40118).....	50,000.00

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
League of Nations, Geneva, Switzerland — <i>Continued</i>			
Fiscal Committee. Study of international double taxation problems (RF 33004).....	\$24,057.90	\$.....	\$20,700.37
Leland Stanford Junior University, Palo Alto, California			
Food Research Institute. Research program (RF 40046).....	60,000.00	10,000.00
Research in social sciences (RF 37069).....	2,500.00	2,500.00
Library of International Relations, Chicago, Illinois			
General budget (RF 36095).....	11,250.00	6,250.00
London and Cambridge Economic Service, England			
Research on business cycle (RF 37067).....	4,300.88	1,849.98
London School of Economics and Political Science, University of London, England			
Emergency fund (RF 39095).....	51,250.00	11,790.00
Library development (RF 31030).....	14,750.36	5,358.66
Purchase of land for expansion of school plant (RF 31028).....	34,140.38	16,767.14
Research fund (RF 35067).....	3,000.00	3,000.00
McGill University, Montreal, Canada			
Research in social sciences (RF 36078).....	2,649.79
National Bureau of Economic Research, New York City			
Committee on Financial Research			
Staff and studies (RF 39106).....	70,000.00	35,000.00

International study of history of prices (RF 29138, 33113).....	\$3,486.03	\$.....	\$3,469.85
Planning and research in field of finance (RF 37139).....	18,316.48	17,331.07
Program of research in fiscal policy (RF 40016).....	20,000.00	10,000.00
National Institute of Economic and Social Research of Great Britain, London General budget (RF 37049).....	103,723.75	16,841.80
National Institute of Public Affairs, Washington, D. C. Training of administrative personnel for the Indian Service (RF 37106)....	22,530.18	22,530.18
Training of personnel for the federal services (RF 38047, 40099).....	61,250.00	105,000.00	35,000.00
New School for Social Research, New York City Graduate Faculty of Political and Social Science (RF 40034).....	10,000.00	10,000.00
New York School of Social Work, New York City General budget (RF 32043).....	2,500.00	2,500.00
Norwegian Committee for International Studies, Oslo Program of research and popular education in international problems in Norway (RF 37102).....	10,485.87
Ontario Medical Association, Welland, Canada Development of medical relief records (RF 37016).....	1,656.84	1,108.91
Pacific Northwest Council of Education, Planning, and Public Administration Administration, research, and publication (RF 38048, 40048, 40123).....	39,082.27	57,500.00	32,250.00
Royal Institute of International Affairs, London, England Research program (RF 37004).....	112,597.50	40,051.47
Social Science Research Council, New York City Administrative budget (RF 39107).....	105,000.00	30,000.00
Committee on Social Security Exploratory studies, conferences, and small projects (RF 38064, 39082, 40088).....	22,000.00	15,000.00	12,837.84

EXHIBIT F — *Continued*

	PRIOR YEARS	APPROPRIATIONS 1940	1940 PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
Social Science Research Council, New York City — <i>Continued</i>			
Committee on Social Security — <i>Continued</i>			
Study of interrelations between social security program and national income in the United States (RF 39083).....	\$15,000.00	\$.....	\$6,850.00
Study of state unemployment compensation administration (RF 38101)..	5,000.00	1,200.00
Work in field of social security (RR 37070, 39081).....	76,172.78	30,000.00
Conferences and planning (RF 38043).....	99,760.24	48,213.86
General research projects (RF 31126).....	87,349.72
Grants in aid of research (RF 38044).....	50,150.00	22,200.00
Public Administration Committee			
General expenses, exploratory studies, conferences, and small projects (RF 35114, 39057, 39084, 40089).....	95,423.51	15,000.00	44,712.62
Study of administrative methods of Department of Agriculture (RF 37140)	9,666.36	5,000.00
Study of administrative organization of Tennessee Valley Authority (RF 36040).....	4,352.04	Cr. 12.64
Survey of programs of training in public administration (RF 37065).....	8,750.00
Research in the economic history of the United States, the islands, and nearby territory (RF 40116).....	300,000.00
Spelman Fund of New York, New York City			
Work in public administration (RF 38049).....	1,650,000.00	300,000.00

State Charities Aid Association, New York City			
Establishing local citizens public welfare committees in New York State (RF 37111).....	\$27,635.26	\$.....	\$27,126.59
Syracuse University, New York. School of Citizenship and Public Affairs			
Training course in public administration (RF 39058).....	43,500.00	6,500.00
University of Alabama, University. Bureau of Business Research			
Study of commodity production in the Southeast (RF 40017).....	10,000.00	10,000.00
University of California, Berkeley			
Bureau of Public Administration			
Establishing measurement standards for local government activities in the San Francisco-Oakland metropolitan region (RF 39059).....	25,000.00	10,000.00
Institute of Social Sciences			
Research program (RF 35068).....	2,500.00	2,500.00
University of Chicago, Illinois			
Aid to social science facilities (RF 31133, 35087).....	125,000.00	75,000.00
Local community research (RF 31131).....	31,522.50
School of Social Service Administration			
Current expenses (RF 39045).....	60,000.00	25,000.00
General endowment (RF 34057).....	500,000.00
Training and research in public administration (RF 38091).....	37,500.00	25,000.00
University of Delaware, Newark			
Study of individual income distribution (RF 40117).....	18,000.00
University of Louvain, Belgium. Institute of Economics			
General budget (RF 38102).....	11,286.76	686.47
University of Minnesota, Minneapolis			
Program of training for public service (RF 36065, 40035).....	17,649.19	39,000.00	12,500.00
Study of employment and unemployment in St. Paul (RF 40078).....	11,500.00	6,500.00

EXHIBIT F — *Continued*

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THE ROCKEFELLER FOUNDATION

SOCIAL SCIENCES — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
University of North Carolina, Chapel Hill Institute for Research in the Social Sciences General budget (RF 35069).....	\$2,500.00	\$.....	\$2,500.00
University of Oslo, Norway. Institute of Economics Research program (RF 36112).....	10,500.00	5,000.00
University of Oxford, England Business cycle research (RF 37015, 39060).....	4,654.42	3,446.96
Development of program in social sciences (RF 34154).....	26,826.31	15,208.19
Social Studies Research Committee (RF 40040).....	24,000.00	5,902.50
University of Paris, France Research in social sciences (RF 35072).....	41,128.41	14,894.59
University of Pennsylvania, Philadelphia. Wharton School. Industrial Research Department General budget (RF 35074, 40047).....	2,500.00	105,000.00	20,000.00
Studies of an old Philadelphia company and of unemployment in Philadelphia (RF 39080).....	11,000.00	11,000.00
University of Sofia, Bulgaria. Statistical Institute of Economic Research General budget (RF 37110).....	13,774.85	8,439.04
University of Southern California, Los Angeles. School of Government Development of program (RF 38033, 40124).....	18,000.00	24,000.00	11,939.02
University of Texas, Austin Research in social sciences (RF 37003).....	2,500.00	2,500.00

University of Virginia, Charlottesville				
Bureau of Public Administration				
Program of service and research (RF 36066, 39108).....	\$29,405.26	\$.....	\$8,890.23	
Institute for Research in the Social Sciences. General budget (RF 34175)...	1,250.00	1,250.00	
University of Wisconsin, Madison				
Study of amount and distribution of income in Wisconsin (RF 39079)....	25,350.00	14,775.00	
Welfare Council of New York City				
Research Bureau. General budget (RF 36139).....	15,000.00	15,000.00	
Western Reserve University, Cleveland, Ohio. School of Applied Social Sciences				
General budget (RF 32042, 33064, 34087).....	1,250.00	1,250.00	
Yale University, New Haven, Connecticut				
Research in international relations (RF 35079).....	5,000.00	5,000.00	
TOTAL — SOCIAL SCIENCES	\$5,988,225.74	\$1,450,000.00	\$1,924,543.71	

HUMANITIES

Drama

American Foundation for the Blind, New York City

Development of dramatic training work (RF 40109)..... \$..... \$30,000.00 \$.....

Carolina Art Association

General expenses of Dock Street Theatre, Charleston, South Carolina (RF 38051)..... 7,500.00 5,000.00

Cornell University, Ithaca, New York

State-wide program in music and drama (RF 40015)..... 20,000.00 5,150.00

Leland Stanford Junior University, Palo Alto, California

Work in drama (RF 40030)..... 25,000.00 6,000.00

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
HUMANITIES — <i>Continued</i>			
Drama — <i>Continued</i>			
National Theatre Conference, Cleveland, Ohio			
General expenses and revolving fund to cover royalty fees on plays for non-commercial production (RF 38054).....	\$8,521.29	\$.....	\$2,000.00
Support of activities and projects (RF 40131).....	55,000.00
Stevens Institute of Technology, Hoboken, New Jersey			
Research in control of sound and light for dramatic purposes (RF 39075)..	24,150.00	10,450.00
University of North Carolina, Chapel Hill			
Work in drama (RF 37028, 38050).....	16,500.00	12,000.00
Vassar College, Poughkeepsie, New York			
Preparation of reports of the Federal Theatre Project and of national modes of operation in the field of community drama (RF 39087).....	8,750.00	8,750.00
Yale University, New Haven, Connecticut			
Department of Drama			
Development and testing of equipment in theatre lighting (RF 40031).	19,500.00	10,000.00
Libraries and Museums			
American Library Association, Chicago, Illinois			
Aid in connection with the General Catalogue of the Bibliothèque Nationale (RF 36020).....	30,000.00
Committee on International Relations			
Activities in Canada, other British possessions, Greenland, and Europe (RF 39048).....	43,000.00	5,000.00

Preparation of new edition of Union List of Serials in the United States and Canada (RF 39051).....	\$28,600.00	\$.....	\$20,000.00
Studies of library cooperation with Latin America (RF 39047).....	22,500.00	9,175.00
American Library in Paris, Inc., France			
General budget (RF 40042).....	25,000.00	5,000.00
Bibliothèque pour Tous, Berne, Switzerland			
Book purchases and development of regional services (RF 39049).....	21,000.00	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).....	84,280.18	1,682.61
Folger Shakespeare Library, Washington, D. C.			
Purchase and cataloguing of books and manuscripts (RF 40041).....	50,000.00	15,331.85
Harvard University, Cambridge, Massachusetts			
Microfilm copies of foreign newspaper files (RF 38090).....	2,000.00	2,000.00
Library of Congress, Washington, D. C. Hispanic Foundation			
Development of catalogue of Hispanic material and organization of bibliographical services (RF 39097).....	22,000.00	10,906.50
Museum of Modern Art, New York City			
Current expenses (RF 39025).....	30,000.00	22,500.00
National Central Library, London, England			
Establishment of Bureau of American Bibliography (RF 37059).....	6,032.79	1,429.10
General operations (RF 40032).....	8,500.00	4,250.00
National Library of Peiping, China			
Development of library services (RF 36072).....	13,750.00	8,250.00

EXHIBIT F — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
HUMANITIES — <i>Continued</i>			
Libraries and Museums — <i>Continued</i>			
New York Museum of Science and Industry, New York City			
General budget (RF 39100).....	\$10,000.00	\$.....	\$10,000.00
New York Public Library, New York City			
Development of services in microfilm (RF 39098).....	15,000.00	15,000.00
Princeton University, New Jersey			
Index of Christian Art (RF 38100).....	46,000.00	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
Tulane University, New Orleans, Louisiana			
Cataloguing collections of museum of Middle American Research Institute (RF 38098).....	5,000.00	5,000.00
University of Chile, Santiago			
Development of its central library (RF 39094).....	8,000.00	3,732.69
University of Oxford, England			
Development of Bodleian and other libraries (RF 31121).....	727,870.25	152,501.70
Radio and Film			
American Film Center, Inc., New York City			
General budget (RF 39012, 40132).....	29,075.00	50,000.00	29,075.00
Columbia University, New York City			
Research in radio (RF 40014).....	35,400.00	25,400.00

Harvard University, Cambridge, Massachusetts			
Lecturer in broadcasting (RF 39086).....	\$24,000.00	\$.....	\$10,000.00
Library of Congress, Washington, D. C.			
Work in radio broadcasting (RF 40133).....	23,320.00
Museum of Modern Art, New York City			
Film library (RF 40068).....	60,000.00	15,000.00
National Committee of the United States of America on International Intellectual Cooperation, New York City			
International exchange of motion pictures of educational and cultural value (RF 39055).....	2,312.50	2,312.50
National Film Society of Canada, Ottawa. General budget (RF 39054)	15,125.47	8,036.89
New School for Social Research, New York City			
Experimental demonstrations of music in film production (RF 40013)...	20,160.00	9,720.00
Princeton University, New Jersey. School of Public and International Affairs			
Study of value of radio to listeners (RF 37072, 39076).....	3,000.00	3,000.00
Work of the listening center (RF 40054)	25,000.00	18,750.00
Rocky Mountain Radio Council, Laramie, Wyoming			
General budget (RF 40043).....	18,500.00	5,000.00
University Broadcasting Council, Chicago, Illinois			
Development of radio programs of educational and cultural value (RF 37073).....	7,500.00	7,500.00
World Wide Broadcasting Foundation, Boston, Massachusetts			
Development of radio programs of educational and cultural value (RF 38056).....	36,759.16	36,759.16

EXHIBIT F — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
HUMANITIES — <i>Continued</i>			
Far Eastern Interests			
American Council of Learned Societies, Washington, D. C.			
Cataloguing American collections of Chinese and Japanese books (RF 37120).....	\$45,629.40	\$.....	\$8,645.38
Summer seminars in Far Eastern Studies (RF 38088).....	7,500.00	3,000.00
Claremont Colleges, California			
Development of Far Eastern studies (RF 39077).....	10,000.00	8,000.00
Columbia University, New York City			
Books and teaching materials in Far Eastern languages (RF 38030)....	15,000.00	5,000.00
Promotion of Japanese studies (RF 37112).....	2,500.00	2,500.00
Visiting lecturer on Japanese cultural history (RF 39093).....	9,000.00	3,000.00
Cornell University, Ithaca, New York			
Development of Far Eastern studies (RF 38087).....	8,375.00	1,375.00
Development of Russian studies (RF 40052).....	14,000.00	3,125.00
Institute of Pacific Relations, American Council, New York City			
English translations of source materials on Chinese history (RF 39052) ..	25,750.00	10,900.00
Leland Stanford Junior University, Palo Alto, California			
Development of Far Eastern studies (RF 39053).....	13,312.50	4,255.58
Orthological Institute of China, Peiping			
General budget (RF 37012, 40028).....	4,985.38	9,600.00	5,965.51

Princeton University, New Jersey			
Development of Far Eastern studies (RF 38029).....	\$11,084.90	\$.....	\$2,950.00
Royal Ontario Museum of Archaeology, Toronto, Canada			
Teaching and research in Far Eastern subjects (RF 37121).....	15,078.11	6,250.00
University of Chicago, Illinois			
Books and teaching materials in Far Eastern languages (RF 38031)....	15,000.00	5,000.00
Development of new materials for teaching Chinese languages and literature (RF 36122).....	9,887.85	4,492.40
University of Pennsylvania, Philadelphia			
Development of Far Eastern studies (RF 38028).....	7,500.00	4,155.60
Yale University, New Haven, Connecticut			
Development of Chinese studies (RF 37026).....	8,800.00	5,900.00
Latin American Interests			
American Council of Learned Societies, Washington, D. C.			
<i>Handbook of Latin American Studies</i> (RF 38012).....	9,797.49	2,082.11
Work in field of Latin American studies (RF 40067, 40097).....	52,000.00	5,000.00
Argentine-North American Cultural Institute, Buenos Aires			
Development of program of teaching English, drama, and creative arts (RF 40081).....	15,000.00	2,619.60
Brown University, Providence, Rhode Island			
Increasing collections of material on early American history and Hispanic culture (RF 40069).....	35,000.00	5,235.03
Duke University, Durham, North Carolina			
Purchase of books and other documentation in field of Latin American studies (RF 40049).....	25,000.00

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS	THE ROCKEFELLER FOUNDATION
HUMANITIES — <i>Continued</i>				
Latin American Interests — <i>Continued</i>				
International Bureau of Education, Geneva, Switzerland. Children's Literature Section				
Studies in Latin American countries (RF 38003).....	\$4,000.00	\$.....	\$4,000.00	
National Institute of Anthropology and History, Mexico City				
Development of its program (RF 40130).....	20,000.00	
Pan American Union, Washington, D. C.				
Division of Intellectual Cooperation (RF 40029).....	12,000.00	4,000.00	
Tulane University, New Orleans, Louisiana				
Books and other documentation in field of Latin American studies (RF 40051).....	18,000.00	2,500.00	
University of North Carolina, Chapel Hill				
Books and other documentation in field of Latin American studies (RF 40050).....	25,000.00	3,000.00	
Fellowships				
Administered by The Rockefeller Foundation (RF 36147, 37132, 38116, 39115, 40090, 40137).....	104,525.57	65,000.00	49,254.32	
Authors' League of America, Inc., New York City				
(RF 38053).....	14,000.00	5,700.00	
National Theatre Conference, Cleveland, Ohio				
(RF 39019).....	24,000.00	8,000.00	

General

American Council of Learned Societies, Washington, D. C.				
Fellowships, planning committees, and foreign activities (RF 39046)....	\$55,000.00	\$.....	\$36,791.55	
General activities (RF 34157, 38105).....	81,673.47	20,241.68	
Boston Symphony Orchestra, Massachusetts				
Berkshire Music Center (RF 39101).....	60,000.00	35,000.00	
Grants in Aid				
(RF 37128, 38112, 39088, 39119, 40082, 40084, 40092, 40100, 40141)....	150,379.35	250,000.00	118,356.73	
Harvard University, Cambridge, Massachusetts				
Research in field of criticism and in uses of languages (RF 39018).....	45,000.00	5,000.00	
International Committee of Historical Sciences, Paris, France				
General budget, distribution of publications, and expenses of next Congress (RF 37141).....	9,800.00	2,600.00	
Library of Congress, Washington, D. C.				
Studies of communication trends in war time (RF 40111).....	20,000.00	10,000.00	
Payne Fund, New York City				
Preparation of materials for teaching English to foreign-born residents of the United States (RF 40053).....	20,000.00	6,250.00	
Princeton University, New Jersey, School of Public and International Affairs				
Studies of public opinion (RF 39099, 40110).....	7,000.00	20,000.00	7,000.00	
Former Program				
American School of Classical Studies, Athens, Greece				
Fellowships in archaeology in connection with excavation of the Athenian Agora (RF 40055).....	8,800.00	3,000.00	
Museum to house objects excavated at the Agora (RF 37089).....	125,000.00	

EXHIBIT F — *Continued*

	APPROPRIATIONS PRIOR YEARS	1940	1940 PAYMENTS
HUMANITIES — <i>Continued</i>			
Former Program — <i>Continued</i>			
American Schools of Oriental Research, Baghdad, Iraq, and Jerusalem, Palestine. Endowment (RF 36061)	\$50,338.90	\$.....	\$50,338.90
University of London, England. School of Oriental Studies			
Research in African linguistics (RF 36003).....	510.41
TOTAL — HUMANITIES.....	\$2,249,654.97	\$1,074,780.00	\$1,008,147.39
PROGRAM IN CHINA			
Associated Boards for Christian Colleges in China, New York City			
Emergency grants to private universities and colleges in China (RF 40045)	\$.....	\$65,000.00	\$65,000.00
Chinese Mass Education Movement			
General budget (RF 39050, 40044).....	8,515.62	6,250.00	5,984.07
Chinese Ministry of Education, Nanking. Commission on Medical Education			
General budget (RF 39050, 40044).....	6,080.00	2,000.00	2,366.71
Emergency Fund (RF 39016).....	9,055.00	7,261.30
Fellowships. Foreign and local (RF 37047, 38076, 39050, 40044).....	126,089.56	50,000.00	19,723.35
Grants in Aid (RF 39050, 40044).....	8,903.74	25,000.00	14,259.66

Ministry of Industry and Agriculture, Nanking. National Agricultural Research Bureau. Insect control work (RF 39050, 40044)	\$4,809.65	\$4,625.00	\$2,723.84
Nankai University, Tientsin. Institute of Economics General budget (RF 39050, 40044)	4,248.38	3,750.00	4,500.40
National Central University, Nanking. College of Agriculture Development of work in animal husbandry and veterinary medicine (RF 39050, 40044)	2,061.28	2,125.00	620.32
National Council for Rural Reconstruction General budget (RF 39050, 40044)	27,543.62	25,000.00	11,924.55
National Health Administration, Nanking Training of health personnel (RF 39050)	19,261.53	5,116.47
Unallocated balance of 1939-40 appropriation (RF 39050)	1,140.00
University of Nanking. Department of Agricultural Economics General budget (RF 39050, 40044)	11,900.00	8,750.00	6,041.17
Yenching University. Peiping College of Public Affairs General budget (RF 39050, 40044)	10,378.01	7,500.00	7,004.44
TOTAL — PROGRAM IN CHINA.....	\$239,989.39	\$200,000.00	\$152,526.28

MISCELLANEOUS

Emergency Committee in Aid of Displaced Foreign Scholars, New York City Salary and expenses of an assistant (RF 40096)	\$.....	\$10,000.00	\$2,500.00
Exchange Fund (RF 35100)	39,715.44

EXHIBIT F — *Continued*

	PRIOR YEARS	1940	1940 PAYMENTS
MISCELLANEOUS — <i>Continued</i>			
Government of Finland. University of Helsinki			
Teaching and research program (RF 40086).....	\$.....	\$25,000.00	\$25,000.00
History of The Rockefeller Foundation (RF 37037).....	9,858.71	2,860.50
New School for Social Research, New York City			
Administration of grants to European refugee scholars (RF 40083).....	35,000.00
Playground and Recreation Association of America, New York City			
General budget (LS 1000).....	10,000.00	10,000.00
Special Research Aid Fund for European Scholars (RF 35020, 35135, 35153, 36090, 37090, 38034, 38092, 39078, 39092).....	132,709.23	75,848.10
University of Minnesota, Minneapolis			
Child study and parent education (LS 933-34)	23,786.12	22,891.07
University of Toronto, Canada			
Child study and parent education (RF 30054).....	4,978.10
Visits by individuals and commissions (RF 30101).....	9,268.54	3,852.43
TOTAL — MISCELLANEOUS.....	\$230,316.14	\$70,000.00	\$142,952.10

ADMINISTRATION**Scientific Divisions**

1939.....	\$68,545.05	\$.....	\$22,829.49
1940.....	556,535.00	31,200.00	521,683.17
1941.....	539,575.00

General

1939.....	38,070.68	16,525.71
1940.....	278,991.00	1,487.28	246,400.89
1941.....	260,241.00

TOTAL — ADMINISTRATION.....	\$942,141.73	\$832,503.28	\$807,439.26
		\$21,929,745.48	

LESS**Unused Balances of Appropriations Allowed to Lapse**

Rockefeller Foundation	\$815,732.30*		
International Health Division.....	121,690.37	937,422.67	

GRAND TOTALS.....	\$20,992,322.81	\$9,899,497.28	\$10,770,047.53

* Includes \$34,790.01 which reverts to authorizations.

EXHIBIT G

REFUNDS ON PRIOR YEAR CLOSED APPROPRIATIONS

American School of Classical Studies, Athens, Greece	(RF 38097)	\$5 18
Chinese Ministry of Education, Nanking		
Commission on Medical Education	(RF 38075)	399.18
Columbia University, New York City	(RF 38020)	2 81
Drosophila Stock Center, Cold Spring Harbor, Long Island, New York	(RF 34035)	38 90
<i>Encyclopaedia of the Social Sciences</i> , New York City	(RF 32114)	1,110 80
Harvard University, Cambridge, Massachusetts	(RF 35031)	318 55
Institute of Public Administration, New York City	(RF 37005)	190 85
Institute of Public Health, Tokyo, Japan	(RF 32116)	16 43
League of Nations, Geneva, Switzerland	(RF 29076)	186.55
Library of Congress, Washington, D. C.	(RF 38002)	1,468 54
Ministry of Industry and Agriculture, Nanking, China		
National Agricultural Research Bureau	(RF 38075)	24 27
National Central University, Nanking, China	(RF 38075)	35
National Health Administration, Nanking, China	(RF 38075)	86.69
National Music League, New York City	(RF 37014)	36.74
Orthological Institute, Peking, China	(RF 36019)	1,468.75
Paris Office Building	(RF 21151)	67 20
Payne Fund, New York City	(RF 39013)	129 75
University of California, Berkeley	(RF 36004)	808 71
University of Nanking, China	(RF 38075)	1 26
University of Rochester, New York	(RF 36027)	1 15
Yale University, New Haven, Connecticut	(RF 36096)	909.75
		<hr/> \$7,272.41 <hr/>

EXHIBIT H

INTERNATIONAL HEALTH DIVISION

DESIGNATIONS DURING 1940, UNPAID BALANCES AS AT DECEMBER 31, 1939,
OF PRIOR YEAR DESIGNATIONS, AND PAYMENTS THEREON DURING 1940

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS	TREASURER'S REPORT
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES				
Anemia				
Puerto Rico				
1939 (IH 36047, 38043).....	8789.50	\$.....	\$687.55	
Schistosomiasis and Hookworm				
Egypt				
1938 (IH 37036, 37039).....	2,027.98	
1939 (IH 38044-45).....	1,704.18	857.59	
1940 (IH 39027).....	1,335.00	1,330.68	
Malaria				
Africa				
Egypt				
1938 (IH 37094, 38039).....	100.54	
1939 (IH 38051).....	356.72	224.87	
Caribbean Area				
Costa Rica				
1938-39 (IH 38008).....	10.12	
1939-40 (IH 38089, 39011, 39070).....	2,259.49	1,000.00	2,605.55	411

EXHIBIT H—Continued

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Malaria — <i>Continued</i>			
Caribbean Area — <i>Continued</i>			
Cuba			
1938-40 (IH 37087).....	\$5,408.33	\$.....	\$3,032.76
1940-42 (IH 39071).....	20,000.00	5,532.65
Haiti			
1940-41 (IH 40009).....	1,750.00
Panama			
1939 (IH 38049).....	1,433.28
Salvador			
1938-39 (IH 36047, 38038).....	27.05	27.05
1939-40 (IH 39020).....	1,500.00	1,500.00
1940-42 (IH 40010).....	10,000.00	462.00
Europe			
Albania			
1939 (IH 38092).....	1,798.69	337.27
Balkans, Italy, and Northern Europe			
1939 (IH 38050).....	66.77	66.77
Cyprus			
1938 (IH 37045).....	1,530.72
1939-40 (IH 38093).....	16,964.60	3,956.96

England				
University of Cambridge. Molteno Institute of Parasitology				
1939-41 (IH 39014).....	\$1,500.00	\$.....	\$608.28	
Greece				
1938 (IH 37046).....	1,431.61	
1939-40 (IH 38094).....	7,732.92	6,667.85	
Italy				
Institute of Public Health, Rome				
1938-39 (IH 37092).....	10,662.59	7,827.88	
Mediterranean Region				
1939-40 (IH 39021).....	22,500.00	7,014.57	
Portugal				
1939-40 (IH 38095).....	13,227.10	8,526.73	
Spain				
1936 (IH 35133).....	2,454.06	1,491.45	
Far East				
China				
1940-41 (IH 39077).....	21,000.00	9,941.62	
India				
1939 (IH 38052).....	14,354.85	11,812.91	
1940 (IH 39032).....	32,850.00	13,445.63	
South America				
Brazil				
<i>Anopheles gambiae</i> Control				
1939-40 (IH 38091, 39025, 39031).....	105,124.33	125,000.00	115,303.96	
British Guiana				
1939-41 (IH 39018).....	10,000.00	3,187.26	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
<i>Malaria — <i>Continued</i></i>			
United States			
Chemotherapy studies			
1941-42 (IH 40065).....	\$.....	\$23,400.00	\$.....
Drainage equipment			
1940-41 (IH 40003).....	2,000.00	966.09
Florida			
1938-39 (IH 38015, 38046).....	10,416.28	8,345.08
1940 (IH 39028-29).....	18,050.00	11,993.38
Johns Hopkins University, Baltimore, Maryland. School of Hygiene and Public Health			
1939-40 (IH 38047).....	2,050.66	1,793.81
University of Chicago, Illinois			
1939 (IH 38048).....	945.66	941.71
1940 (IH 39030).....	2,000.00
Mental Hygiene			
Johns Hopkins University. School of Hygiene and Public Health, Baltimore, Maryland			
1939-41 (IH 38053, 39033).....	13,200.00	6,500.00	10,072.98
Tennessee			
1939-40 (IH 38054).....	12,604.91	10,343.49
1940-41 (IH 39034).....	16,000.00	4,240.74

Nutrition				
North Carolina				
1940-41 (IH 39069).....	\$.....	\$9,500.00	\$5,064.29	
Vanderbilt University School of Medicine, Nashville, Tennessee				
1939-41 (IH 39003).....	34,893.94	19,331.37	
1941-42 (IH 40074).....	20,000.00	
Rabies				
Alabama				
1938-39 (IH 37081, 38013, 38081, 39007).....	10,904.29	9,440.04	
1940 (IH 36047, 39035).....	1,000.00	19,000.00	10,322.89	
Respiratory Diseases				
Influenza Studies				
Europe				
Hungary				
1939 (IH 38057).....	5,587.00	2,885.71	
1940 (IH 39039).....	5,500.00	1,726.82	
United States				
California				
1938-40 (IH 38014, 39016).....	16,180.22	15,847.83	
1940-41 (IH 39036).....	19,020.00	3,509.20	
Minnesota				
1937-39 (IH 37021, 38056).....	128.90	
1939-41 (IH 38056).....	9,522.02	9,176.14	
1940-41 (IH 38056, 39038).....	1,519.92	12,930.00	2,993.96	
New York				
1939-40 (IH 38084).....	9,050.98	6,593.03	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS	416
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>				
Respiratory Diseases — <i>Continued</i>				
Influenza Studies — <i>Continued</i>				
United States — <i>Continued</i>				
New York University				
1938-41 (IH 38023).....	\$10,914.19	\$.....	\$7,000.00	
1941-43 (IH 40069).....	14,000.00	
Respiratory Virus Research				
Argentina				
1940-43 (IH 39024, 40017).....	20,000.00	10,000.00	
Study of the Common Cold				
Columbia University, New York				
1939-40 (IH 38055).....	7,958.21	5,258.79	
1940-41 (IH 39037).....	11,000.00	3,497.52	
Scarlet Fever				
Rumania				
1937-38 (IH 36043, 38030).....	241.21	
1939-40 (IH 38058).....	15,381.53	8,394.93	
Smallpox				
Spain				
Study of vaccine virus				
1936 (IH 35144).....	714.89	
Syphilis				
California				
1939-42 (IH 39008).....	20,160.00	3,131.92	

THE ROCKEFELLER FOUNDATION

Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland			
1939 (IH 38005, 38082, 39009).....	\$4,985.82	\$.....	\$4,300.63
1940-41 (IH 39017, 39068).....	24,530.00	9,500.00
1941-43 (IH 40067).....	33,040.00
North Carolina			
1940-42 (IH 39022).....	14,000.00	1,535.57
Tuberculosis			
Caribbean Area			
Costa Rica			
1939-42 (IH 39013).....	18,717.07	8,011.61
Jamaica			
1939-42 (IH 38087, 40028).....	33,636.09	5,175.00	12,740.99
Puerto Rico			
1938-39 (IH 38026).....	520.83	95.00
Europe			
Austria			
1938-39 (IH 37090).....	8,027.23	2,401.59
United States			
Committee on Neighborhood Health Development of New York City			
1938-42 (IH 38031, 40006).....	6,425.46	3,155.00	4,378.13
Consultant			
1938-41 (IH 38003).....	3,252.34	609.19
Cornell University Medical College, New York City			
1939-40 (IH 38059).....	10,445.28	10,430.84
1940-41 (IH 39040).....	13,500.00	3,392.16
Tennessee			
1939-41 (IH 38085).....	21,360.09	11,374.85
1941-42 (IH 40071).....	10,908.00

EXHIBIT H — *Continued*

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CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
Typhus Fever Studies			
1940-41 (IH 40001).....	\$.....	\$5,000.00	\$36.95
Yellow Fever			
Africa			
1939 (IH 38063).....	10,195.44	5,315.75
1940 (IH 39046).....	25,000.00	6,245.21
Caribbean Area			
Central America and West Indies			
1939-41 (IH 38088).....	2,735.13	268.27
Panama			
1940-41 (IH 39072).....	1,000.00	234.62
Europe			
France, Pasteur Institute, Paris			
1938 (IH 37056).....	754.48
1939 (IH 38062).....	1,034.38	313.05
South America			
Bolivia			
1940 (IH 39042).....	5,000.00	2,491.90
Brazil			
1939 (IH 38060, 40011).....	14,361.72	6,450.00	20,811.69
1940 (IH 39043).....	75,000.00	41,232.83
1940-41 Studies in transmission of jungle fever (IH 40018, 40019, 40029)	10,000.00	4,795.26

British Guiana			
1939-40 (IH 39019).....	\$2,000.00	\$.....	\$341.77
Colombia			
1939 (IH 38060).....	8,099.53	8,099.45
1940 (IH 39041).....	48,000.00	31,896.53
Laboratory building (IH 37030, 38029).....	1,243.29
Peru			
1939 (IH 38061).....	5,500.00	4,876.35
1940 (IH 39044).....	7,100.00	2,924.34
Other countries of South America, including international administration			
1939 (IH 38060).....	2,198.14	2,197.17
1940 (IH 39045).....	2,000.00	503.39
Other Studies			
Collection and testing of wild animals for use in the study of diseases of public health interest			
1938-41 (IH 38042, 38080, 39063, 40066).....	15,550.68	5,022.00	4,346.48
Statistical analyses of the records of certain specific diseases			
1939 (IH 38064).....	287.26
1940-41 (IH 39047).....	500.00
LABORATORIES OF THE INTERNATIONAL HEALTH DIVISION AT THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK CITY			
1939 (IH 38065, 39002).....	2,087.37	2,087.37
1940 (IH 39048, 40022).....	174,000.00	155,901.59
Remodeling and equipment			
1939-40 (IH 39065).....	5,000.00	5,000.00
1940-41 (IH 40025).....	6,000.00

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS	420
STATE AND LOCAL HEALTH SERVICES				
Public Health Administration				
Africa				
Egypt				
1939 (IH 38071).....	\$1,338.67	\$	\$533.34	
1940 (IH 39054).....	1,990.00	787.67	
Canada				
Nova Scotia				
1937-41 (IH 36022).....	16,597.31	
Caribbean Area				
Central Office				
1939 (IH 38068).....	516.65	405.88	
1940 (IH 36047, 39050).....	800.00	5,300.00	4,890.87	
Costa Rica				
Office in San José				
1939 (IH 38069).....	793.15	778.14	
1940 (IH 39051).....	2,000.00	1,471.36	
Cuba				
1940 (IH 39052).....	2,000.00	1,374.58	
Panama				
1939 (IH 38070).....	785.78	755.20	
Far East				
Fiji Islands				
1939 (IH 38075).....	258.90	

THE ROCKEFELLER FOUNDATION

India				
1939 (IH 38072-73).....	\$3,008.01	\$.....	\$2,255.25	
1940 (IH 36047, 39055-56).....	180.00	6,750.00	3,312.35	
Netherlands India				
1939-40 (IH 38074).....	2,164.26	1,111.92	
Mexico				
Central Administration and Training Station				
1939 (IH 38066-67).....	1,519.59	564.17	
1940 (IH 39049).....	2,365.00	1,429.87	
South America				
Brazil				
1940 (IH 39053).....	10,000.00	1,142.21	
Rio de la Plata and Andean Region				
1940-41 (IH 40023).....	15,000.00	
United States				
Alabama				
1938-40 (IH 37080).....	6,497.52	4,641.17	
State Health Surveys				
1935-40 (IH 35065).....	3,556.12	520.25	
Divisions of Vital Statistics				
Canada				
Manitoba				
1938-44 (IH 37085, 39005).....	10,027.35	5,655.99	
Nova Scotia				
1938-42 (IH 37026).....	5,674.51	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
STATE AND LOCAL HEALTH SERVICES — <i>Continued</i>			
Divisions of Epidemiology			
Canada			
Alberta			
1938-41 (IH 38006).....	87,772.83	\$.....	\$3,232.85
British Columbia			
1938-41 (IH 38006).....	6,466.80	5,855.91
Public Health Laboratories			
Canada			
Prince Edward Island			
1939-43 (IH 38035).....	15,300.00
Caribbean Area			
Costa Rica			
1938-39 (IH 38037)	55.58
1940 (IH 39023)	500.00	413.22
Public Health Nursing			
United States			
Committee on Neighborhood Health Development of New York City			
1938-42 (IH 37079).....	16,189.47	9,731.71
Sanitary Engineering			
Africa			
Egypt			
1936-38 (IH 35104)	343.50

Far East				
Ceylon				
1940-41 (IH 39076).....	\$.....	\$3,650.00	\$1,143.66	
India				
1939-40 (IH 38076, 39015, 39026, 40014).....	9,586.56	2,125.00	7,897.64	
Other State Health Services				
Canada				
Quebec, Division of Tuberculosis				
1939-42 (IH 3906).....	5,736.07	2,097.06	
Local (County) Health Departments				
Canada				
British Columbia				
1936-41 (IH 36021, 38020, 38024).....	35,653.97	10,759.62	
Ontario				
1935-39 (IH 34065).....	3,783.78	2,370.30	
Quebec				
1938-43 (IH 38025).....	10,332.04	2,630.62	
Caribbean Area				
Costa Rica				
1939-40 (IH 38090, 39012).....	2,285.72	723.24	
Cuba				
1938-41 (IH 37088).....	12,088.27	5,970.75	
Panama				
1937-39 (IH 36066).....	1,238.60	
Salvador				
1940 (IH 40005).....	1,000.00	370.00	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
STATE AND LOCAL HEALTH SERVICES — <i>Continued</i>			
Local (County) Health Departments — <i>Continued</i>			
Europe			
Albania			
1936-41 (IH 36028, 37089).....	\$7,423.73	\$.....	\$2,512.50
Tirana Health Center. Construction and equipment (IH 36052, 37028)....	3,503.75	110.21
Austria			
1936-39 (IH 35154).....	1,706.27	132.79
Finland			
Helsinge Health Center			
1940-45 (IH 40012, 40079).....	23,700.00	3,068.63
Building (IH 40013).....	7,500.00	6,135.00
Greece			
1936-42 (IH 36029, 37034).....	15,481.71	2,546.42
Italy			
1938-42 (IH 37035).....	18,000.00
Portugal			
1939 (IH 38096).....	5,429.31	3,694.18
1940 (IH 39058).....	7,200.00	3,724.26
Rumania			
Institute of Hygiene, Bucharest. Development of health center			
1935-40 (IH 35058).....	612.20	549.92
Spain			
1936 (IH 36008).....	3,000.00	685.40

Turkey				
Health Center, Istanbul				
1936-39 (IH 36016).....	\$1,178.42	\$.....	\$.....	
Health Center, Ankara				
1938-42 (IH 37093).....	56,700.00	
Far East				
India				
Bengal				
1938-43 (IH 38011).....	22,307.91	4,987.16	
Bombay				
1939-43 (IH 38097).....	22,800.00	5,529.39	
Delhi				
1937-42 (IH 36110).....	16,378.78	4,607.38	
Madras				
1937-40 (IH 36044).....	7,802.57	3,773.12	
Mysore				
1936-40 (IH 35156).....	9,233.83	2,494.88	
Sanitation research				
1938-39 (IH 38012, 38041).....	450.40	25.49	
Java				
1937-40 (IH 34143, 36045).....	10,930.76	831.24	
Mexico				
1936-42 (IH 35084, 37086, 38036, 39057, 40026-27).....	15,197.46	12,080.00	6,949.82	
United States				
New York				
1935-39 (IH 34047, 34132).....	6,424.14	837.03	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
PUBLIC HEALTH EDUCATION			
Schools of Hygiene and Public Health			
Canada			
University of Toronto. School of Hygiene 1940-44 (IH 39004, 39067).....	\$41,400.00	\$.....	\$3,315.50
Europe			
Bulgaria. Institute and School of Hygiene, Sofia 1938-41 (IH 38010, 39075).....	29,536.59	10,035.53
European institutes of hygiene. Developmental aid 1940-41 (IH 39074, 40030).....	2,070.00	569.31
Greece. National Institute of Hygiene, Athens 1938 (IH 37074)	579.5945
Hungary. State Hygienic Institute, Budapest 1938-40 (IH 37091).....	1,161.43	605.89
Spain. National Institute of Health, Madrid 1940-43 (IH 40024).....	10,000.00
Turkey. School of Hygiene, Ankara 1938-40 (IH 37075, 38040, 39059).....	5,455.54	4,400.00	7,574.40
Far East			
China. Public Health Training Institute, Kweiyang, Kweichow 1940 (IH 40021).....	14,000.00	5,334.00
Japan. Institute of Public Health, Tokyo Field Training Area 1935-40 (IH 32188, 37037).....	9,049.29	4,450.57

United States				
Harvard University				
School of Public Health, Boston, Massachusetts				
Developmental aid				
1940-44 (IH 40004)	\$.....	\$14,000.00	\$1,000.00	
Study of public health administrative practices				
1940-43 (IH 40007)	18,000.00	
Johns Hopkins University. School of Hygiene and Public Health, Baltimore, Maryland				
Health Center. Land (IH 38032-33)	10,000.00	
Developmental aid				
1940-44 (IH 39066, 40008)	52,500.00	30,000.00	
Schools of Nursing				
Canada				
University of British Columbia, Victoria				
1937-40 (IH 36035)	3,102.81	1,195.71	
University of Toronto				
1939-41 (IH 38086)	695.63	
Caribbean Area				
Panama. Santo Tomás Hospital				
1937-42 (IH 37015)	20,906.53	5,142.63	
Europe				
Denmark. Aarhus				
1938-41 (IH 37029)	12,361.19	6,508.15	
Rumania. Bucharest				
1936-41 (IH 35085)	5,109.23	61.42	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
PUBLIC HEALTH EDUCATION — <i>Continued</i>			
Schools of Nursing — <i>Continued</i>			
Europe — <i>Continued</i>			
Spain, Madrid			
1940-43 (IH 40020).....	\$.....	\$20,000.00	\$.....
United States			
Skidmore College, Saratoga Springs, New York			
1939-43 (IH 38019).....	25,500.00	8,500.00
University of California, Berkeley			
1937-40 (IH 37005).....	1,200.00	1,200.00
Vanderbilt University, Nashville, Tennessee			
1935-40 (IH 36012).....	1,500.00	1,500.00
Training Stations			
Mexico			
Xochimilco Training Station			
1940 (IH 39061).....	1,385.00	810.49
United States			
Harvard University, School of Public Health, Boston, Massachusetts			
1935-40 (IH 34068).....	5,122.14	5,122.14
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland			
1937-42 (IH 37018).....	43,707.94	12,555.69

Fellowships, Travel of Government Health Officials and Teachers of Public Health, and Training of Health Workers

1936 (IH 35113).....	\$1,000.00	\$.....	\$.....
1937 (IH 36072, 37022-23).....	13,779.65	288.75
1938 (IH 37076, 38078).....	27,757.94	3,866.21
1939 (IH 38077, 39079).....	134,599.65	101,559.55
1940 (IH 39060).....	180,000.00	62,190.55

Other Training

Europe

Italy

Travel of staff assistant in the Institute of Hygiene, University of Rome
(IH 40015).....

..... 450.00 450.00

United States

New York. Committee on Neighborhood Health Development, New York

City

Consultant

1939 (IH 38083).....

2,916.70 2,916.70

North Carolina. Public Health Education and School Health Service

1939-43 (IH 38034).....

25,000.00 8,645.50

Exhibits at New York World's Fair

1940 (IH 39064).....

..... 9,760.00 9,760.00

FIELD SERVICE

Salaries and Expenses of Staff

1939-40 (IH 38079, 39062)

Salaries.....

3,158.63 473,000.00 470,816.68

Commutation.....

9,047.21 49,000.00 44,110.56

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1940 DESIGNATIONS	1940 PAYMENTS
FIELD SERVICE — <i>Continued</i>			
Salaries and Expenses of Staff — <i>Continued</i>			
Travel.....	\$15,228.85	\$149,000.00	\$148,966.96
Medical examinations.....	374.55	1,000.00	548.85
Field equipment and supplies.....	3,175.15	4,000.00	5,307.57
Pamphlets and charts.....	2,570.24	7,000.00	5,188.01
Express, freight, and exchange.....	899.25	1,000.00	358.75
Insurance and retirement allowances.....	24,623.81	55,000.00	48,609.71
Bonding.....	2,235.78	2,000.00	496.07
Field office expenses.....	3,267.89	4,000.00	1,608.20
Director's Fund for Budget Revision (IH 36047).....	3,189.00
Exchange Fund (IH 30052, 33077).....	21,521.44
	\$1,614,133.77	\$1,989,410.00*	\$1,867,204.21

* The Foundation appropriated \$2,000,000 for the work of the International Health Division during 1940, the undesignated balance of \$10,590 being allowed to lapse as of December 31, 1940.

EXHIBIT I

STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS

SECURITIES RECEIVED THROUGH EXCHANGE

\$1,438,300 New York, City of, Corporate Stock 3s/80, plus cash amounting to \$24,227.50 net, received in exchange for \$1,750,000 Interborough Rapid Transit Co. 1st & Ref. 5s/66 (Stamped) (C/D). These securities were taken into the books at the ledger value of the Interborough bonds, less the cash payment of \$24,227.50 net, or 116.163.....

\$1,670,772.50

SECURITIES GIVEN TO THE UNIVERSITY OF CHICAGO IN PART PAYMENT OF APPROPRIATION (Set aside at the closing prices January 10, 1940, less transfer taxes)

		AMOUNT RECEIVED	LEDGER VALUE
\$420,000	Atchison, Topeka & Santa Fe Ry. Adj. 4s/95 (Stamped).....	\$365,232.00	\$315,000.00
500,000	Kansas City Terminal Ry. 1st 4s/60.....	542,925.00	375,000.00
500,000	New York Connecting R.R. 1st Ser. A 4½s/53.....	526,800.00	478,453.65
		<u>\$1,434,957.00</u>	<u>\$1,168,453.65</u>

SECURITIES SOLD

\$1,438,300	New York, City of, Corporate Stock 3s/80 @ 102.34.....	\$1,471,891.19	\$1,670,772.50
50,000	New York, Lake Erie & Western Docks & Improvement Co. 1st Ext. 5s/43 @ 90	45,000.00	45,061.60
550,000	Public Service Corp. of New Jersey 6% Perpetual Interest Bearing Certificates @ 160.825.....	884,537.50	462,000.00
500,000	United Electric Co. of New Jersey 1st 4s/49 @ 117.70.....	588,500.00	360,000.00
202	Shares Kanawha & Hocking Coal & Coke Co. 7% Cum. Pfd. @ \$3.93 per share.	793.86	4,040.00
668	Shares Kanawha & Hocking Coal & Coke Co. Com. @ \$0.93 per share.....	621.24	2,672.00
10,000	Shares Manhattan Ry. Cap. (Modified Guarantee) (C/D) @ \$15.95 per share.....	159,459.20	600,000.00
166/200ths	Shares Standard Oil Co. (New Jersey) Cap. (Par \$25) @ \$35.19 per share.....	29.21	27.38
		<u>\$3,150,832.20</u>	<u>\$3,144,576.48</u>

EXHIBIT I -- *Continued*

		AMOUNT RECEIVED	LEDGER VALUE
SECURITIES REDEEMED, MATURED, AND EXCHANGED			
\$18,000	Bethlehem Steel Corp. Cons. SF Ser. E 3½s/66, redeemed @ 101.....	\$18,180.00	\$16,632.37
798,000	Bethlehem Steel Corp. Cons. SF Ser. E 3½s/66, redeemed @ 105	837,900.00	737,368.57
8,750	Calgary Protestant Public School District No. 19, Province of Alberta 5s/40, paid at maturity @ par less a discount of 9.91%, or 90.09.....	7,882.87	7,437.50
500,000	Chicago, Junction Rys. & Union Stockyards Coll. Ref. 5s/40, paid at maturity @ par.....	500,000.00	465,000.00
399,000	Chicago, Milwaukee & St. Paul Ry. Receivers Equip. Ser. D 5s/36-40, redeemed @ par.....	399,000.00	387,362.50
609,300	Chicago, Rock Island & Pacific Ry. Certificates of Indebtedness of the Trustees 3½s/47, redeemed @ par.....	609,300.00	614,815.01
80,000	Illinois Central R.R. Equip. Ser. M 4½s/40, paid at maturity @ par.....	80,000.00	78,800.00
1,750,000	Interborough Rapid Transit Co. 1st & Ref. 5s/66 (Stamped) (C/D), exchanged for \$1,438,300 New York, City of, Corporate Stock 3s/80, plus cash amounting to \$24,227.50 net.....	1,695,000.00	1,695,000.00
30,000	Pennsylvania R.R. Co. Gen. Equip. Trust Certificates Ser. D 4½s/40, paid at maturity @ par.....	30,000.00	29,550.00
10,100	Phelps Dodge Corp. Conv. Deb. 3½s/52, redeemed @ 105.....	10,605.00	10,967.97
50,000	St. Louis-San Francisco Ry. Equip. Ser. CC 4s/40, paid at maturity @ par.....	50,000.00	45,598.64
100,000	Southern Pacific Co. Equip. Ser. I 4½s/40, paid at maturity @ par.....	100,000.00	98,500.00
		<hr/> <u>\$4,337,867.87</u>	<hr/> <u>\$4,187,032.56</u>

REDUCTION IN LEDGER VALUE

Distribution of \$2.50 per share on 74,535 shares Indiana Pipe Line Co. Cap. Stock (Par \$10) on account of capital reduction authorized by the stockholders April 24, 1940, and par value reduced to \$7.50.....	\$186,337.50	\$186,337.50
	<hr/>	<hr/>

Balance (Used to write down the ledger value of \$3,345,000 Chicago, Rock Island & Pacific Ry. Co. 1st & Ref. 4s/34).....	\$9,109,994.57	\$8,686,400.19
	<hr/>	<hr/>
	423,594.38	

RECONCILIATION

Ledger value of securities, December 31, 1939	<hr/>	\$156,387,813.55
Ledger value of securities received through exchange.....	<hr/>	1,670,772.50
	<hr/>	
		\$158,058,586.05
Ledger value of securities		
Given in payment of appropriation.....	\$1,168,453.65	
Sold.....	3,144,576.48	
Redeemed, matured, and exchanged	4,187,032.56	
Reduction in ledger value.....	186,337.50	
Balance used to write down ledger value, as above.....	423,594.38	9,109,994.57
	<hr/>	<hr/>
Ledger value of securities, December 31, 1940.....		\$148,948,591.48

EXHIBIT J

SCHEDULE OF SECURITIES ON DECEMBER 31, 1940

BONDS

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Baltimore & Ohio R.R. Ref. & Gen. Ser. A 5s, Dec. 1, 1995 (Stamped).....	\$1,750,000	80.	\$1,400,000.00	37.	\$647,500.00
Baltimore & Ohio R.R. Ref. & Gen. Ser. F 5s, March 1, 1996 (Stamped).....	495,500	101.88	504,839.38	37.	183,335.00
Burlington, Cedar Rapids & Northern Ry. Cons. 1st 5s, April 1, 1934.....	64,000	101.56	65,000.00	3.75	2,400.00
Calgary Protestant Public School District No. 19, Province of Alberta 5s, June 2, 1941-1948.....	62,250	85.	52,912.50	62.50	38,906.25
Chicago & Alton R.R. Ref. 3s, Oct. 1, 1949.....	551,000	65.	358,150.00	9.	49,590.00
Chicago City & Connecting Rya. Coll. Trust 5s, Jan. 1, 1927 (C/D).....	1,305,000	52.	678,600.00	5.375	70,143.75
Chicago & Erie R.R. 1st 5s, May 1, 1982.....	156,000	93.	145,080.00	109.125	170,235.00
Chicago, Milwaukee & St. Paul Ry. Gen. Ser. C 4½s, May 1, 1989.....	500,000	103.	515,000.00	30.	150,000.00

Chicago, Milwaukee, St. Paul & Pacific R.R. Ser. A 5s, Feb. 1, 1975.....	\$446,300	62.59	\$279,366.99	5.	\$22,315.00
Chicago, Milwaukee, St. Paul & Pacific R.R. Conv. Adj. Ser. A 5s, Jan. 1, 2000.....	1,785,200	40.80	728,419.46	1.	17,852.00
Chicago & North Western Ry. Gen. 5s, Nov. 1, 1987.....	201,000	98.10	197,175.00	17.5	35,175.00
Chicago Rys. Co. 1st 5s. Feb. 1, 1927 (25% paid) (C/D) (500 bonds @ \$750 each).....	375,000	96.	360,000.00	45.75	171,562.50
The Chicago, Rock Island & Pacific Ry. 1st & Ref. 4s, April 1, 1934.....	3,345,000	68.79	2,301,182.55	7.5	250,875.00
Chicago, St. Louis & New Orleans R.R. Cons. 3½s, June 15, 1951.....	200,000	66.	132,000.00	63.5	127,000.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. Gen. 4s, June 1, 1993.....	700,000	83.89	587,250.00	76.	532,000.00
Cleveland Short Line Ry. 1st 4½s, April 1, 1961.....	500,000	95.	475,000.00	81.	405,000.00
Consolidation Coal Co. Secured Notes 5s, July 1, 1950..	485,000	100.	485,000.00	100.	485,000.00
Denver & Rio Grande 1st Cons. 4s, Jan. 1, 1936.....	810,000	96.42	781,033.15	7.5	60,750.00
Denver & Rio Grande Western R.R. Gen. 5s, August 1, 1955 (Assented subject to plan).....	574,000	59.	338,660.00	1.	5,740.00
Edmonton School District No. 7 Deb. 5s to April 15, 1953, then 4½s to Feb. 1, 1967.....	350,000	81.	283,500.00	60.	210,000.00
Eric R.R. Gen. Conv. Ser. B 4s, April 1, 1953.....	1,065,000	74.72	795,742.30	38.5	410,025.00
Illinois Central R.R. Equip. Ser. M 4½s, May 1, 1941..	80,000	98.5	78,800.00	101.16	80,928.00
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

EXHIBIT J—Continued

BONDS—Continued

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Imperial Chinese Government Hu Kuang Rys. S.F. Loan of 1911 5s, June 15, 1975.....	\$189,000	34.	\$321,300.00	7.625	\$58,221.45
Kansas City, Fort Scott & Memphis Ry. Ref. 4s, Oct. 1, 1936.....	\$274,000	96.16	263,466.64	30.625	83,912.50
Kansas City Southern Ry. Ref. & Imp. 5s, April 1, 1950	550,000	84.	462,000.00	69.125	380,187.50
The Laclede Gas Light Co. Ref. & Ext. 5s, April 1, 1942	200,000	102.38	204,759.41	95.5	191,000.00
Lake Erie & Western R.R. 2nd 5s, July 1, 1941.....	100,000	100.	100,000.00	96.	96,000.00
Lake Shore & Michigan Southern Ry. 1st 3½s, June 1, 1997.....	926,000	87.	805,620.00	93.	861,180.00
Louisville & Nashville-Southern Ry. Monon Coll. Joint 4s, July 1, 1952.....	775,000	72.	558,000.00	88.	682,000.00
Mexico, Republic of, Cons. Ext. Loan Ser. C 5s, June 1, 1945 (Assenting bonds).....	(\$70,800)	343,380	35.05	120,360.00	3.375
Class "A" Certificates for interest in arrears.....		150,228.75	6.	9,013.73	—0—

Missouri-Kansas-Texas R.R. Prior Lien Ser. A 5s, Jan. 1, 1962.....	\$331,250	78.5	\$260,031.25	12.875	\$42,648.44
Missouri-Kansas-Texas R.R. Prior Lien Ser. B 4s, Jan. 1, 1962.....	331,250	64.5	213,656.25	11.	36,437.50
Morris & Essex R.R. 1st Ref. 3½s, Dec. 1, 2000.....	175,000	82.75	144,812.50	38.375	67,156.25
Mutual Fuel Gas Co. 1st 5s, Nov. 1, 1947.....	250,000	100.	250,000.00	116.	290,000.00
National Rys. of Mexico Prior Lien S.F. 4½s, July 1, 1957 (Assenting bonds).....	350,000	13.	45,500.00	2.375	8,312.50
Secured 6% Notes due Jan. 1, 1933 for coupons due Jan. 1, 1914	1,125	59.	663.75	—0—	—0—
National Rys. of Mexico Ctsfs. Ser. A for interest in arrears.....	47,857.50	5.5	2,632.16	—0—	—0—
National Rys. of Mexico Ctsfs. 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	30.	22,500.00
New York Central R.R. Secured S.F. 3¾s, April 1, 1946.....	979,000	97.95	958,912.15	95.	930,050.00
New York, Lake Erie & Western Docks & Imp. 1st Ext. 5s, July 1, 1943.....	350,000	90.13	315,452.15	95.	332,500.00
Northern Pacific Ry. Ref. & Imp. Ser. A 4½s, July 1, 2047.....	1,390,000	85.05	1,182,150.00	51.25	712,375.00
Northwestern Elevated R.R. 1st 5s, Sept. 1, 1941.....	500,000	70.	350,000.00	8.5	42,500.00
Pennsylvania R.R. Gen. Equip. Trust Ctsfs. Ser. D 4½s, May 15, 1941.....	30,000	98.5	29,550.00	101.3	30,390.00

EXHIBIT J — *Continued*BONDS — *Continued*

NAME	PAR	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Pennsylvania R.R. Gen. Ser. A 4½s, June 1, 1965.....	\$1,500,000	98.25	\$1,473,750.00	108.625	\$1,629,375.00
Phelps Dodge Corp. Conv. Deb. 3½s, June 15, 1952.....	124,100	108.59	134,764.85	107.125	132,942.13
Philadelphia & Reading Coal & Iron Co. Ref. S.F. 5s, Jan. 1, 1973.....	167,000	94.25	157,401.42	16.5	27,555.00
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	62.	155,000.00
Reading Co. Gen. & Ref. Ser. A 4½s, Jan. 1, 1997.....	333,000	94.25	313,852.50	79.5	264,735.00
St. Louis-San Francisco Ry. Equip. Ser. CC 4s, May 15, 1941-43.....	150,000	90.15	135,228.64	103.168	154,752.50
St. Louis-San Francisco Ry. Prior Lien Ser. A 4s, July 1, 1950.....	1,500,000	73.	1,095,000.00	9.25	138,750.00
St. Louis-San Francisco Ry. Cons. Ser. A 4½s, March 1, 1978.....	2,500,000	14.2	355,000.00	9.375	234,375.00

St. Louis Southwestern Ry. Gen. & Ref. Ser. A 5s, July 1, 1990.....	\$1,918,500	66.8	\$1,281,538.80	10.	\$191,850.00
Southern Pacific Co. Equip. Ser. I 4½s, June 1, 1941.....	100,000	98.5	98,500.00	101.35	101,350.00
Southern Pacific Co.-Central Pacific Stock Coll. 4s, Aug. 1, 1949.....	100,000	76.	76,000.00	37.625	37,625.00
Southern Pacific R.R. 1st Ref. 4s, Jan. 1, 1955.....	100,000	86.	86,000.00	57.75	57,750.00
Standard Oil Co. (New Jersey) 25 year Deb. 3s, June 1, 1961.....	15,000,000	98.	14,700,000.00	106.5	15,975,000.00
Tennessee Coal, Iron & R.R. Gen. 5s, July 1, 1951.....	400,000	92.	368,000.00	127.5	510,000.00
United States of America Treasury Notes Ser. A 1¾s, March 15, 1942.....	5,000,000	100.21	5,010,328.13	102.75	5,137,500.00
Wabash R.R. 2nd 5s, Feb. 1, 1939.....	120,000	97.8	117,360.00	14.625	17,550.00
Washington Ry. & Electric Cons. 4s, Dec. 1, 1951.....	450,000	83.5	375,750.00	108.	486,000.00
Western Pacific R.R. 1st Ser. A 5s, March 1, 1946 (As- senting).....	200,800	83.	166,664.00	15.	30,120.00
TOTAL BONDS.....	\$46,830,019.68	\$35,784,472.35

EXHIBIT J — *Continued*

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	\$60.50	\$302,500.00	
Atlanta, Birmingham & Coast R.R. 5% Guar. Cum.....	4,062	94.00	381,828.00	58.00	235,596.00	
Bethlehem Steel Corp. (Delaware) 7% Cum.....	400	129.07	51,629.47	130.50	52,200.00	
Chicago City & Connecting Rys. Participation Certifi- cates (No par) (C/D).....	17,530		1.00		1.00	
Chicago & Eastern Illinois Ry. 6% Cum.....	3,000	5.00	15,000.00	1.125	3,375.00	
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	107.00	1,426,631.00	
Denver & Rio Grande Western R.R. 6% Cum.....	3,280	5.00	16,400.00	.0625	205.00	
Illinois Central R.R. 6% Non-Cum "A".....	2,857	15.50	44,283.50	13.25	37,855.25	
International Harvester Co. 7% Cum.....	45,721	115.00	5,257,915.00	169.875	7,766,854.88	
Missouri-Kansas-Texas R.R. 7% Cum. "A".....	10,499	41.98	440,772.00	1.375	14,436.13	
Ohio Oil Co. 6% Non-Voting Cum.....	10,500	103.50	1,086,750.00	109.75	1,152,375.00	
Pere Marquette Ry. 5% Cum.....	5,740	49.66	285,048.76	24.50	140,630.00	
Standard Oil Co. (Ohio) 5% Cum.....	15,000	101.00	1,515,000.00	107.50	1,612,500.00	
United States Steel Corp. 7% Cum.....	6,600	133.86	883,462.50	127.75	843,150.00	
TOTAL PREFERRED STOCKS.....	\$11,951,842.99	\$13,594,309.26	

COMMON STOCKS

American Telephone & Telegraph Co. Cap.....	5,400	\$182.92	\$987,752.50	\$167.75	\$905,850.00	
The Buckeye Pipe Line Co. Cap. (Par \$50).....	49,693	62.77	3,119,109.72	40.00	1,987,720.00	
Central National Bank of Cleveland (Par \$20).....	8,482	32.11	272,397.43	10.375	88,000.75	
Chehalis & Pacific Land Co. Cap. (Par \$10).....	220		1.00		1.00	
Chicago City & Connecting Rys. Participation Certifi- cates (No par).....	10,518		1.00		1.00	
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	72.50	46,255.00	
Consolidated Edison Co. of New York, Inc. (No par)	22,200	45.26	1,004,792.50	22.50	499,500.00	
Consolidation Coal Co. Rights to purchase Common Stock.....	5,875	—0—	—0—	.125	734.38	
Continental Oil Co. (Delaware) Cap. (Par \$5).....	60,627	11.15	676,125.70	19.125	1,159,491.38	
Eureka Pipe Line Co. Cap. (Par \$50)	12,357	45.	556,065.00	21.00	259,497.00	
Illinois Central R.R.....	4,070	9.63	39,173.75	6.75	27,472.50	
Indiana Pipe Line Co. Cap. (Par \$7.50).....	74,535	9.20	685,722.00	3.25	242,238.75	
International Nickel Co. of Canada, Ltd. (No par).....	30,600	65.14	1,993,253.40	24.25	742,050.00	
Interstate Natural Gas Co. Inc. Cap. (No par).....	33,763	14.96	505,042.25	25.00	844,075.00	
Kennecott Copper Corp. Cap. (No par).....	33,100	59.78	1,978,731.03	37.25	1,232,975.00	
Middle West Corp. Cap. (Par \$5).....	68,351.92	9.75	666,431.22	6.125	418,655.51	
National Fuel Gas Co. Cap. (No par).....	847,060	7.75	6,564,715.00	11.625	9,847,072.50	
National Transit Co. Cap. (Par \$12.50).....	126,481	12.70	1,606,308.70	10.25	1,296,430.25	
New York Transit Co. Cap. (Par \$5).....	24,784	6.50	161,096.00	6.25	154,900.00	
Northern Pipe Line Co. Cap. (Par \$10).....	27,000	8.33	225,000.00	8.25	222,750.00	
Ohio Oil Co. (No par).....	94,684	35.38	3,349,446.50	7.50	710,130.00	
Phelps Dodge Corp. Cap. (Par \$25).....	37,600	52.72	1,982,151.40	35.25	1,325,400.00	

TREASURER'S REPORT

EXHIBIT J — *Continued*COMMON STOCKS — *Continued*

NAME	SHARES	LEDGER VALUE		MARKET VALUE	
		PRICE	TOTAL	PRICE	TOTAL
Provident Loan Society of New York Certificates.....	\$266,000	100%	\$266,000.00	113%	\$300,580.00
Southern Pipe Line Co. Cap. (Par \$10).....	24,845	86.25	155,281.25	87.125	177,020.63
South West Pennsylvania Pipe Lines Cap. (Par \$10)....	8,000	37.50	300,000.00	22.00	176,000.00
Standard Oil Co. (California) Cap. (No par).....	60,967	17.25	1,051,680.75	18.50	1,127,889.50
Standard Oil Co. of Indiana Cap. (Par \$25).....	691,140	28.90	19,973,946.00	26.25	18,142,425.00
Standard Oil Co. (New Jersey) Cap. (Par \$25).....	1,109,478	32.98	36,593,938.27	34.375	38,138,306.25
Standard Oil Co. (Ohio) (Par \$25).....	135,648	25.50	3,459,024.00	39.00	5,290,272.00
Tilden Iron Mining Co. Cap.....	667½	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	28.00	6,720,000.00
Wilson Realty Co. Cap.....	591		1.00	— 0 —	— 0 —
TOTAL COMMON STOCKS	\$90,166,728.81	\$92,337,943.40

SUMMARY

	LEDGER VALUE	MARKET VALUE
Bonds.....	\$46,830,019.68	\$35,784,472.35
Preferred Stocks.....	11,951,842.99	13,594,309.26
Common Stocks.....	90,166,728.81	92,337,943.40
	\$148,948,591.48	\$141,716,725.01

HASKINS & SELLS

CERTIFIED PUBLIC ACCOUNTANTS

67 BROAD STREET, NEW YORK

ACCOUNTANTS' CERTIFICATE

THE ROCKEFELLER FOUNDATION:

We have examined the balance sheet of The Rockefeller Foundation as of December 31, 1940, and the related summaries and schedules of funds, appropriations, and investment securities for the year 1940, 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.

The investment securities at December 31, 1940, were counted by us and the cash balances were confirmed to us by the depositaries.

No effect has been given in the accompanying statements to accrued income not received or to expenditures made from advance accounts not reported in time to be recorded when the books were closed as of December 31, 1940.

In our opinion, subject to the foregoing, the accompanying balance sheet and related summaries and schedules of funds, appropriations, and investment securities, fairly present the financial condition of The Rockefeller Foundation at December 31, 1940, and the results of its operations for the year ended that date, in conformity with generally accepted accounting principles followed by the Foundation on a basis consistent with that of the preceding year.

HASKINS & SELLS

New York, March 14, 1941.

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