

The
Rockefeller Foundation

Annual Report

1939

THE ROCKEFELLER
FOUNDATION

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To THE TRUSTEES OF THE ROCKEFELLER
FOUNDATION:

GENTLEMEN:

I have the honor to transmit herewith a general review of the work of The Rockefeller Foundation for the period January 1, 1939, to December 31, 1939, 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 1939**

PRESIDENT'S REVIEW

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PRESIDENT'S REVIEW

BY WAY OF PREFACE

THE Rockefeller Foundation was incorporated in 1913 under the laws of the State of New York. Its purpose as stated in its charter is "to promote the well-being of mankind throughout the world." Changing conditions must necessarily affect decisions as to how that purpose can best be realized; but for two decades the advance of knowledge, with research as the chief tool, has been the definite objective and method of the Foundation's program.

The Foundation is organized in five divisions:

- The International Health Division
- The Division of the Medical Sciences
- The Division of the Natural Sciences
- The Division of the Social Sciences
- The Division of the Humanities

The International Health Division, while making appropriations to other institutions, is primarily an operating agency; that is, it maintains its own laboratories and has a scientific staff spread around the world. The other four divisions are in no sense operating agencies. They conduct no researches of their own. Their work is confined to the support of universities, labora-

tories, and research groups, and to the training through postdoctoral fellowships of competent personnel in the various fields of knowledge.

Unless a fairly definite policy of concentration is adopted, any organization concerned with the advance of knowledge runs the risk of scattering its resources over too wide an area. Only unlimited funds, guided by a more perfect wisdom than that with which any single group is endowed, could hope to maintain simultaneous action on all the frontiers of knowledge. Consequently, the Foundation has followed the far more modest plan of placing special emphasis on certain particular fields. Thus, in the medical sciences the emphasis at the moment is on psychiatry; in the natural sciences on experimental biology. These fields of concentration are not rigidly interpreted; they serve merely as guiding lines, and exceptions are made when unusual opportunities develop in other areas.

The book value of the principal fund of the Foundation as of December 31, 1939, was \$146,159,942.09. Under its charter, the Foundation is free to spend from both principal and income. In the twenty-seven years of its existence \$93,775,000 has been appropriated from principal and \$228,900,000 from income.

The affairs of the Foundation are under the direction of a self-perpetuating board of trustees

who serve without compensation. The program is administered through a group of executive officers. Both trustees and officers retire at the age of sixty-five. Regular meetings of the board of trustees are held twice a year, in April and December; special meetings are subject to the call of the Chairman. The executive committee of the board meets each month except in July and August.

The principal office of the Foundation is in New York. In Europe, an office is maintained in Paris under the general direction of a vice-president and of representatives of the directors in the several divisions. The Far Eastern office of the Foundation is located in Shanghai.

In order to avoid confusion which occasionally arises in relation to the work of the Foundation, it should be pointed out that the General Education Board and The Rockefeller Institute for Medical Research, while established by Mr. John D. Rockefeller, are separate organizations, separately incorporated, each with its own capital funds.

THE YEAR IN BRIEF

Grants made by The Rockefeller Foundation in 1939 amounted in round figures to \$9,500,000. Of this sum, \$8,000,000 was distributed in approximately equal amounts of \$2,000,000 each

to work in the four fields of public health, medical, social, and natural sciences. One million dollars was appropriated for activities in the humanities, and the better part of a half million toward the program of rural reconstruction in China. The income of the Foundation during 1939 was \$6,627,450. To supplement the appropriations account \$1,845,000 was transferred from the principal fund. The details of the Foundation's finances for the year appear on pages 377 to 470 of this report.

The program of the Foundation in 1939 involved cooperative effort in forty-seven countries. Twenty-one of the countries in which work was aided were in Europe, five in Asia, two in Africa, seven in South America, nine in North and Central America and the West Indies, and, in addition, Java, Fiji, and Australia. The ratio between the amount of money that went to foreign countries and the amount spent on work in the United States was the same as last year, i.e., approximately 25 per cent in foreign countries as against 75 per cent in the United States.

Any record of grants made in a given field during a particular year necessarily presents an unrealistic and somewhat distorted picture of long-range programs, because it has to omit the mention of many active projects the support of which was voted in previous years. If the

Foundation appropriates a sum for the maintenance of a laboratory over a seven-year period, for example, the seven-year appropriation appears but once on the formal record, i.e., when the money is first voted, and does not reappear during the subsequent years when payments are being made. Consequently, the list of appropriations made in 1939 or in any other one year is necessarily a more or less random sampling, caught between two dates on the calendar, of the broader plans of the different divisions.

NIGHT OVER EUROPE

The mounting catastrophe in Europe and its effect on universities and laboratories in every country there — whether involved in the war or not — have necessitated modifications in the work of The Rockefeller Foundation. When the war broke out on the first of September, 1939, the Foundation had 110 running appropriations in Europe, distributed in twenty-two different countries, and involving a total sum in excess of \$4,000,000. A substantial part of these appropriations was for research in various scientific fields. Nearly \$2,000,000 of the total was for work in Great Britain; approximately \$750,000 was allocated to Switzerland; \$330,000 each to France and Sweden; and the balance in smaller amounts ranging down to \$3,500 in Finland.

In a number of instances work supported by these appropriations is being continued on a level that has been but little affected by the war. For example, Heilbron's research in organic chemistry, to which the Foundation is contributing at Imperial College, London, is still going forward. Niels Bohr's work in biophysics at Copenhagen and Svedberg's studies with the super-centrifuge at Uppsala are also only indirectly disturbed. The Tavistock Clinic in London, where the Foundation is financing research in psychosomatic medicine, is proceeding, thus far at least, without serious interruption. Similarly, work in the general field of neurology, under grants from the Foundation, is being carried on at the Universities of Brussels, Leiden, Lund, Oslo, and Oxford.

Moreover, in spite of many unfortunate exceptions, there seems to be at least some effort in influential circles in Europe to insulate important scientific research work from the shock of war and to allow the laboratory men to continue with their tasks. In this respect, Europe is perhaps profiting by the tragic example of the last war when men like Henry G.-J. Moseley the physicist, von Prowazek the parasitologist, S. B. McLaren the mathematician, Karl Schwarzschild the astronomer, and a great host of fresh new leaders in every field of science were killed at the

front. Of the 240 enlisted students of the École Normale Supérieure in Paris, an institution which supplies the French universities with professors, 120 were killed. Among the graduates of this school, 560 who were already professors in the universities were mobilized; 119 were killed. Of the students resident at the École Centrale des Arts et Manufactures, the most important engineering school in France, 179 were killed, together with 362 of the graduates.

This memory is still fresh in scientific circles in England, France, and elsewhere, and efforts are being made, with the help of governments, to prevent in this war, as far as possible, the recurrence of such ghastly sacrifice.

But an attempt to keep scientific workers at their tasks, laudable as its motive is, meets but a small portion of the problem. At best it can salvage for the future only those whose promise is already indicated. Nowhere is there occult imagination to detect in a humble patent examiner a future Einstein, or to see in a tanner's son a Louis Pasteur. Darwin at twenty showed no particular promise in his studies; but he had courage and spirit and would have made excellent material for the front-line trenches. No human precaution can protect a nation from the sacrifices which war levies upon future talent — the undiscovered scientists, the gifted minds, the

intellectual and spiritual leaders upon whom each generation must build the hope and promise of the generation to come. The mortgage which war places upon the economic resources of a country is as nothing compared with the mortgage levied upon its future intellectual and cultural life.

In the war that is now being carried on in Europe the sacrifices and the processes of disintegration have already begun. We can see now something of the extent of the disaster. The University of Warsaw has ceased to exist. According to reliable reports, the entire Polish faculty of the University of Cracow is in a concentration camp. The Polish members of the faculty of the University of Vilna have been dismissed. Scarcely a year ago, the Moors, entrenched in the ruined University of Madrid, used the books from the University library as defenses in their rifle pits. The University of Prague has been shut by the German Government. The University of Strasbourg has been torn from its site and planted in Clermont-Ferrand. For reasons of economy and because their students are in military service, more than half the universities of Germany are closed. The institutions comprising the University of London have been uprooted and scattered over a wide area in southern England. The 20,000 student population of the University of Paris has shrunk

to 5,000. In all countries, whether combatant or noncombatant, the undiscriminating necessities of military mobilization have decimated faculties and student bodies alike. In many instances the ablest men on a faculty are being drafted for various types of war work. In other instances, on both sides of the fighting lines, laboratories hitherto devoted to the extension of knowledge, both in medicine and in the natural sciences, are being geared into the war machine. As a prominent governmental official on the continent recently said: "Science can now have but one object: to help win the war."

Perhaps the most frightening aspect of modern war is the intellectual blackout which it creates. One does not have to subscribe to H. G. Wells's grim prophecy that "mankind, which began in a cave and behind a windbreak, will end in the diseased-soaked ruins of a slum"; but certainly the night in Europe cannot be long continued without the sacrifice of cultural values on so vast a scale that the chance of an enlightened and gracious life, not alone for this generation in Europe, but for the children and grandchildren of this generation, will be irretrievably lost.

DIVIDED WE FALL

One occasionally hears the statement that the trend of intellectual leadership is westward across the Atlantic. In proof of the assertion specific

fields are mentioned, such as neurosurgery, astronomy, dentistry, and perhaps orthopedics, in which America has won pre-eminent standing. But this argument overlooks the many fields in which leadership, certainly until the war began, was still in Europe and the many others in which genius and stimulation are as potent on one side of the ocean as on the other. In physiology, for example, it would be difficult to determine whether the leadership lies in Europe or in the United States. The same is true of anatomy and pathology. In fields like pharmacology, tropical medicine, ophthalmology, legal medicine, social medicine, and dermatology — to mention only a few — leadership is unquestionably still in Europe, or was in 1939. In mathematics, the English are indisputably pre-eminent in analytic number theory; the Russians are making important contributions in topology and probability, the French in algebra. America cannot match the group of European scientists in the important fields of enzyme chemistry and the organic chemistry of natural products. Nowhere else in the world can one duplicate or even approach the co-ordinated and cooperating Scandinavian group which is focusing so many precise techniques of chemistry and physics on problems of biology.

If one is tempted to question the vitality of science in Europe, it is interesting to note that

the most dramatic scientific development of the year 1939 originated there, i.e., the splitting of the atom of the heavy element uranium and its transmutation into barium and other light elements. This realization of the old dream of the alchemists was based upon results obtained in 1934 by the Italian physicist Fermi; but the disintegration products of uranium were first directly observed in 1939 by Hahn and Strassmann of Berlin.

America needs to be humble about this question of intellectual leadership. In spite of the anxiety and insecurity abroad during these recent years, of the six Nobel prizes awarded in science in 1939, five went to Europe and one to the United States. In countless ways we are dependent upon Europe for stimulation and leadership in relation to many segments of our intellectual and cultural activity.

If because of war exhaustion or chaos the universities and laboratories of Europe should be forced to suspend their fundamental activities for even half a decade, the consequences to the intellectual life of America would be immediate and disastrous. For scientific growth is almost invariably the result of cross-fertilization between laboratories and groups in widely separated parts of the world. Only rarely does one man or one group of men recite with clear, loud

tones a whole important chapter, or even a whole important paragraph, in the epic of science. Much more often the start comes from some isolated and perhaps timid voice, making an inspired suggestion, raising a stimulating question. This first whisper echoes about the world of science, the reverberation from each laboratory purifying and strengthening the message, until presently the voice of science is decisive and authoritative. Thus, in the case of the breakdown of uranium during the past year, the early tentative questionings came from Rome; they were caught up at Berlin, were eagerly heard at Paris and Copenhagen, and then spanned the Atlantic and were seized upon here so enthusiastically that literally within hours, rather than within days, the critical experiments had been checked and extended at Columbia University, at the Carnegie Institution of Washington, and in Lawrence's laboratory at the University of California.

Similarly, the amazing development and application of sulfanilamide — that beneficent gift to mankind — has been the result of a collaboration in which flags and boundary lines have been nonexistent. The first hint of it was discovered in Germany, oddly enough in connection with the commercial dye industry, and the drug was given the name prontosil. With this hint as a

basis, in 1935 a German scientist — Dr. Gerhard Domagk — published the results of his experiments with mice under carefully controlled laboratory conditions, showing the extraordinary effect of prontosil on streptococcus. The Pasteur Institute in Paris then picked the matter up, and subjecting prontosil to organic analysis discovered that its activity was localized in one distinctive part of its molecular structure. This potent factor in prontosil, separated from the rest of the molecule, is what we now know as sulfanilamide. At this point Queen Charlotte's Hospital in London, with a grant from The Rockefeller Foundation, tried the drug on women suffering from streptococcal infection associated with puerperal or childbirth fever, immediately reducing the death rate from such infections by 25 per cent. The Johns Hopkins School of Medicine was the next institution to carry forward the experiments, and in the last three years research on this drug has been developed, with brilliant results, in laboratories and hospitals on both sides of the Atlantic.

Achievement in science, more often than not, is the result of the sustained thinking of many minds in many countries driving toward a common goal. The creative spirit of man cannot successfully be localized or nationalized. Ideas are starved when they are fenced in behind frontiers.

The fundamental unity of modern civilization is the unity of its intellectual life, and that life cannot without disaster be broken up into separate parts. If, as a result of the present cataclysm on the other side of the Atlantic, Europe freezes into an Arctic night, we shall not easily keep the fires lit in the universities and laboratories of America.

INVASION FROM AFRICA

In this REVIEW a year ago the arrival and spread in Brazil of the dreaded malaria-carrying mosquito, *Anopheles gambiae*, was reported. It came from Africa, apparently by airplane or on a fast French destroyer, and was first discovered in 1930 in Natal by a member of the staff of the Foundation. Since that time it has spread over three hundred miles to the west following the prevailing winds, and the infested area now covers 12,000 square miles.

Many public health workers throughout the Americas are awaiting with anxiety the outcome of the campaign that has been organized against this mosquito. These workers realize that one of the most serious health problems facing their own countries is involved in the possibility of *gambiae* continuing its invasion and sooner or later reaching their territories. The tragic result of such a spread cannot be overstated. A dis-

tinguished malariologist, Dr. M. A. Barber, has recently said: "This invasion of *gambiae* threatens the Americas with a catastrophe in comparison with which ordinary pestilence, conflagration, and even war are but small and temporary calamities. *Gambiae* literally enters into the very veins of a country and may remain to plague it for centuries. Even the penetration of yellow fever into the Orient might be a lesser evil, because its vector is domestic and more easily controlled."

Hardly a year after landing in America, *gambiae* was causing severe outbreaks of malaria near Natal and by July 1931 it had reached a point 115 miles along the coast to the northwest. The great drought in 1932 and 1933 must have reduced its numbers and checked its progress, for several years passed without further startling evidences of its presence. Nevertheless, the invasion continued slowly up the coastal plain at an average speed of about forty miles a year and it is likely that the insect was often carried by boats from point to point along the shore. The interior of the State of Rio Grande do Norte in this section is extremely arid at all times and the mosquito failed to penetrate it, while the flat alluvial shelf, along which it succeeded in breeding its way, is in several places so narrow that the work of fifteen or twenty men would have been enough

to stop the progress of *gambiae* at any time during these early years.

That *gambiae* did not spread southward from Natal during all this time is a piece of good fortune not easy to explain. It is true that the prevailing winds are in the opposite direction, but *gambiae* might have made progress against the wind in cars, boats, and trains. Until recently no attempt was made to fumigate these means of transportation.

By 1937 the invader had reached the well-populated valleys to the northwest, and calamitous epidemics followed in 1938, arousing the government to action. Since the necessary expenditures were far beyond the local resources of the area already invaded, the national Government of Brazil assumed the responsibility. In 1939 it increased its first appropriation of \$250,000 to \$500,000, and the plans for 1940 provide for a further increase. The Foundation in 1939 appropriated \$100,000 for this purpose, and the amount set aside in the 1940 budget is \$230,000.

The actual field service of the campaign against the *gambiae* is being carried on by the personnel of the Foundation in collaboration with the Brazilian Government. The Foundation has assumed the responsibility of direction and administration. Early in 1939 the Malaria Service of the Northeast (of Brazil) was created by govern-

ment decree and began the task of organizing a field force to prevent further extension of the gambiae, to minimize the effects of its activity in the area already infested, and to reduce its range.

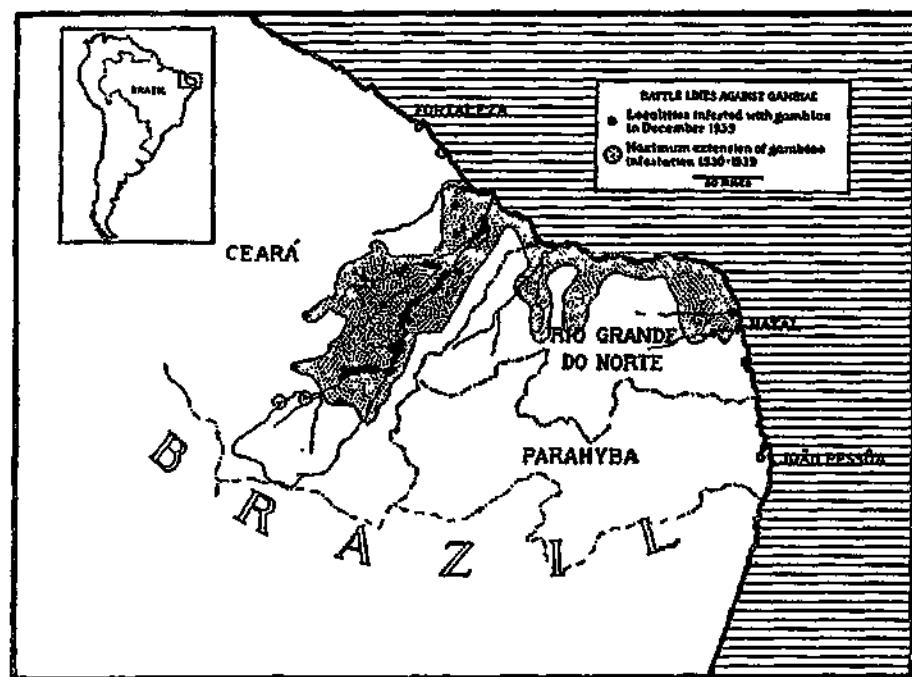
The first results in 1939 were frankly disappointing. The organization of the Malaria Service of the Northeast coincided with the beginning of the rainy season, when the gambiae advances by leaps and bounds, and this, together with the lack of personnel trained in methods of mosquito control, prevented any early apparent results of the campaign. As was anticipated, widespread epidemics of malaria occurred, and during the first few months of the Service some 114,000 persons were treated for the disease. During these early months the only visible consequence of activity was the reduction of mortality from malaria through medication of acute cases.

By the beginning of July, however, a staff of over two thousand doctors, technicians, scouts, inspectors, guards, and laborers, trained in methods of control, was available, and even though the rainy season was unusually prolonged, appreciable results were obtained, not only in minimizing the further spread of gambiae in the frontier districts, but also in reducing the incidence of the mosquito in certain heavily infested sections to a point where careful surveys re-

peatedly failed to reveal the presence of either larvae or adults.

In this campaign both climate and physical geography promise to be indispensable allies. The rainy season is restricted to four months out of twelve, i.e., from February through May, and *gambiae* is a mosquito which breeds mainly in residual rain-water pools, shallow, open to the sun, and without vegetation. It does not lay eggs in permanent or deep water, in running, salty, or shaded water, or in water supporting aquatic vegetation. On the other hand, it takes advantage of every little depression in the ground, such as wheel tracks or hoofprints, no matter how shallow or small, which can present a water surface for eight or nine days. During the rainy season, with its almost daily showers, *gambiae* becomes a formidable antagonist. But for eight months in the year, the heat of the tropical sun, the strong continuous trade winds, and the low humidity combine to dry up all shallow surface waters and to make life precarious and of short duration for the *gambiae*. Potential breeding places are reduced to disconnected pools in the beds of the larger rivers, none of which maintains a flow in summer. Most of the higher rolling country back from the coast is practically non-infectible by *gambiae*. Its arid, stony soil supports a scrub vegetation composed of a resistant,

thorny bush mingled with cactus. The region is without water for larvae, and without shelter for gambiae adults. The sparse population of the interior is therefore closely bound to the river systems and so also is the gambiae mosquito throughout the summer.



The plans of the campaign against gambiae sound like the plans of an army on defense. The frontiers of the infested region are defined by fumigation posts on all the outgoing roads. These are the forts of this new kind of Maginot Line. A ten-mile zone beyond the gambiae's farthest limit of advance is to be kept noninfectible, which from the mosquito's point of view is the

"scorched earth" policy. Within this zone, as well as within the area already infected, all breeding places of the mosquito must be eliminated or treated with Paris green or other larvicide. The whole region is being mapped from the air so that no pools, ponds, or other collections of water will be overlooked. The adult mosquitoes are being sought and killed in the houses with insecticide sprays to diminish the chances of their laying eggs and thus perpetuating the species in the region. Every automobile and train that leaves the infested area is being stopped, inspected, and fumigated. A maritime service has been organized at points along the coast to disinfect every boat or plane bound for clean ports. It is war in a very real and grim sense, and, unlike other types of war, its purpose is the preservation of human life.

It will be seen from the map on page 23 that by December 1939 *gambiae* had been pushed back to its central strongholds in the main river valleys and on the narrow coastal shelf. If the mosquito can be held within its present limits during the wet season of 1940, we can begin to think of the possibility of its eventual eradication from the entire region. This, of course, would mean extermination of the last surviving pair. It must be admitted that eradication is a rash word in terms of prophecy. As in all campaigns,

accidents may determine the issue. Thus in one case the *gambiae* mosquito was transported many miles into previously uninfested territory through the medium of an old automobile which used an improvised wagon road through the jungle and thus avoided the fumigation post on the main thoroughfare. In another case it was a small fishing boat that carried the mosquito up the coast, thus driving a wedge in the defense line against the spread of the disease. If the war is won, victory will come through continued vigilance. The wet season of 1940 will test the efficacy of the present measures and will be critical as far as the *gambiae* campaign is concerned.

YELLOW FEVER — 1939

The first active participation of The Rockefeller Foundation in the control of yellow fever was at Guayaquil, Ecuador, in 1918, and was followed in succeeding years by collaboration with the governments of the various American republics in which the disease was reported. Previous to 1930, measures for the control of yellow fever were limited to the organization of anti-*aegypti* mosquito campaigns in the larger centers of population and in such smaller communities as were found to harbor the disease. These campaigns were costly and were essentially tempo-

rary in character, inasmuch as it was then considered safe to discontinue work twelve months after the last reported case of yellow fever.

The early efforts of the Foundation seemed at first to be everywhere successful, and collaboration was undertaken and discontinued in one country after another, until by 1925 it was believed that the last remaining focus of infection in the Americas was in Northeast Brazil, where the Foundation had participated in control measures since 1923.

In 1928, however, the unexpected outbreak of yellow fever in the capital city of Rio de Janeiro, from which the disease had been absent for twenty years and which lay almost a thousand miles from the known endemic region of Northeast Brazil, suggested the existence of unknown factors in the epidemiology of yellow fever. Almost overnight the strategy of the battle had to be changed and accepted ideas discarded. It was discovered that yellow fever could occur — and does occur — in districts where there are no aegypti mosquitoes, and that under conditions of forest environment the disease is transmitted by unknown vectors and through hosts other than man. Blood tests of wild monkeys show that they are involved in epidemics, but other animals may also play a part. The capture and analysis of thousands of forest mosquitoes during

an epidemic showed that three species had yellow fever virus in them, and that two of them could transmit the disease to monkeys by biting. This so-called "jungle" yellow fever constitutes what may be a permanent reservoir of infection, and vast areas of the South American hinterland are undoubtedly endemic centers of the disease.

Consequently. The Rockefeller Foundation in recent years has shifted its emphasis from temporary anti-aegypti mosquito campaigns in a few of the larger centers to a broader program which includes three principal points:

1. The permanent prevention of aegypti-transmitted yellow fever through more rigid control measures in urban areas.
2. The early discovery of such outbreaks of yellow fever as may occur.
3. The prevention of jungle yellow fever, in so far as possible, through mass vaccination of exposed populations.

Laboratory research has contributed effective weapons in this new drive against yellow fever. Among these weapons is viscerotomy — or the post-mortem examination of liver tissue from all persons dying after a brief, febrile illness — which was developed and introduced by the Foundation in 1930. Experience has repeatedly shown that reports of clinical cases, and the investigation of suspicious outbreaks, cannot be

relied upon for accurate information regarding the distribution of either urban or jungle yellow fever. Viscerotomy has proved to be far the most sensitive index of the active presence of the disease and is now widely employed both in South America and Africa. In Brazil since 1930 over 175,000 liver specimens have been examined, of which nearly a thousand have shown evidence of yellow fever.

Another weapon contributed by the laboratory is the so-called mouse protection test developed by the Foundation in 1931. By testing the blood of persons for its power to protect mice against yellow fever it is possible to tell whether those persons have ever had the disease. One of the American soldiers who voluntarily exposed himself to yellow fever in Walter Reed's experiments in Cuba after the Spanish-American War contributed blood which protected mice against yellow fever virus thirty years after the soldier's attack. With the aid of this mouse protection test it was found that yellow fever had recently existed and was probably still present in Africa from Senegal to the Upper Nile, although the disease had not previously been identified in Central Africa.

A third weapon contributed by laboratory research is individual vaccination against yellow fever. Vaccination with virus 17D, developed in

the laboratories of The Rockefeller Foundation, was first used in the field in Brazil in 1937 when some forty thousand persons were inoculated. The 1938 outbreak of jungle yellow fever, involving some of the most heavily populated regions of Brazil, resulted in the organization of a field vaccination service which inoculated over one million persons, most of whom lived in the rural parts of the infected area. Postvaccination protection tests showed that a very high percentage of those vaccinated during 1937, and during the 1938 epidemic season, had developed demonstrable immunity. Likewise, epidemiological observations in the epidemic areas left no doubt of the efficacy of the vaccine used during the 1938 epidemic.

Unfortunately, similar results were not obtained with certain lots of vaccine used during the last two months of 1938 and the early months of 1939. Clinical, and even fatal, cases of yellow fever were observed in vaccinated persons, and postvaccination protection tests revealed that only a small percentage of some groups of those vaccinated had been immunized. Investigation failed to show any major faults in the manufacture and handling of the vaccine, but indicated that the vaccine virus had in the course of repeated subcultures become further modified and had lost much of its protective power for man,

without losing its ability to produce fatal encephalitis in white mice. Since white mice were used for the testing of the vaccine virus, its lack of potency became apparent only when put to the test in man. As a result of this experience, field vaccination in Brazil was interrupted for some months after the end of the 1939 yellow fever season, until a new stock of a low subculture vaccine of satisfactory protective strength could be produced. In spite of this interruption, 581,513 persons were vaccinated during 1939, and the end of the year finds the vaccination units working to capacity in the State of Espirito Santo, where a serious outbreak of the disease recently occurred.

The Rockefeller Foundation has been in charge of the administration of the government Yellow Fever Service in Brazil for sixteen years. Since active participation in the administration of essentially governmental services for prolonged periods of time is not within the program of the Foundation, arrangements were made to surrender this responsibility in Brazil at the end of 1939. Those sections of the Yellow Fever Service devoted to the control of aegypti breeding, viscerotomy, and vaccination have been incorporated by presidential decree in a special National Yellow Fever Service, subordinated directly to the Ministry of Education and Health.

Brazil is to be congratulated on its recognition of yellow fever as a permanent national problem and its organization of a national service with a well-trained and experienced staff, capable of maintaining the entire country free of aegypti-transmitted yellow fever and of reducing to a minimum, through vaccination, the loss of life from the jungle form of the disease.

The withdrawal of the Foundation from active participation in the administration of the Brazilian Yellow Fever Service does not imply any lessening of interest on the part of the Foundation in the study and control of this disease. It is proposed to continue collaboration with the Brazilian Government in the manufacture of vaccine, in studies of the epidemiology of jungle yellow fever, and in the further identification of hosts and vectors of jungle yellow fever other than man and the aegypti mosquito.

In addition to the program in Brazil, the Foundation collaborated in 1939 in the study or control of yellow fever in Bolivia, Peru, Colombia, British Guiana, and Uganda, Africa. In Bogotá, Colombia, a new laboratory, built and equipped with the help of the Foundation for all types of yellow fever studies and for the production of yellow fever vaccine, was opened early in the year. Similar institutions have previously been created with assistance from the Foundation in

Rio de Janeiro and in Entebbe, Uganda, Africa. Research in yellow fever is also being carried on in the New York laboratories of the Foundation.

OTHER WORK IN PUBLIC HEALTH

In 1939, through its International Health Division, The Rockefeller Foundation gave assistance to public health work of one kind or another in thirty-seven different countries. Thus in malaria, for example, field studies or control operations were carried on in India, Egypt, Portugal, Greece, Cyprus, Italy, Albania, British Guiana, Brazil, Salvador, Panama, Costa Rica, Cuba, and Mexico. Either by direct grants to other institutions or through its own technical staff, the Foundation was involved in studies of the common cold at Columbia University, New York; anemia in Puerto Rico; hookworm disease at the Johns Hopkins School of Hygiene and Public Health; scarlet fever in Rumania; rabies in Alabama; syphilis at the Johns Hopkins University and in San Joaquin County, California; sylvatic plague in Alberta and British Columbia; tuberculosis in Jamaica, Costa Rica, Puerto Rico, Canada, and New York City; and schistosomiasis in Egypt.

Influenza studies were carried on with Foundation assistance chiefly in the United States. Laboratory work, concentrating on virus re-

search, was conducted by staff members in the laboratory of The Rockefeller Foundation in New York City. In Westchester County, New York, a community has been selected for the experimental study of respiratory virus infections including influenza. This work is a special service of the Westchester County Health Department, but is under the technical supervision of Foundation staff members. Financial support was given to the California State Department of Public Health toward the establishment of an influenza laboratory near the campus of the University of California in Berkeley, and work in this laboratory is now going forward under the direction of a staff member of the Foundation. Research at the influenza laboratory of the State Health Department of Minnesota on the campus of the University of Minnesota also received Foundation assistance. Outside the United States the Foundation supported influenza studies of a broad epidemiological character at the State Hygienic Institute in Budapest, Hungary.

Either by direct financial grants or by lending the services of staff members assistance was given to central or local health departments, in certain areas of the following countries: Mexico, the Caribbean islands, Central America, India, Java, Canada, Greece, Italy, Portugal, Rumania, Turkey, and the United States.

Finally, 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 Bulgaria, Hungary, Sweden, Turkey, Denmark, Rumania, Panama, and Japan. The Foundation also cooperated with the Skidmore College School of Nursing, the University of California Division of Nursing, and the Schools of Nursing of the University of Washington, the University of Toronto, and Vanderbilt University.

The expenditures of The Rockefeller Foundation in 1939 through its International Health Division are shown by the following approximate figures:

Control and investigation of specific diseases	\$625,000
Laboratories of the International Health Division in New York	135,000
State and local health services	160,000
Public health education	300,000
Technical staff	<u>750,000</u>
	<u><u>\$1,970,000</u></u>

A detailed report of the work of the International Health Division for 1939 will be published early in the summer of this year.

THE MANY-CENTERED WHOLE

Each man sees the world through his own eyes. It is inevitable, therefore, that there should be,

in relation to knowledge, a kind of personal centripetal tendency. One's own sensations, one's own point of view, one's own interests have a vividness and a validity which give them for each one of us, an understandable priority.

Other factors doubtless enter, but this natural preoccupation unquestionably leads many scholars to view their own subject as the central pivot around which all knowledge swings. Choose off the shelves a group of learned treatises and sample the prefaces: *Mathematics* — it is the queen of the sciences; *Physics* — it is the source of the basic laws for the behavior of all matter; *Chemistry* — a recent text says, "Chemistry touches all human interests. It is the central science"; *Biology* — it assaults the greatest mystery of all, the mystery of life; *Astronomy* — it has the cosmos and eternity for its heroic theme; *Psychology* — it analyzes the mental processes which we must use on other problems; *Logic* — it deals with the laws of reason itself; *Philosophy* — it is an examination of the ultimate questions which give life meaning. And so one could expand the list, with brave and startling claims for the central character and basic importance of one field, one specialty, one segment of knowledge after another.

All this is particularly familiar to the officers of an institution which distributes research funds;

for it is their privilege to listen to numbers of enthusiasts, each of whom sees his own problem as truly focal, each convinced that he is dealing with the one central theme. And all this is as it should be, for these apparently contradictory claims arise partly because of the egocentric character of man, but they are also due to wholly selfless enthusiasms, to the concentration to which specialized competence naturally leads and to certain facts about the interrelated character of knowledge.

This paradox of the whole that has not one but many centers contains, as do many paradoxes, important elements of truth. The web of knowledge is vast and intricately interconnected, with threads radiating in all directions in such a way as to make each fact, when one closely examines it, a veritable center. Someone learns how better to polish a prism or grind a lens, and he has reached out to the farthest star, has probed deeply into the smallest cell. A biochemist in Holland reports something new about the symmetry of complicated molecules in certain tissues — and every cancer expert in the world focuses his attention. An American develops a method of speeding up electrified particles in a sort of glorified merry-go-round — and out run the radiating and unpredictable threads of connection all over the world and throughout the whole web of

scientific knowledge, touching a specialist in intermediary metabolism in New York, a physicist in Paris, an anemia specialist in Rochester, a geneticist in Russia, a cancer specialist in Boston, a metallurgist in Tokyo, a cellular physiologist in Copenhagen, a radiologist in St. Louis.

This is of immense help to an organization with funds to spend in the advancement of science. For it means that even if support is concentrated on a definite field, such as psychiatry in the medical sciences, for example, or experimental biology in the natural sciences, the possibility of influence on many other fields of knowledge is not surrendered. Even more important, it means that in choosing the recipients for support in science, the major emphasis can be on brains, imagination, industry, and character, with only secondary consideration to the often completely baffling question, "Is this of basic importance?" It means that a brilliant man, working with devotion and determination, will somehow make of himself and of his own particular problem a significant center from which truth will expand.

THE MEDICAL SCIENCES — 1939

Grants in the medical sciences made by The Rockefeller Foundation in 1939 fall into three general groups: new appropriations in the field of psychiatry; renewals or extensions of earlier

appropriations in this field; and new appropriations or renewals in support of other phases of medical research and teaching not closely related to psychiatry.

Among new appropriations in psychiatry, \$106,080 was given to the University of Toronto for research on carbohydrate metabolism as related to mental disease, a joint enterprise of the Psychiatric Clinic and the physiologists of the Banting Institute, who are particularly qualified in the studies of insulin. To the Catholic University of America \$85,000 was appropriated for the teaching of abnormal psychology and child psychiatry to Catholic teachers and social workers, both lay and clerical. An appropriation of \$17,150 was made to the Dikemark Mental Hospital in Norway for biochemical studies of the insane. Each of these three grants was for five years or more.

Renewal of support previously given by the Foundation to psychiatric research was made to departments of psychiatry at Johns Hopkins, Harvard, Institute of the Pennsylvania Hospital, University of Illinois, University of Colorado, Tulane University, University of Oxford, University of Lund (Sweden), University of Brussels, the Tavistock Clinic (London), and to the Boston State Hospital. These eleven grants, averaging about three years in duration and ap-

proximately \$37,000 in amount, involved a total of \$404,750. In judging the relatively short duration of these grants, it should be noted that the Foundation had already given aid to these eleven undertakings over periods of time averaging more than four years.

Outside the program in psychiatry some relatively large grants were made in 1939 to a variety of undertakings. A conditional appropriation of \$400,000 was made to Harvard University for the endowment of its School of Dental Medicine, toward which the Carnegie Corporation has pledged \$650,000. This appropriation of the Foundation becomes effective when from all sources the total increase in the endowment of the School reaches \$2,550,000.

For the development of an adequate department of preventive medicine and public health in the Johns Hopkins School of Medicine, an appropriation was made of \$350,000, payable at the rate of \$35,000 a year for ten years. Continuation of studies in endocrinology at Yale and the University of California was provided for by grants of \$36,000 and \$75,000 respectively. Psychological research under the direction of the Child Research Council of Denver was aided with a grant of \$19,200 available over a period of six years. For the maintenance of the National Committee of Maternal Health, an inde-

pendent organization selecting and administering research projects in the fields of reproduction and sex phenomena, \$12,000 was appropriated over a two-year period. Support in the amount of \$42,000 was renewed for a three-year period for studies in the constitutional aspects of disease, under the direction of Dr. George Draper at the School of Medicine of Columbia University. The sum of \$15,000 was contributed to the development of legal medicine at Harvard over a three-year period. Two appropriations were voted of fluid research funds from which allocations are to be made by the recipient institutions to investigators and projects which they themselves select: one to the Johns Hopkins School of Medicine in the amount of \$15,000 a year for six years; and one to the Medical Research Council of Great Britain for research in endocrinology, psychiatry, neurology, and allied subjects, in the amount of \$10,000 a year for five years.

THE NATURAL SCIENCES — 1939

As has been stated, the present program of the Foundation in the natural sciences places primary emphasis on experimental biology. This program is based upon the conviction that man will profit enormously from a deeper and clearer understanding of the phenomena of life. It is par-

ticularly concerned in helping to bring to bear upon these complicated and subtle problems all the battery of modern precision techniques. It is interested in the way inheritance operates, in the way cells grow and divide, in the way genetic characteristics find their physiological expression, in the physical and chemical control of growth and development, in the biochemical aspects of nutrition and in a variety of other matters involved in understanding the details of life processes.

One group of 1939 appropriations was related to the application of chemistry to biological problems. A five-year grant was made to the University of Utrecht for research under Professor F. Kögl on the biochemistry of growth substances. Two grants were made to the University of Minnesota: one provides assistance over five years to Professor G. O. Burr for studies of certain substances (lipids) which play a vital role in cellular activities; the other gives aid over three years to researches under Professor M. B. Visscher on the mechanism of osmosis in living systems. To the Johns Hopkins University a four-year appropriation was made for a group program on the chemical structure of biologically important compounds. To the University of Oxford funds were voted to build an extension to the research laboratory of organic chemistry under Sir Robert Robinson.

The five appropriations in this group totaled \$197,875.

A second group of appropriations emphasized the application of physics to biological problems. Funds were given to Washington University, St. Louis, to construct a cyclotron which will be used in biological and medical experimentation; and a three-year grant was made to Professor Lawrence's group in support of similar activities at the University of California. A three-year grant to the University of Chicago is assisting studies in molecular spectra, under Professor R. S. Mulliken. The Memorial Hospital of New York received a grant covering three years, for research in the spectroscopic aspects of anemia, under Dr. C. P. Rhoads. The four grants in this group totaled \$149,000.

Two grants were made in the field of genetics. The University of Missouri, where there has been an important recent development in this subject, was assisted in building a research laboratory of genetics, and was given a five-year grant toward its research program. An appropriation covering five years was made to Brown University to aid the genetics researches of Professor P. B. Sawin. These two grants totaled \$109,000.

A five-year grant to the biology group at Amherst College also involved support of genetics, as well as of experimental embryology and growth studies. Such assistance to groups or de-

partments, in contrast to support of specific projects, has been an important part of the Division's program. Thus during 1939 a ten-year grant was made in support of research in biology at Stanford University. Also involving assistance to a group activity was a grant in support of the Cold Spring Harbor symposia on quantitative biology. The appropriations in this classification total \$242,500.

Emphasis on several interests of the Foundation was included in a grant of \$224,000 in support of further activities of the Yale Laboratories of Primate Biology. A minor portion of this sum covered the cost of erecting and equipping a small new physiological laboratory at Orange Park, Florida, where there are already located extensive facilities for breeding and rearing chimpanzees for research purposes. The remainder of the grant will contribute, over a five-year period, to the support of a general program in which these animals, so close to man in many important regards, are to be utilized in the study of a wide range of physiological, psychobiological, neurological, nutritional, serological, and biochemical problems.

In addition to these appropriations, funds were voted to the National Research Council in support of its general budget (\$61,956.54) and of its fellowship program (\$180,000).

Once during the year an appropriation was

made for a purpose somewhat removed from the program of the Foundation in the natural sciences under its policy of concentration. Political interference in Germany having threatened the integrity of the leading world journal for abstracting mathematical literature, a grant was given to the American Mathematical Society to aid in the founding of such a journal in the United States. The editorial offices of this new journal are at Brown University. A second grant was made for the establishment of a microfilm laboratory at Brown, through which an important microfilm service in mathematics has been set up in conjunction with the new journal. These two grants totaled \$61,500.

THE CLAIM OF THE SOCIAL SCIENCES

We are living in a world that threatens to brush aside everything that intelligence stands for. Two great wars and the prospect of more; over half the population of the earth caught in this maelstrom of destruction; ten years of depression with millions everywhere still without employment; confusion over issues and values that leaves men frustrated and uncertain — it is little wonder that the temptation is to forsake reason and resort to force.

One of the difficulties is that force seems to be such an easy answer. It appears to cut through

the complexity and confusion without the necessity of the severe intellectual effort and discipline involved in creating any effective alternative. The real tragedy is not that so many men in the world believe in force as a method of social organization as that so many who reject force as an ideal surrender to it in practice because there seems to be nothing else to do.

But force in the end always defeats itself. In the long run it solves nothing and answers nothing. It brings us no step nearer the prospect of the "great society" which science and culture have revealed. If the world of the future is a more promising habitation for mankind it will be only as a result of the persistent application not of force but of intelligence against the things that now thwart our hopes. We have created a society so interdependent that issues are no longer simple, individual, and local; they are complex, social, and world wide. And they are beyond the experience of most of us. Money and credit, fiscal policy, international relations, international trade and finance, national income and its distribution, wages, profits, prices, monopoly, purchasing power, savings and investment, employment and unemployment, social security, collective bargaining, housing, public opinion, propaganda, public administration, the relations between government and business, individual and

social adjustment, crime, social welfare, education, population, social justice in an interdependent society — here is merely a brief list of some of the urgent issues. How can tanks and bayonets hope to solve such problems as these?

The alternatives before us are clear. While still giving lip-service to the processes of reason, we can, by lack of well-directed effort, yield the field to the various advance pickets which force from time to time employs — catch words and gullibility, propaganda and slogans, emotion and prejudice, partisanship and antisocial self-seeking. Or, as the only alternative to rule by force, we can make the hard choice that calls for a vigorous backing of competent intellectual efforts to define and analyze the issues facing society.

These alternatives confront America as well as Europe, democracies as well as totalitarian states. When sincere and high-minded men hold opposite views on the complex issues of a democracy and when no effective effort is made to narrow or define those differences by objective analysis, the tendency is for the differences to freeze into ideologies and thereby to shift from an intellectual to a purely emotional basis. Instead of a creative struggle of facts and ideas, conflict degenerates into a mere fight for power. But if by objective and competent study the issues are more precisely defined and the facts more exactly known, then the conflicting views

which still remain can, with reasonable good will, more readily be resolved. Certainly if by competent study we widen the area of definitely ascertained fact and relation, we shall build a more solid substructure for public and private policy. Furthermore, all those wholesome efforts to transmit knowledge which we broadly include under the term "adult education"—and, indeed, formal education itself—can never be more effective than our basic understanding permits. Nor can we hope for adequate clarification of the moral and ethical questions of today until these highly involved issues are stated clearly on the technical side.

Thus the studies in the social sciences present an intellectual challenge of central importance. The simple techniques and methods of yesterday will not suffice. Highly specialized and complex methods are necessary. Methods as intricate and varied as the problems themselves must be developed and employed by highly skilled men and women working under the most favorable conditions. In the words of Lord Stamp's trenchant comment: "Any truth is many-sided, even simple truth. But the complex truth of today needs approach by many different methods and by many different types of mind before we can arrive at even an approximation to the truth."

On this issue a vigorous democracy in which the mind is free cannot afford to be defeatist,

difficult as the course may be. Intelligence must fight to make itself heard above the noise of marching feet. When complexity multiplies and problems pyramid, lack of effective support for competent intellectual effort may be as fatal to democratic process as lack of freedom.

Democracy today needs the social scientists, both inside and outside the universities. It needs to free them to think with all possible penetration, wherever that thinking may lead. New ideas about human relations and institutional adjustment should be fully, honestly, and hospitably analyzed. Society should be most deeply concerned, not with ridiculing failures or condemning those whose findings it does not approve, but with aiding that small minority of pioneers whose work in the social studies is reaching up to new levels of scientific achievement. Such persons are to be found in universities, in government, and in private life. No greater contribution to the disinterested comprehension of today's issues could be made than by affording these able men and women full opportunity to make their work genuinely effective.

THE HANDICAPS OF THE SOCIAL SCIENTIST

What are the handicaps which lessen the effectiveness of the ablest workers in social research?

They alone can best answer, but certain tentative observations by an outsider may perhaps help to stimulate discussion and focus attention.

1. We ask too much of the social student. The solution of the problems confronting society is the task of all the intellectual and moral agencies of society — public and private. Society has a right to ask of the social scientist that he be objective and technically competent, and that he "deepen and make more definite our understanding of fact and relationship in the social world." The rest is society's responsibility.

2. The social scientist is limited by the fact that he does not deal with rational material but with the rational and irrational conduct of man. The host of variables which this fact introduces multiplies the obstacles to his work and sets limits to the applicability of results.

3. Funds available for the research work of university social scientists are, generally speaking, paltry. The endowment for social science research in sixteen leading universities totals only \$3,000,000, or an average annual income from endowment per institution of about \$7,500. In considering this insignificant figure we should bear in mind the importance to society of the issues awaiting investigation and the great cost if they are to be studied on a factual basis.

In contrast with the small sums spent for

research are to be placed the vast sums spent for teaching in the social field. No outsider, even though familiar with the struggles over budgets in American universities, can presume to advise. But it may not be inappropriate to express the hope that, even in the face of present financial pressure, provision for the *transmission* of knowledge may not preclude more support of the *increase* and *refinement* of the knowledge to be transmitted.

Universities might well consider the possibility of setting aside a fixed percentage of the annual budget for research in the social sciences, even though in most cases the percentage would have to be small. This would give a basis for long time planning which does not now exist.

4. The extension and deepening of knowledge in the social studies have in many cases been submerged in universities by the heavy responsibilities for the *transmission* of what is known (or believed) at the moment. The research function is given lip-service, but in most universities it has been crowded to the background by the pressure of immediate teaching tasks. These pedagogical needs usually guide administrations in the selection of staff, the appointment of department chairmen, and the allocation of faculty time. Among faculty members lack of time and the belief that teaching presents a prior claim limit

the pursuit of scientific research. This belief is undoubtedly well based as far as the overwhelming majority of the faculty is concerned. But university administrations should be interested and discriminating enough to seek out the few individuals on their faculties who are genuinely gifted in research, and should be courageous enough to plan the time and support of such persons from the point of view of the research objective.

The establishment of research professorships — each incumbent perhaps doing some teaching — represents a wholesome step that some institutions have taken and which should be possible in many more.

The research and teaching functions are both vastly important — and important to each other. But when either function too greatly dominates the other, the resulting situation is both unhappy and unhealthy.

5. In many branches of the social sciences it is extremely difficult for the university student of social problems to study the real phenomena of his field in their setting. A well-stocked university library goes far toward providing the student of the humanities with the material for his studies. A well-equipped laboratory will do the same for the natural scientist. But the phenomena with which many social students are concerned are

usually not to be had on the campus. The university social scientist, therefore, finds difficult that intimate and continuous access to his living materials which the student of medicine or of the natural sciences has achieved.

While the university professor becomes more and more engrossed with his heavy teaching load and consequent administrative chores, the reality of things outside his environment grows in complexity and in rate of change. Thus the difficulty and expense of bridging the gulf between the university social scientist and his "laboratory" increases. Thus, too, the university student in the social field has all too often been content with academic speculation about the phenomena of his field instead of studying the phenomena themselves. As Julian Huxley has said: "To speculate without facts is to attempt to enter a house of which one has not the key, by wandering aimlessly round and round, searching the walls and now and then peeping through the windows. Facts are the key."

The relation between the social scientist and the world of action which is his laboratory will always remain an enormously complex problem for which there is no single or simple solution. A number of the grants by The Rockefeller Foundation during 1939 were for the support of efforts to bridge this gap. Some of these grants are listed in the next section of this REVIEW.

6. Another handicap lies in the broad qualifications required of the social scientist. A good physicist does not necessarily have to be acquainted with the fine arts or the social sciences. To be really effective as a social student, however, a person should be familiar with both the humanities and the physical sciences. He needs to have a rich scholarly background in addition to the most rigorous scientific standards and methods. Time, capacity, and temperament being limited, the perfect combination is rare and difficult to achieve. The efforts to train such social scientists, in graduate school and beyond, offer promising possibilities for study and experiment.

7. Finally, donors, whether personal or institutional, often handicap the efforts of the very men they seek to help. Wise giving in support of research in the social studies requires more than unremitting alertness to discover the able person working fruitfully and intelligently on significant issues. It means capacity to learn from such persons what aid is needed and how it can best be given. It means that no attempt must be made by the donor to strait-jacket the area of study. And it usually means that the donor should recognize that the greatest gains in social research and social wisdom are likely to grow out of consecutiveness of effort over a period of years. Donors of funds need, therefore,

to be sure that their grants facilitate rather than injure consecutiveness of work and planning on the part of the recipient institutions and persons. In general, smaller sums over a period of years should create more values than a larger sum for a temporary "survey" type of study. Sources of funds should appreciate, too, that a modest research effort may often throw more light on great issues than a more ambitious attack. They should also be conscious that all studies in the social sciences, as in the natural sciences, are really interlocking parts of one whole. The incidental light which one study throws upon a problem outside its direct purpose may often constitute its most significant claim to validity.

THE SOCIAL SCIENCES — 1939

The greater part of the grants made by the Foundation in the field of the social sciences in 1939 provided for the continuance of work previously aided. Certain institutions received what is termed general support — i.e., contributions toward their general budgets — while others were assisted in developing or carrying on specific activities or projects. Appropriations of these two types were made in the United States, in Canada, and in Europe.

Three institutions in the United States received general support of substantial nature.

The sum of \$870,000, available over ten years, was appropriated to the National Bureau of Economic Research for the continuance of its activities as a national center of economic research. The Brookings Institution received \$225,000 toward the support of its general program over a three-year period. The Social Science Research Council was given \$105,000 for general administrative expenses over the next three and one-half years.

Owing to the war, an appreciable loss of income from tuitions was handicapping the activities of the London School of Economics and Political Science. Accordingly, £12,500 was appropriated to this important center of research in the social sciences for general use in 1940. Similarly, support of the general activities of the Dutch Economic Institute was given through a grant of \$18,000; while the Canadian Institute of International Affairs received \$30,000 (Canadian) for its general budget. Both these grants are available over three years.

Appropriations made by the Foundation in 1939 for special programs and projects were for various purposes. The Social Security Committee and the Public Administration Committee of the Social Science Research Council, for instance, each received \$60,000 in 1939 for use over two years for general expenses; \$15,000 as a small

research fund was also placed at the disposal of each committee. A grant of \$70,000 for use in the years 1940 and 1941 made possible the continuance of a program of research in finance at the National Bureau of Economic Research. The work, which has been in progress for two years under an earlier Foundation grant, was undertaken at the suggestion and with the financial support of the Association of Reserve City Bankers. The University of Wisconsin received \$29,100 for work during a two-year period upon the amount and distribution of income within Wisconsin. The Social Security Committee of the Social Science Research Council was granted \$15,000 to study the economic implications of the federal social security legislation with respect to the national income of the United States.

Three appropriations to American universities provided funds for the continuance of training and research in public administration under programs previously aided by the Foundation. Harvard University was given \$55,000 for the use of its Graduate School of Public Administration over a five-year period; the Bureau of Public Administration of the University of Virginia received \$24,000 for work over four years; and Syracuse University, \$50,000 upon a contingent basis to maintain graduate training in public administration.

An appropriation of \$60,000 on a matching basis was made to the University of Chicago toward the budget of the School of Social Service Administration for use over a three-year period during which the University will seek to meet the conditions of an endowment pledge made by the Foundation in 1934.

The Council on Foreign Relations, New York, received \$44,500 toward a special study of the problems of peace and reconstruction following the war. The Foreign Policy Association, New York, inaugurated a Latin American Information Service with the aid of a \$10,000 grant from the Foundation. The University of Pennsylvania was given \$11,000 for two studies by its Industrial Research Department, whose general program had been assisted by the Foundation since 1927. A special project designed to aid the Bureau of Public Administration of the University of California over three years in the development of objective standards for measuring effectiveness of local government activities in the San Francisco region was financed to the extent of \$30,000.

BOOKS

In reporting on its plans for the enlargement of the Bodleian Library at the University of Oxford, the University's Commission wrote that if the

present rate of increase in the Library continued, the plan would suffice for two centuries; if the rate doubled, for one. And the Commission sagely remarked, "There is no way of knowing by what methods human utterance will be recorded at the end of either period." Whatever developments occur, however, it is difficult to imagine a world with no place for libraries and no need for books.

Aid to libraries and library projects has always been an important part of the Foundation's program in the humanities. Prior to 1933, by grants to internationally important European institutions, the Foundation sought to improve the technique of libraries in Great Britain, France, and Germany. Thus \$2,300,000 was appropriated to the Bodleian Library at Oxford, for both the completion of its catalogue and the extension of its plant. Similarly, \$107,400 was given to the British Museum for catalogue revision; \$113,500 to the Bibliothèque Nationale in Paris; and \$50,000 to the Preussische Staatsbibliothek in Berlin.

Since 1933 Foundation aid in this type of work has included the training of men for library administration, not only in Europe but in South America and in China and Japan. In 1939 the Foundation continued its interest in this general field and made a number of appropriations through

the American Library Association as well as to individual libraries for purposes illustrative of their expanding work. To the American Library Association, the Foundation appropriated \$60,000 for its Committee on International Relations. This Committee, after careful study, is supplying funds to various popular libraries in Europe for the purchase of books printed in English. All the countries thus assisted have been able to make their book purchases with the unhappy exception of Finland. In England and France, books and periodicals financed under this project have already found their way to military hospitals and naval vessels.

The Foundation also appropriated \$25,000 to the Bibliothèque pour Tous in Switzerland. This independent library is a national medium of adult education serving the people of Switzerland by distributing books to single readers and to adult groups. It is unique among libraries in Europe in that it serves impartially three language groups — German, French, and Italian.

To the Library of Congress the Foundation appropriated in 1939 \$22,000 for the development of a catalogue of Hispanic material and the organization of bibliographical services in the Hispanic Foundation. The Hispanic Foundation began its official existence as an integral part of the Library of Congress on July 1, 1939. It was

made possible by gifts from individual donors and by a Congressional appropriation toward salaries. The work of the Hispanic Foundation will be closely integrated with the programs of the Committee on Latin American Studies of the American Council of Learned Societies, the American Library Association, and other related agencies in this general field.

A grant for a somewhat similar purpose, in the amount of \$30,000, was made to the American Library Association for studies of library cooperation with Latin America. The American Library Association has an active committee in this field which proposes to conduct a series of exploratory studies covering exchange relations now existing between important libraries in the United States and Latin America. It is expected that out of these studies will come the development of a systematic exchange of publications, the distribution of American scholarly journals in Latin America, and the preparation of a description of important Latin-American collections now in the libraries of the United States.

The Foundation also appropriated \$38,600 to the American Library Association for the preparation of a new edition of the Union List of Serials in the United States and Canada. The Union List of Serials is a national index to all material in serial form, with the exception of

newspapers, in the important libraries of this country and Canada. The first edition, published in 1927, is a volume of 1,588 pages listing serials published through 1925. Nearly the entire edition of 1,750 copies has been sold. A new edition of this extremely useful index is necessary, and the Foundation's appropriation will insure successful publication.

Another grant which the Foundation made in 1939 in the general library field was \$15,000 to the New York Public Library for the development of its microfilm services. This appropriation will enable the Library to give its Reference Department at the central building equipment for microfilm copying. The Department will produce long runs of copy of important material for outside demand. In addition, the new photographic facilities will restore to use a great mass of material now held out of circulation, including rare collections of newspapers and other publications printed on poor paper.

WHAT WILL RADIO DO FOR SOCIETY?

A foundation concerned with the advancement of knowledge finds some striking contrasts in its work. On the one hand, its funds may be serving on far frontiers where science is dealing with the smallest divisions of matter — the neutron, proton, and electron. On the other hand, its funds

may be at work in nearer and more familiar fields where little or no definite knowledge yet exists.

This latter situation is illustrated by a grant which the Foundation made in 1937 to the School of Public and International Affairs of Princeton University, toward a study of the role which radio is playing in the lives of listeners. This study, in its early stages, was principally concerned with discovering whether there were reliable ways of finding answers to such questions as these: What individuals and social groups listen to the radio? How much do they listen, and why? In what ways are they affected by their listening?

The radio industry had, of course, been concerned with determining the size and distribution of its audience, but primarily with relation to that audience as prospective purchasers for products advertised over the air. To learn what it could of the listener as an individual and as a member of society, the Princeton study, quite literally, began where the industry left off. In some instances, a reworking of data gathered by the industry, or by other research agencies, yielded the evidence that was wanted. In other cases, where data were lacking, the study undertook its own research.

During 1939 the Foundation made a further

grant to Princeton University to enable the study to formulate its findings, bringing appropriations for the work to a total of \$84,500. The first reports of the study are now appearing. Some of them will be of interest chiefly to specialists; others will undoubtedly attract a wider public.

One report, shortly to be published, contrasts radio's present service with that of the printed page. What individuals and what groups in American society tend to listen rather than to read? Striking indeed is the divergence of preference reported in one set of interviews.

Those who prefer to listen

"I understand easier when I am listening. It is explained better."

"I live right inside the radio when I listen."

"Radio convinces me more, because somebody is telling it to me."

"When there is a story (on the radio) I think I am there. But when I am reading, I look up once in a while. I know always where I am."

Those who prefer to read

"I seem to get things much more easily by reading them."

"I become more absorbed in reading."

"I like to have things written down. It gives me a feeling of certainty I don't have when I am listening."

"In listening, there are always other things that take your mind away. When I read, I have to live with it. I have to look always at the book. When I am listening, I am looking around."

To be sure, factors other than sheer preference enter in, as in the case of the housewife who remarked:

"I feel always a little bit ashamed when I read. It looks so lazy. You don't just sit and read if you have a family."

But strikingly as these preferences diverge, the "reasons" given for them by each group clearly reflect the common experience of finding satisfaction in what they hear or read. Thus it is not strange that those who listen least are those who most readily find satisfaction in what they read.

Nor is it strange, even with literacy almost universal, to find that the percentage of radio listeners is greater among high school graduates than it is among college graduates, and greater still among those who did not reach high school. Yet while this latter culture-level group listens most in point of time, it listens least to radio's more serious offerings — symphonic music, opera, talks, discussions of affairs, and all programs of an educational character. Even speeches of prime political importance draw from the lower educational groups a percentage of listeners substantially smaller than from the upper groups. In short, radio seems, as yet, not to be extending the interests of those members of its audience who find more satisfaction in listening than in reading.

Perhaps this is only to be expected. For as the report points out: "Print did not raise the intellectual standard of living just because it was invented, but because it was used by social institutions, such as schools, and promoted by agencies, such as libraries and publishers. In the same way, serious broadcasting will have to become imbedded in the whole plexus of social institutions before it can, to any large extent, contribute to the increase of serious responses in the American community."

In the case of news, though variation in listening between the more and less educated groups is not so marked, the less educated rely more on radio than the more educated, who tend to rely on print. The value of the news service which radio brings is dependent, in part, upon the accuracy and impartiality of the flow of information. "This becomes of extreme social importance," says the report, "when we consider one of the apparent characteristics, namely the suggestibility of the lower cultural groups, as compared with the upper." That suggestibility is, in fact, the subject of another of the study's reports, shortly to be published by the Princeton Press, which deals with the "panic" occasioned by Orson Welles's broadcast, the *War of the Worlds*, during the autumn of 1938.

What will radio do for society? The answer to

that question, it is pointed out, must depend to a great extent upon what parts of the population are subject to radio's influence, and upon the factors which determine whether or not people listen. The publication of the Princeton reports, dealing with such problems as these, will test the expectation which led the Foundation to contribute toward this project, i.e., that knowledge of what radio is doing for its audience should be basic in any effort to increase still further its public service.

THE HUMANITIES — 1939

In addition to its interest in libraries and the radio, described in preceding pages, the Foundation in 1939 made appropriations to undertakings in motion pictures, the drama, and cultural relations with the Far East. In its program in the humanities the Foundation is attempting to assist those efforts which tend to raise the general cultural level and promote cultural interchange between nations.

In line with its interest in radio, the Foundation gave Harvard University \$24,000 to help establish at a major institution a lectureship in broadcasting. To this lectureship the University has appointed Mr. Charles A. Siepmann, formerly of the British Broadcasting Corporation.

In the field of the motion picture, the largest

contribution during 1939 was an appropriation of \$60,000 to the American Film Center for general expenses during a two-year period. The Center was established in 1938, not to produce motion pictures but to act as a central agency for promoting and developing the production, distribution, and use of motion pictures for educational and cultural purposes. The Foundation also appropriated \$7,500 to the National Committee of the United States of America on International Intellectual Cooperation for the development of international exchange of educational films; and \$19,380 to the National Film Society of Canada for the same purpose.

The Foundation has long had an interest in the promising growth of amateur drama which is taking place in this country. Appropriations made during 1939 included \$17,500 to Vassar College toward the cost of a report on the Federal Theatre Project, and of a survey of practical methods for the promotion of community drama on a national basis; \$25,000 to the Studio Theatre School of Buffalo, New York, for the development of its school and community program in drama; \$25,000 to the National Theatre Conference to enable it to provide fellowships for advanced training in drama; and \$30,000 to the Stevens Institute of Technology for research in the control of sound and light for dramatic purposes.

Like libraries, museums are a necessary agency in any development which looks toward wider cultural participation in a democracy. During 1939, the Foundation appropriated \$75,000 for use over a two-year period to the Museum of Modern Art to provide a rotating fund for the circulation of exhibits and for publication; and \$25,000 to the New York Museum of Science and Industry toward its general budget.

A number of appropriations made by the Foundation in 1939 were concerned with various aspects of study in Far Eastern subjects. Thus \$15,000, available over a three-year period, was given to the Claremont Colleges, Claremont, California, for its well-developed program in Far Eastern studies; \$15,000, payable over five years, to Stanford University for the support of courses in Chinese language and literature; and \$31,700, available over three years, to the American Council of the Institute of Pacific Relations toward the cost of producing English translations of source material on Chinese history.

Two appropriations made during the year relate to the growing importance of English as an international language. To Harvard University the Foundation gave \$50,000, available over five years, in support of research by Dr. I. A. Richards in the use and teaching of language. The sum of \$22,000 was given to the Payne Fund

for the preparation of English texts and teacher-training programs to be used in classes of foreign-born adults.

In 1939 the Foundation stepped outside its usual program in the humanities to make a contribution toward a project which it is hoped will have an important influence on the development of music in America. In the familiar setting of the annual Berkshire Symphonic Festival in Massachusetts, there is to be established in 1940 a center for musical education which will provide six weeks of instruction under the direction of Serge Koussevitzky, leader of the Boston Symphony Orchestra. Festival concerts will be given for three weeks in August; in the final week all productions are to be new symphonies by American composers. For fifty selected advanced students there will be an institute offering courses in orchestral conducting, dramatic interpretation, and advanced composition; for 400 others, there will be an academy giving instruction in choral, orchestral, and chamber music. Toward the support of this project over two years the Foundation appropriated \$60,000.

Finally, reference should be made to the appropriation to the American Council of Learned Societies. This outstanding national organization of American humanistic scholarship has long had support from the Foundation. In continuation

of this support, the Foundation in 1939 appropriated \$80,000, to be used over a period of two years, toward the cost of the Council's fellowship program, planning committees, and international activities.

THE WORK IN CHINA

War still runs its insensate course in China. Destruction continues on a wide scale. It is one thing, however, to destroy life and property; it is another and far more difficult thing to destroy an idea. In 1934, before war struck, leaders in the political and intellectual life of China started what really was an attempt to make over a medieval society in terms of modern knowledge. One of the aspects of this ambitious program had to do with rural reconstruction, inasmuch as the Chinese farmers constitute 85 per cent of the population. There is no higher tribute to the soundness of this effort than the astonishing fact that, in spite of the intolerable difficulties of the past few years, it still endures.

The Rockefeller Foundation has been proud to cooperate in China's program for rural reconstruction. Since 1934, dealing almost wholly with Chinese institutions, the Foundation has appropriated a total of \$1,500,000 for this work. Individual grants have been made to the National Council for Rural Reconstruction, a co-

operative effort of Chinese universities with local agencies; to the Chinese Mass Education Movement, under the leadership of Y. C. James Yen; to Yenching and Nankai Universities for training in rural administration; to the University of Nanking for training in agricultural economics; to the National Central University for research in animal husbandry; and to the National Agricultural Research Bureau for insect control work. In the field of public health, aid has been given to the National Health Administration for public health training and to the Ministry of Education toward the expenses of its Commission on Medical Education. The Foundation has also furnished funds for small grants in aid and for local training fellowships.

Of the nine projects supported under this program in China, the only one still within the present Japanese lines is the College of Public Affairs of Yenching University. This work in the social sciences, which has long been aided by the Foundation, is apparently able to operate without interference. The other projects in the program have been moved from Tientsin, Tsining, Nanking, and Changsha to Kunming, Kweiyang, Chungking, Chengtu, and elsewhere in the Southwest Provinces. Before the war, the Southwest Provinces, with a population approximately equal to that of the United States, were among

the most primitive sections of China. Making an advantage of necessity, the Chinese Government has been taking aggressive steps to improve conditions there. Railroads and highways are being constructed; education and public health are being promoted. As the war spreads, these provinces are under increasing attack and are suffering from serious interruptions in their outside contacts. In spite of this, however, and regardless of the outcome of the war, it would seem that this area will play an important part in the future of China.

Since the war began, Foundation officers have made regular visits to the Southwest Provinces. With few exceptions, the projects which the Foundation is aiding appear not only to be well established in their new locations but to be working along realistic lines, based not on war economy but on plans for long-time development.

In support of the work in China in 1939, the Foundation appropriated a total of \$198,860, of which \$133,860 was for the nine projects above described, and \$65,000 for fellowships and small grants in aid. In addition, the Foundation appropriated \$75,000 to the Associated Boards for Christian Colleges in China toward the emergency needs of nine private foreign colleges in China. At last report only three of these colleges remained at their original location.

The Peiping Union Medical College which is supported by the China Medical Board, aided by grants from The Rockefeller Foundation, continues its work in Peiping, handicapped by the economic adversities in China, but unmolested by the war.

KEEPING THE SPARK ALIVE

Since 1915 The Rockefeller Foundation, both directly and through representative national agencies in various countries, has provided fellowships for over 6,800 individuals from seventy-four different countries.

Commenting on the Foundation's former fellows, the REVIEW for 1936 said:

"These men and women represent a group who have obtained, in so far as it has been humanly possible to devise it, the best training open to them anywhere in the world at the time when that training was most useful. In almost every case, they now occupy the posts for which their fellowship experience was intended to equip them. As a group, although scattered throughout the world, they have had a common experience; spiritually, if not linguistically, they speak a common language. Although not the primary purpose of the fellowship program, one of its important by-products has been its tangible contribution to international understanding."

The events of the last six months have had a profound effect upon the lives of this group of

trained men and women. In many cases it can no longer be said that they "occupy the posts for which their fellowship experience was intended to equip them." In countries now at war or mobilized for war, many former fellows, their careers interrupted, are serving either directly with the armed forces or in government posts engaged in war work. In those countries whose national existence has already been destroyed, an even larger proportion of former fellows are without productive employment of any kind. It is hard to believe, however, that this investment in leadership has been wasted. On either side of the battle lines are men now at war with each other who once, in better times, served the common cause of science and learning. One can only hope that when peace comes again these men will be alive and in the mood to work together once more on problems which transcend geographical boundaries and racial hate.

Since fellowships are awarded to the relatively young, it was inevitable that the Foundation's fellowship program should, of all its activities, first feel the effect of war. Many fellows who were citizens of belligerent nations gave up their appointments at once to join the colors. Others from neutral lands found it inadvisable, in a number of instances, to carry on studies in the institutions to which they had been accredited.

Many adjustments and readjustments had to be made. On September 1, 1939, there were ninety-five fellows of the 1938-1939 appointments, most of them due soon to return home. At the same time there were 207 fellows under appointment for 1939-1940, some of whom had already arrived at their posts and were at work, while others were either en route or just on the point of leaving for their new positions. Following the outbreak of war, the Foundation was obliged to take action which amounted to a temporary cancellation of fellowship exchange between Europe and America. In the case of most Europeans in the group still at home, appointments had to be rescinded. European fellows already at work in the United States were notified that the Foundation was willing to continue all fellowships to their normal termination, but if the recipients so desired, it was prepared to facilitate their return home. By the end of 1939, 154 fellowships had been terminated.

In so far as practicable, however, the Foundation has carried on its fellowship program. During 1939 the Foundation supported 583 fellowships at a cost of approximately \$775,000. Of the total number of these fellowships, 409 were administered directly by the Foundation. The fields representing these fellowships were as follows: public health, 112; public health nurs-

ing, thirty; medical sciences, sixty; natural sciences, seventy-seven; social sciences, fifty-eight; humanities, sixty-eight; and the program in China, four (not including local fellowships in China). The other fellowships supported by the Foundation during 1939 were awarded by other agencies. The National Research Council was responsible for seventy-six; the American Council of Learned Societies for five; the Social Science Research Council for forty-eight; the Peiping Union Medical College for twenty-three; the Medical Research Council of Great Britain for seven; the American School of Classical Studies, Athens, for eight; and the Authors' League of America for seven. The 583 fellows supported in 1939 were citizens of forty-six countries; 312 of them pursued their work in countries other than their own.

APPLICATIONS DECLINED DURING 1939

In 1939 the Foundation was obliged to decline 2,459 of the applications for aid which it received, since the type of assistance requested did not fall within the scope of the activities of the organization as determined by its present policies. The Foundation does not make gifts or loans to individuals, or finance patents or altruistic movements involving private profit, or contribute to the building or maintenance of churches, hos-

pitals, or other local institutions, or support campaigns to influence public opinion on any social or political questions, no matter how important or disinterested these questions may be.

The applications declined during 1939 may be classified under the following headings: conferences and meetings, twenty-two; continued aid to projects, thirty-one; cures, remedies, investigations of theories and inventions, 127; development of educational institutions and projects, 247; European refugees, 205; fellowships, travel and training grants, 710; local institutions (including hospitals, theatres, libraries, museums, churches, etc.), 218; personal aid, seventy-seven; plans for organization for world peace, nine; public health projects, forty-two; publication, 139; research projects, 383; and miscellaneous, 249.

REPORT OF THE SECRETARY

SECRETARY'S REPORT

THE members and trustees of The Rockefeller Foundation during the year 1939 were:

John D. Rockefeller, Jr., <i>Chairman</i>	
Winthrop W. Aldrich	Ernest M. Hopkins
Harold W. Dodds	Thomas J. Parkinson
Lewis W. Douglas	Alfred N. Richards
John Foster Dulles	John D. Rockefeller, 3rd
Raymond B. Fosdick	Walter W. Stewart
Douglas S. Freeman	Arthur Hays Sulzberger
Herbert S. Gasser	Harold H. Swift
Walter S. Gifford	George H. Whipple
Jerome D. Greene	Ray Lyman Wilbur
Owen D. Young	

The officers of the Foundation were:

John D. Rockefeller, Jr.	<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*
Harold W. Dodds Herbert S. Gasser
Lewis W. Douglas John D. Rockefeller, 3rd
Douglas S. Freeman Walter W. Stewart
Arthur Hays Sulzberger

The following served as scientific directors of the International Health Division of the Foundation during 1939:

Thomas M. Rivers, M.D., *Chairman*

Stanhope Bayne-Jones, M.D. Kenneth F. Maxcy, M.D.
Ernest W. Goodpasture, M.D. Harry S. Mustard, M.D.
Felix J. Underwood, M.D.
The Director of the Division

MEETINGS

Regular meetings of The Rockefeller Foundation were held on April 5 and December 5 and 6, 1939. Seven meetings of the executive committee were held during the year to take actions within general policies approved by the trustees.

FINANCIAL STATEMENT

A summary of the Appropriations Account of the Foundation for the year 1939 and a statement of its Principal Fund follow.

SUMMARY OF APPROPRIATIONS ACCOUNT

FUNDS AVAILABLE

Balance from 1938 \$1,899,994
 Income for 1939.. 6,627,442
 Unexpended balances of appropriations and authorization allowed to lapse and refunds on prior year grants 847,006
 Transferred from principal fund in accordance with resolutions of trustees, April 5, 1939..... 1,845,000

FUNDS APPROPRIATED

Appropriations	
Public Health...	\$2,000,000
Medical Sciences	1,927,180
Natural Sciences	2,005,832
Social Sciences..	2,027,700
Humanities.....	992,180
Program in China	300,000
Miscellaneous.....	100,000
Administration	
Scientific Divisions.....	575,099
General.....	276,926
	<u>\$10,204,917</u>

Less appropriations for which funds were previously authorized.....	759,000
	<u>\$ 9,445,917</u>

Authorization for later appropriation by the executive committee	17,504
	<u>\$ 9,463,421</u>

Balance available for appropriation in 1940.....	1,756,021
<u>\$11,219,442</u>	<u>\$11,219,442</u>

THE ROCKEFELLER FOUNDATION

PRINCIPAL FUND

Book value as of December 31, 1938..... \$148,004,942

Deduct:

Amount withdrawn from principal for transfer
to Appropriations Account in accordance with
resolutions of the trustees April 5, 1939..... 1,845,000

Principal Fund as of December 31, 1939..... \$146,159,942

INTERNATIONAL HEALTH DIVISION

2

INTERNATIONAL HEALTH DIVISION

SCIENTIFIC DIRECTORS

Stanhope Bayne-Jones, M.D. Harry S. Mustard, M.D.
Ernest W. Goodpasture, M.D. Thomas M. Rivers, M.D.
Kenneth F. Maxcy, M.D. Felix J. Underwood, M.D.

The Director of the Division

STAFF DURING 1939

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.	Ottis R. Causey ²
Marston Bates	Lowell T. Coggeshall, M.D.
Johannes H. Bauer, M.D.	Ralph K. Collins, M.D.
Henry Beeuwkes, M.D. ¹	Platt W. Covington, M.D.
George Bevier, M.D.	Porter J. Crawford, M.D.
Mark F. Boyd, M.D.	F. Elisabeth Crowell
John C. Bugher, M.D.	Brian R. Dyer
Alexander W. Burke, M.D.	Walter C. Earle, M.D. ³

¹ Resigned August 31, 1939.

² Appointed July 1, 1939.

³ Resigned May 11, 1939.

Monroe D. Eaton, M.D. Daniel M. Molloy, M.D.
John E. Elmendorf, M.D. Hugo Muench, M.D.
Edward W. Flahiff, M.D. J. Harland Paul, M.D.
William L. Fleming, M.D.¹ George C. Payne, M.D.
John P. Fox, M.D.² Edward G. Pickels
Raymond M. Gilmore Persis Putnam
John B. Grant, M.D. Elsmere R. Rickard, M.D.
Richard G. Hahn, M.D. Paul F. Russell, M.D.
Rolla B. Hill, M.D. Francis F. Schwentker,
Frank L. Horsfall, Jr., M.D. M.D.
Thomas P. Hughes Raymond C. Shannon
John L. Hydrick, M.D. Hugh H. Smith, M.D.
Henry R. Jacobs, M.D.³ Kenneth C. Smithburn,
William P. Jacocks, M.D. M.D.
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. Taylor⁵
Stuart F. Kitchen, M.D. Mary Elizabeth Tennant
Frederick W. Knipe Max Theiler, M.D.
Henry W. Kumm, M.D. Thomas B. Turner, M.D.⁶
Sylvester M. Lambert, Benjamin E. Washburn,
M.D. M.D.
Charles N. Leach, M.D. John M. Weir, M.D.
Edwin H. Lennette, M.D.⁴ Clifford W. Wells, M.D.
Estus H. Magoon Loring Whitman, M.D.
Alexander F. Mahaffy, D. Bruce Wilson, M.D.
M.D. Daniel E. Wright
William A. McIntosh, M.D. Clark H. Yeager, M.D.

¹Appointed July 1, 1939. Resigned September 30, 1939.

²Appointed July 1, 1939.

³Appointed February 1, 1939.

⁴Appointed August 1, 1939.

⁵Appointed September 1, 1939.

⁶Resigned August 31, 1939.

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INTERNATIONAL HEALTH DIVISION

FRONTIERS OF PUBLIC HEALTH

THREE important frontiers in public health today concern yellow fever, malaria, and influenza. The frontier areas where battle is joined with these diseases may be in jungles, in congested tenements, in the hearts of cities, or in white-tiled laboratories. At many places where earnest workers are striving after needed facts or experimenting in their application to community problems in these fields the Foundation has offered a helping hand.

In yellow fever work such primitive conditions prevailed that within this generation scientific pioneers paid with their lives for lack of the knowledge which they were seeking and which has subsequently been obtained. A new era in yellow fever research was opened in 1927 with the discovery that the rhesus monkey was more susceptible to yellow fever than man. After that there was no longer any lag in yellow fever experimentation. In 1930 Dr. Max Theiler in Boston discovered that the white mouse was also susceptible if inoculated in a certain way. This prepared the way so that the great reservoirs from which yellow fever came into cities and

paths of commerce could be located. By testing sera collected in many countries it was found that the infection had recently existed and was probably still present in Africa from Senegal to the upper Nile. Likewise it was present in most of the Amazon basin. The greatest surprise came when outbreaks of yellow fever were identified in South American localities where the well-known *aegypti* mosquito was entirely absent.

The location of large interior areas in South America from which yellow fever came into the cities was a big step forward. The true nature of this jungle fever is not yet wholly revealed. Meanwhile, however, an excellent start has been made in the application of large-scale methods of immunization by vaccination. The yellow fever frontier has been pushed back until much of the terror has been removed from that fearful epidemic disease which used also to invade the United States.

Malaria has many frontiers because it is transmitted by numerous species of anopheline mosquitoes. Occasionally it develops into a devastating epidemic. One of these frontiers lies in the northeastern part of Brazil where the *Anopheles gambiae* is now being studied and fought. Many persons had for a long time escaped the disease and were consequently highly susceptible. The arrival of these dangerous mosquitoes in great

numbers coincided with conditions ripe for a severe epidemic. Something had to be done quickly. It seemed worth great cost and effort to attempt against heavy odds to get rid of this new invader while it was still possible. A fuller account of this recent control work in malaria and of similar work in yellow fever is found in the REVIEW by the President of The Rockefeller Foundation on pages 18 to 32.

A third frontier is influenza, a disease that at times is almost everywhere. Influenza has always moved about without hindrance. It is a term today applied vaguely to a combination of disease symptoms involving the respiratory tract. New York City is an important center for research on this disease. A new approach began in 1933 when workers at the National Institute for Medical Research at Hampstead, England, succeeded in transmitting to ferrets the infectious agent of one type of influenza then epidemic in England. The same virus was isolated in following years in outbreaks of influenza in many countries from Alaska to Puerto Rico and from the United States to Central Europe and Australia. This disease has been named epidemic influenza. There are various other kinds of respiratory diseases included in the vague influenza group. The virus of epidemic influenza was transmitted to mice also, but the ferret is more sus-

ceptible. Mice can be used only in certain types of study.

It is sometimes said that medical science has advanced so far that the world now needs, above all, application of what has already been discovered. In influenza, however, there is obvious need for something new, a method of immunization. In general, in a number of diseases there is room for pioneers who clear away ignorance at the frontiers of public health and who experiment in limited communities with trial applications of the newer knowledge.

RESEARCH IN THE NEW YORK LABORATORIES

At the Laboratories of the International Health Division in New York a part of the activities centered around a search for the factors responsible for the modification of the virulence of yellow fever virus. There was an investigation of the failure of certain portions of 17D virus used in vaccination in Brazil in the latter part of 1938 to immunize in all cases. A study was made of the ability of the virus at various stages of cultivation to stimulate the production in the human or animal system of protective bodies against yellow fever. Dried tissue culture material from the early stages of the cultivation of the 17D virus was revived and carried through further cultures

to determine more accurately the point at which the virus, when injected into monkeys, would fail to produce fatal disease and at the same time produce a high degree of active immunity in a much less susceptible animal — the guinea pig. This study will probably not be completed for another year.

Although the active component now used in yellow fever vaccination is derived from yellow fever virus rendered nonvirulent by laboratory methods, the factors responsible for this happy modification of the virus are not yet known. The separate series of cultures from which 17D was obtained has been continued for over six years. While the cultivated virus soon lost its ability to affect the viscera, it has retained its virulence for nervous tissue. When the 17D series, however, was developed in the chick embryo from which the central nervous system had been removed, the affinity of the virus to the nervous tissues was also much diminished, and this has never been regained even when the virus was passed through nervous tissue. But a virulent intermediate series of virus cultures which had been passed through chick embryo without the nervous system still retained its neurotropic virulence. The French strain of virus with a virulence equal to the Asibi strain as well as another relatively avirulent strain of yellow fever virus were grown in paral-

lel series. They rapidly lost their virulence but continued to be harmful to the central nervous system. Only one conclusion can thus far be drawn: the lack of nervous tissue elements in the culture medium was not the cause of the change in 17D virus which rendered it nonvirulent.

Malaria investigations in 1939 continued chiefly along the lines of immunology and chemotherapy. Previous studies have revealed that sera from monkeys which have become immune upon recovery from an acute attack of monkey malaria contain protective substances. Continuation of these studies in 1939 showed that certain immune sera of high potency rendered the *Plasmodium knowlesi* or monkey malaria parasites noninfectious for rhesus monkeys when incubated together before inoculation, while the same sera would no longer exert this effect if inoculated separately from the same number of injected parasites. Further evidence that serum from an immune monkey possesses the ability to destroy parasites without the aid of phagocytic cells in the body of the host must be confirmed by proof that the immune serum interferes with the parasite's metabolism. This phase is being investigated.

With *Plasmodium knowlesi* in the monkey, as contrasted to human malaria, it is possible to obtain enormous quantities of parasitic material

for the production of a vaccine. Experiments with vaccine in monkeys did not suggest that vaccination in malaria was a hopeful procedure.

Malaria is a disease in which relapses are frequent. The reason for the occurrence of these relapses which follow treated or untreated acute malaria infections, is not understood. In the laboratory it was found that immediately before a malaria relapse in the rhesus monkey the concentration of protective substances in the blood of these monkeys fell to an undetectable level, but following the termination of the relapse this concentration rose to an extremely high level. The most likely explanation for this behavior is that in chronic malaria infection there exists a continual fluctuating balance between infection and immunity. When the protective substances are depleted or exhausted, a relapse follows. Then the release of large numbers of parasites again stimulates protection until the high concentration of protective bodies once more terminates the relapse.

Investigations with sulfanilamide indicated that this drug has a selective action against the malaria organism *Plasmodium knowlesi*. When this organism was associated simultaneously with the related organism *Plasmodium inui*, sulfanilamide eradicated the former but exerted only a slight effect on the latter parasite. By a

new method the activity of the drug on the metabolism of the malaria parasite was studied. Results indicate that sulfanilamide paralyzes the metabolic activity of the *knowlesi* parasite while the metabolism of the *inui* parasite is not affected. Other studies showed that quinine sulfanilamide bisulphate used against malaria in canaries was no more effective than quinine alone.

With an apparatus maintaining a constant low temperature of -76° C. two different strains of monkey malaria parasites, *Plasmodium knowlesi* and *Plasmodium inui*, were kept alive for at least 150 days, and a canary malaria strain for thirty-five days. Successful preservation of the avian parasites was more difficult than the preservation of the monkey plasmodia.

The knowledge that a sudden increase in potassium in the serum of human beings leads to a chill and a shock was applied to a study of the malaria chill. The work was done in cooperation with Dr. R. L. Zwemer of the School of Medicine of Columbia University, who has recently devised a method for the determination of serum potassium levels. The greatest potassium concentration is in the red blood cells. As the malaria parasites are liberated from the red corpuscles, there is frequently a 100 per cent increase of potassium component in the blood

serum, which after this peak gradually returns to normal values. This result implies that the malaria chill may be due to an accumulation of potassium in the blood stream, and not to some indefinite "toxin." As opportunities for experiment present themselves, attempts will be made to halt the malaria paroxysm by various antipotassium substances.

During 1939 excellent opportunities were provided for epidemiological, clinical, etiological, and serological studies of almost all types of acute diseases of the respiratory tract likely to occur either in suburban or in institutional populations. The major clinical varieties of acute respiratory diseases investigated may be classified as epidemic influenza, primary atypical pneumonia, sporadic grippe, and the common cold. Sporadic grippe and the common cold, however, undoubtedly do not represent clear-cut entities and may well include a number of different conditions.

The group of human beings under observation was increased to a total of about six thousand individuals. Besides the area at Yorktown Heights, New York, where the International Health Division cooperates with the Health Department of Westchester County, arrangements were made for the study of cases of respiratory diseases in the following five state institutions:

the Middletown State Homeopathic Hospital, 3,600 individuals; the New York State Vocational Institute, West Coxsackie, 900 individuals; the Westfield State Farm, Bedford Hills, 450 individuals; the Wallkill State Prison, 400 individuals; and the New York State Training School for Girls at Hudson, 450 individuals. In addition, close and active cooperation is maintained with the Hospital of the Rockefeller Institute and the Welfare Hospital, New York City; the Cornell University Infirmary at Ithaca; and the New York State Department of Health, Albany.

A small epidemic of influenza occurred early in 1939 in the Yorktown Heights area, and localized epidemics were studied in the New York State Vocational Institution, the Rockefeller Institute Hospital, and the Middletown State Homeopathic Hospital. From a total of sixty-five throat washings from representative cases in these epidemics twenty-nine strains of epidemic influenza virus were isolated. The strains were of relatively low virulence.

A study of the antibodies, or protective substances, produced in the human host by influenza was carried out by means of a new neutralization technique, with serum specimens obtained from a group of patients at the Middletown State Homeopathic Hospital. Sera taken from patients

in various stages of the disease were tested by measuring the quantity of epidemic influenza virus which they would neutralize. This power of neutralization existed for a relatively short time. It was proved that an attack of epidemic influenza provides immunity for only a comparatively short time. It was also found that approximately 30 per cent of well persons who had had contact with the disease had been sufficiently infected by the virus to show a significant increase in antibody concentration, although they remained entirely without symptoms of illness.

Through blood specimens from 853 individuals in the Yorktown Heights area, by 800 of whom specimens had previously been given in 1938, and with the use of some 30,000 mice, very full information was obtained of the antibody levels, or potential protection, of this suburban population. When the 1938 concentration of protective substances was compared with the 1939 concentration in sera from the same individuals, it was discovered that these concentrations had not significantly altered during the year, despite the fact that an epidemic of influenza had occurred in a small number of the individuals during that time. This peculiar constancy of antibody strength against epidemic influenza virus appears to be almost in the nature of a personal characteristic. It is unlikely that vaccination

could be expected to produce lasting immunity against epidemic influenza, as the immunity which follows an attack of the disease appears to be of only a few months' duration; nevertheless, such a method of protection would be of very great importance if it could be used in the actual or potential presence of a pandemic of influenza.

Vaccination with epidemic influenza virus was studied in mice and in human beings. Tests with both active and inactive preparations of the virus in mice showed the inactivated virus to be considerably less efficient as an immunizing agent than the active virus, although it still rendered mice immune to subsequent inoculation of small amounts of the virus. Sixty persons were vaccinated with a virus cultured in the developing chick embryo, and serological studies are in progress to determine the amount of protection which may have resulted.

A complex vaccine used to prevent the spread of canine distemper in the ferret colony produced a broad immunity against various strains of influenza virus for more than three months. The tissues used in making the vaccine were obtained from ferrets which had been infected with epidemic influenza virus during the incubation period of the distemper. Immunity in ferrets to so many different strains of influenza virus

could not be obtained by an influenza vaccine without the distemper virus. Although distemper virus is immunologically unrelated to influenza virus, its presence in some way seems to alter the latter virus, so that a vaccine made from both is much more effective than one made from influenza virus alone.

A search to find a native small wild animal susceptible to human respiratory diseases was without result, but it has been discovered that the Syrian hamster, although it fails to show any clinical or pathological symptoms of the disease, is susceptible to infection by epidemic influenza virus and is capable of producing antibodies against this virus. Successful attempts to breed the Syrian hamster have been made in the Division's New York laboratories. The small size of the animal, its relatively low cost, the ease with which it can be handled, and its resistance to distemper may make it of considerable use in the future in the study of epidemics of influenza.

Investigations of sporadic grippe and the common cold show quite clearly that the cause of these conditions is not related to the epidemic influenza virus, but as yet reveal no definite information as to what the agent or agents may be.

Studies on primary atypical pneumonia, an unusual form of pneumonia which has been increasingly noticed during the past two years,

were transferred to Jamaica where experiments were carried out on the wild mongoose. Virus isolated from human cases of this disease produced transmissible consolidation of variable extent in the mongoose lung. If the agent now being studied proves to be actually the cause of primary atypical pneumonia, the information gathered and the tests developed should be of considerable value in diagnosis.

Through the development of a storage cabinet which operates at a mean temperature of -76° C. the New York laboratories have been able to keep between fifteen hundred and three thousand virus specimens systematically filed and readily available. Frequent losses, as well as the possibility of cross contamination of specimens, have been eliminated by the use of a cold gas mixture for cooling and of celluloid tubes. Standard epidemic influenza virus suspensions of known infectiousness have been stored in the cabinet for a period of twelve months, and throat washings from epidemic influenza patients have retained their original virus activity in an unaltered state for a similar period. This ability to store a larger number of specimens than could be studied at any one time, and to make repeated examinations of individual specimens has materially facilitated the investigations reported above.

New animal isolation quarters have made

possible the study of a number of dissimilar virus strains simultaneously in ferrets without fear of cross infection. The animal cages are placed in isolation units of monel metal with reinforced glass doors, which have an air intake and outlet, but are otherwise practically air tight. A powerful exhaust fan in the ventilating system withdraws about 1,800 cubic feet of air per minute. The outlet of each cubicle at the back is connected with the ventilating system. About three cubic feet of air, filtered at both intake and outlet, passes through each cubicle per minute.

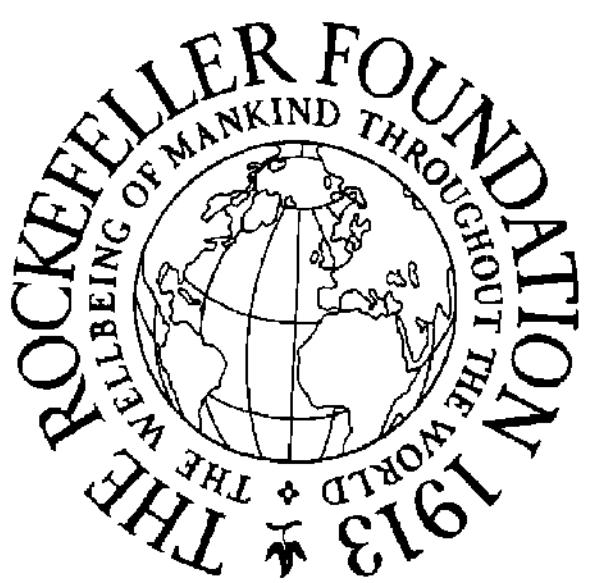
DISEASE CONTROL

YELLOW FEVER

In the above section, an account is given of the recent laboratory work in yellow fever vaccination. This should be read in connection with the account given earlier in this volume, pages 28 to 31, of recent experiences with yellow fever vaccination in Brazil. The work in Brazil was paralleled on a smaller scale by a vaccination campaign in Colombia. From June 1937 to May 1939, vaccinations in Colombia were done almost entirely with a vaccine prepared in the Laboratories of the International Health Division in New York City. The first attempts to prepare 17D vaccine in Colombia were made in 1938. When the

new laboratory building, constructed in Bogotá by the Government of Colombia in collaboration with The Rockefeller Foundation, was completed, installations were provided for large-scale manufacture of yellow fever vaccine. All vaccinations made in Colombia since May 1939 have been carried out with vaccine prepared in that laboratory. From June 1937 to April 1940, 175,182 persons have been vaccinated in Colombia and the vaccinations are continuing at the rate of 10,000 per month. During 1937 and 1938 the number vaccinated in Colombia was 19,356; the number vaccinated in 1939 was 127,957; and during the first four months of 1940 the number vaccinated was 27,867.

The program now in effect involves intensive vaccination of the population in rural zones where actual cases of yellow fever were discovered; vaccination of as high a percentage as possible of the population in areas where yellow fever occurred in the last six years, with special emphasis on the population living along the Magdalena River and along the railroads and highways leading to that river; and finally vaccination of groups of skilled and other workers or travellers who might be exposed in infected zones. In these various groups, people of all ages, from infants of six months upward, have been inoculated. In certain regions, from 60 to 65 per cent



Photograph Excised Here

New Yellow Fever Laboratory, Bogotá, Colombia.



Photograph Excised Here

Lined up for vaccination against yellow fever, Colombia.

of the entire population were given protection, while in other sections the protected portion amounted to 20 per cent.

The efficiency of the vaccine as applied in the field is controlled by the collection of blood samples for the mouse protection test from as many of the vaccinated groups as is practicable. The results of 2,139 protection tests of this kind indicate that over 90 per cent of those tested showed evidence of immunity, and therefore were presumably protected. Least satisfactory results were encountered among groups vaccinated with special lots of vaccine containing relatively small amounts of active virus. No serious reactions, either early or late, to the vaccine have been observed. There is evidence that immunity conferred by the vaccination lasts in most individuals for at least two years.

The Rockefeller Foundation maintains the Yellow Fever Research Institute in Entebbe, Uganda, where the activities during the early part of the year included field studies in the Bwamba area in the western province of Uganda. This is a forest tract with a population of about twenty-five thousand, mostly living in centers outside the forest area. Well over a thousand sera were collected from the Bwamba area and examination by the mouse protection test showed that a little over 10 per cent of the population



Photograph Excised Here

Spraying tanks
used in malaria
control pro-
gram, Attik-
kottai, India.



Photograph Excised Here

New Malaria Institute, dedicated in 1939, Aguas de Moura, Portugal.

had been immunized against yellow fever. The protected persons were of all ages, but there seems to be a marked difference in the percentage of protective sera obtained from adults as compared with children. The fact that the rate for adults in infected areas was about ten times higher than that for children seems to indicate that there may be some difference in occupation or habit at maturity which increases the risk of infection. The presence of yellow fever appears to be related to more intimate contact with the forest. Evidence also points to an extensive epidemic about fifteen years ago. This may have left behind an animal reservoir from which humans are occasionally infected.

Headquarters for future work are planned in another location in closer contact with the forest area. The Uganda Medical Service authorities are cooperating in this plan. The future program of this station would include the capture of monkeys and other available animals, especially rodents, for immunity tests, as well as the capture of insects and their examination for natural infection and the ability to transmit viruses.

Another objective of the work of this Yellow Fever Research Institute is the isolation of infectious agents, including those other than yellow fever virus, found in this region of Africa. When field work is in progress, mice inoculated in the

field are brought to the laboratory for daily observation. If any of such mice become ill, especially if they show symptoms of disturbances in the central nervous system, they are given special study. As a result of this work during 1939 thirteen strains of transmissible agents were established, twelve from Bwamba and one from the Sudan. These agents isolated during the year were markedly different in behavior from those isolated previously. There is considerable doubt as to their nature as well as to their origin. The thirteen agents found in 1939 bring the total number thus far discovered to twenty-one. Investigation of one of these has been completed. The new agent turned out to be a filterable neurotropic virus. It was isolated from the blood of an African woman with fever. It can produce encephalitis in rhesus monkeys and causes characteristic lesions in the central nervous system of susceptible animals. This disease agent, which appears not to be previously described, has been designated the West Nile virus.

MALARIA

With Foundation aid, malaria is attacked in many countries and from many sides. The purpose is to make malaria control more discriminating and increasingly effective. The emphasis is on mosquito control, which entails a close

study of the different species of anopheline mosquitoes and, in some cases, different races of the same species, with regard to their power to convey malaria and the type of breeding places they select. In laboratory work, efforts are made to discover new facts about the nature of malaria immunity, and the reactions of the human body and the malaria parasite to each other.

At the University of Chicago, further support was given to malaria studies by Dr. W. H. Taliaferro, dean of the Division of Biological Sciences. At present, the studies conducted there concern the mechanism of malaria immunity. Increased emphasis is also given to genetic studies both of the malaria parasite and of the mosquito host. At the Johns Hopkins School of Hygiene and Public Health, support is given to malaria studies under the direction of Dr. Robert Hegner. One point under investigation is the question why the malaria organism is more prone to enter young red blood cells than mature ones. The answer to this and similar questions may provide information on new methods of curing and preventing malaria. At the Molteno Institute of Parasitology of the University of Cambridge in England, Colonel S. P. James has received Foundation support in his research on the malaria parasite in chickens. Basic work on the biology of this malaria para-

site is in progress; one of the important results has been the discovery that the chicken malaria organism, *Plasmodium gallinaceum*, has a schizogonic cycle of development in the tissue cells of the spleen and other internal organs, as well as the usual schizogonic cycle in the red blood cells.

Work at the Station for Malaria Research at Tallahassee, Florida, was continued in 1939. The Florida Research Station was organized in 1931. It is under the direction of an International Health Division staff member, assisted by personnel of the Florida State Hospital, for which the Station supplies a malaria therapy service. The arrangement with the Florida State Hospital has resulted in the development of a precise technique for performing naturally induced malaria inoculations and a notable improvement in malaria therapy. The continuity of this work has been made possible by the successful rearing of anopheline colonies at the Station. Investigations of malaria parasitology and immunology are conducted.

Another malaria project in Florida is the control study in Escambia County, which was initiated in 1937. The objectives are the control of malaria in Escambia County and the city of Pensacola, as well as stimulation of control measures elsewhere in Florida. Field investigations and the training of personnel also enter

into the program. The chief features of the malaria control work in this region are its engineering aspects; emphasis is on drainage. The occurrence of malaria is also carefully studied by means of spleen and blood indices, as well as the capture of larvae and adult mosquitoes. Emphasis is laid on the training of future malaria workers. In the early summer of 1939, a group of fifteen persons from local health departments of Florida received training in malaria control.

The members of the anopheline mosquito family vary enormously in their susceptibility to the malaria organism. Of the two hundred-odd species of anophelines, about fifteen have been incriminated as habitual distributors of malaria parasites. These fifteen are scattered all over the world; usually there are only one or two dangerous species in any one area. Persons infected with malaria do not have the sexual form of the plasmodium, or the malaria organism, in the circulating blood stream all the time; hence these persons are true carriers only intermittently or for a limited period. Unless there is at least one carrier present, there will be no malaria. Once the process has started, the mosquito plays the governing role in maintaining the supply of carriers. It is the number of guilty mosquitoes present which, to a great extent, determines the malaria transmission in any locality.

However, a world-wide survey of the situation indicates that, in some cases, this does not hold true. The same mosquito will be an effective carrier in one area and not in another. Malaria mosquitoes differ in their taste for human blood. From the point of view of bloodthirstiness, *Anopheles gambiae*, which has conquered Africa and is now terrorizing Brazil, probably heads the list and at the tail end of the list come certain fresh-water varieties of the European *Anopheles maculipennis*.

Some anophelines may be less susceptible to malaria infection than others. A great deal of valuable work has been done on this point but the results are confusing. Harmless species are quite as easily infected as dangerous ones. It is more promising to investigate the host preferences of mosquitoes. *A. gambiae* shows exclusive attachment to man. Eighty per cent of those caught in Africa gave evidence of having fed on man. But in Italy, certain varieties of *maculipennis* gave an index of as low as 10 per cent in this respect. Figures of this sort are now referred to as the anthropophilic index.

Malaria studies have been carried on in Mexico with the purpose of determining present malaria conditions in the State of Morelos, where malaria occurs in association with the cultivation of rice. The malaria mosquito in these rice fields

is *Anopheles pseudopunctipennis*; in fact, this mosquito is the only carrier of malaria over wide areas in Mexico. Present studies include observation of its behavior under different conditions in various parts of Mexico.

In Cuba a malaria survey, which is eventually to include the whole island, was completed in Oriente Province and partially completed in three other provinces. Results so far obtained in these three provinces indicate that scattered areas of moderate malaria will have to be dealt with. In Oriente Province, with an area of over 6,000 square miles and a population of 1,000,000, where sugar production is the chief industry, the occurrence of malaria is limited to places of less than 1,000 feet altitude. The important vector is *Anopheles albimanus*. Control demonstrations through drainage are to be undertaken at the town of Bayamo and the Vista Allegre section of Santiago. Drainage of the Vista Allegre district should do much toward freeing the entire city of Santiago of malaria.

In Costa Rica the most malarious province is Guanacaste. Liberia, the capital of the province, was selected for a control demonstration. By drainage, breeding places within one kilometer of the city were eliminated, and by November 1939 the spleen index in Liberia had decreased to one-fourth of its original figure.

Drainage measures in Panama are conducted on a large scale in and about various cities and towns. The purpose is to arrive at permanent control of malaria. Foundation cooperation in malaria control in Panama began in 1931 and has continued up to the end of 1939. As a result of this nine-year cooperative program, there are now available in Panama adequate laws which insure funds, a considerable body of trained personnel, and a great deal of experience in malaria work. At present the Government of Panama is spending more than \$150,000 annually for malaria control.

An account of the control campaign against *Anopheles gambiae*, the new and dangerous malaria carrier in Brazil, has been given elsewhere. The importance of the gambiae problem is fully recognized in Brazil. The insect has shown what havoc it is capable of rendering to a susceptible population. It has also shown its capacity for adaptation to inhospitable environments, as well as its capacity to spread by using modern means of transport such as railways, ships, and automobiles. For breeding, the gambiae chooses places where the water temperature rises to a high point in full sunshine, usually such places as hoofprints, marginal pools, borrow-pits, or small excavations where there is no vegetation. It is indifferent to whether the water is

clean or dirty. This mosquito shuns lakes, reservoirs, and running streams and its preference for man-made breeding areas is one point in which it is vulnerable. Furthermore, the long dry season favors the reduction of breeding places. This, in addition to the fact that there are certain natural boundaries which help to hold the *gambiae* in check, engenders confidence in the ability of the Malaria Service to combat this insect. This Malaria Service has been successful in obtaining a large measure of cooperation from the people in doing away with artificial water collections. The success of the campaign to eradicate *gambiae* depends largely on the ability to locate and systematically eradicate these breeding spots.

Investigators in British Guiana encounter a malaria problem which is serious and in many ways unique. The civilized population of the colony, numbering from 350,000 to 400,000, is chiefly concentrated along a narrow coastal strip of land less than five miles in depth. Since much of this land, which is devoted to the production of rice and sugar cane, is below sea level, drainage is impossible. Emphasis is therefore placed on the development of housing projects and mosquito-proofing.

In Albania antilarval work was carried out without interruption in seven stations throughout the country. The work was conspicuously

successful in three of these areas which comprise the most important towns in the country — Tirana, Durazzo, and Scutari.

In July 1939 a survey of Italy was made by staff members to determine the geographic extension of the different varieties of *Anopheles maculipennis*. At the end of the year, the five-year program of financial aid to the Rome Institute of Public Health came to an end. The Laboratory for Malaria Studies, formerly the Malaria Experiment Station which was founded with Foundation aid in 1925 and has received support each year since then, has been made an integral division of the Institute of Public Health.

In Greece the Malaria Division of the Athens School of Hygiene continued to receive support. Forty-two antimalaria dispensaries are operating under the direction of local doctors. Wide distribution of small fish which feed on mosquito larvae was carried out. Considerable attention was also paid to screening. A further important activity of this Malaria Division consists in the training of personnel for malaria work.

In Portugal malaria is almost exclusively a problem associated with rice fields. With the aid of the Department of Health, a new laboratory was built at Aguas de Moura, which has been expanded into an Institute of Malaria. Research

stations have been set up at strategic points for the study of Portuguese anophelines. Experiments with intermittent irrigation as a means of controlling anopheles breeding in rice fields are continuing. Experiments to find a reliable and cheaper insecticide are also a part of the program.

A malaria survey of Egypt is nearly completed and has revealed several problems which need detailed study. Malaria is widespread in the Nile Valley and in the region where rice is cultivated. Studies thus far made point to *Anopheles pharoensis*, a rice field breeder, as the chief vector. Colonies of this mosquito have been established and are under investigation in the laboratory at Cairo. Efforts are made to determine in what degree this mosquito prefers human to animal blood and also to throw light on the relative longevity of this mosquito, which has an important bearing on malaria transmission in a hot and dry country.

In India routine surveys of adult mosquitoes and larvae, as well as of human blood smears and spleens, are made to furnish necessary measuring rods for engineering research in malaria control. The chief center of this work is the King Institute of Preventive Medicine, Guindy, Madras. A small field station has been organized at Pattukkottai, an overnight journey south from Madras city. The malaria program in India aims to

provide integration of medical, entomological, agricultural, and engineering research. The agricultural work especially enters into the picture because in India, too, a part of the problem concerns rice field malaria.

INFLUENZA

In addition to the extensive influenza studies made in the New York laboratories of the International Health Division of The Rockefeller Foundation, and the associated field work at Yorktown Heights and Shrub Oak, which have been discussed in preceding sections of this report, the Foundation supported investigations of respiratory diseases, mostly influenza, and also a certain amount of work on the common cold, at three places in the United States and one in Europe. In making influenza studies, the Foundation cooperates with the state health departments of California and Minnesota and with New York University College of Medicine, and with the State Hygienic Institute at Budapest. Studies of the common cold, closely allied with other investigative work in respiratory diseases including influenza, have for some time been given support at Columbia University. This support was continued in 1939.

The principal objective of the investigations at Columbia University is the preparation of a

vaccine which could be used prophylactically for the prevention of the common cold. Thus far it has been found impossible to immunize human beings by vaccinations or to adapt the common cold virus to a laboratory animal. It is possible at the present time to build up by vaccination the antibody or protective content of the blood, but no method has been discovered for making such protection effective in human respiratory infection where the virus gains entrance into surface cells and passes directly from cell to cell, escaping contact with the antiviral substances of the blood. There does seem to be some form of acquired resistance to virus infection in the human respiratory tract; the problem is to discover the nature of this resistance and to develop some method of imitating it artificially.

The studies of influenza in Budapest, Hungary, comprise both field and laboratory work. The field part of the program is devoted to a study of outbreaks of influenza and influenza-like diseases, and to attempts to isolate the virus. In the laboratory, the protective qualities of the five viruses isolated in Hungary were compared with other known strains of human influenza viruses and with the swine virus. All of the Hungarian strains are different from the other known influenza viruses and markedly different from the swine virus. Experiments on induced im-

munity were continued with mice. The most effective immunity was obtained by an active virus. Formalin-killed virus and virus inactivated by heat is less effective.

Influenza studies by the Department of Health of California are receiving Foundation support both for operating expenses and in the way of a contribution toward the purchase of a site and the construction of a laboratory building. The objectives are the establishment of an influenza laboratory as a part of the state laboratory services of California, the investigation of influenza occurring in this region, and the development of an efficient method of immunization. Work begun during the latter part of 1939 was concentrated on the study of epidemic influenza. At the end of the year, there was no evidence that epidemic influenza, caused by one of the known strains of virus, was prevalent in these regions of California during the months of October, November, and December. Studies on immune substances in the serum and on the immunity reactions of various experimental animals and human beings have also been undertaken. The ultimate aim is to develop more accurate and rapid methods of diagnosis.

In the Minnesota State Department of Health, field services are provided by the staff of the Department. Interest centers in a laboratory

study of the influenza virus and in epidemiological and clinical studies of the disease. The epidemic of respiratory infection which occurred at the Willmar State Hospital in May 1939 was not due to influenza virus. In the latter part of 1939, a comparative study of the various methods of the cultivation of virus in embryonic chick tissue was undertaken in order to determine which gives the best results and which tissues of the embryonic chick support the greatest multiplication of virus.

The influenza studies at the New York University College of Medicine relate to the etiology and methods of infection in respiratory diseases. They also include field studies of immunity to influenza. All cases of respiratory diseases at Bellevue Hospital and all patients who had illnesses in any way resembling influenza were observed and attempts made to isolate a virus. An incidental purpose of this scrutiny of Bellevue patients was to be on the lookout for the earliest evidence of an epidemic.

The chief task was to devise methods of effective vaccination, other than subcutaneous injection of active virus, against epidemic influenza virus. To this end, two methods of inactivating influenza virus were studied. In general, it appears that in the course of inactivation there is a distinct decrease in the immunizing potency.

The possibility of vaccination by the intranasal route is also under consideration. During the year, a good deal of time was devoted to remodeling the premises, installing equipment, and training technical assistants. There is now a well-arranged isolated unit for the care of infected ferrets.

OTHER DISEASES

Financial aid toward tuberculosis studies under the direction of Dr. E. L. Opie at the Henry Phipps Institute of the University of Pennsylvania was first given in 1930. From 1932 on, these studies have been continued at the Cornell University Medical College. They are concerned chiefly with the resistance against tuberculosis induced by inoculation with heat-killed tubercle bacilli. Material for inoculation is manufactured in the laboratories at Cornell University Medical College and supplied to the members of the International Health Division staff who are conducting tuberculosis vaccination studies in Jamaica. This material has been used for a number of years to inoculate inmates of the Mental Hospital at Kingston and, in the latter part of 1938, a beginning was made of extending this tuberculosis work to the general population of Jamaica. The purpose is to determine the protective value of inoculation of heat-killed tubercle bacilli as a public health measure.

During 1939 there was satisfactory progress of this work, due largely to excellent cooperation from various government agencies.

For vaccination purposes, individuals are selected who have a low resistance to tuberculosis. These include as large a group as possible of susceptible young adults living in highly infected areas. The method of finding out which persons have a low resistance to tuberculosis involves the use of tuberculin tests. Persons who react weakly or not at all to the tuberculin test are selected to receive vaccination, or intracutaneous inoculation with heat-killed tubercle bacilli.

During 1939 about twenty-two thousand individuals received tuberculin tests. From these were selected the nonreactors or weak reactors, who were to serve as groups for vaccination and control. The control group was not vaccinated, but was examined later in order to find out whether the vaccinated group had greater protection against tuberculosis. A total of 3,561 individuals of the general population were vaccinated and another group of 3,318 acted as controls.

Among the vaccinated individuals, the first group of 868 were tuberculin tested approximately a month after vaccination and 78.3 per cent were classified as having a satisfactory degree of protection. At the same time, 658 persons

from the control group were tuberculin tested and 9.9 per cent showed a degree of protection comparable to that classified as satisfactory in the vaccinated group. Six months later, 347 vaccinated persons were retested and 62.2 per cent were classified as satisfactory. Among the controls tested at the same time interval, the satisfactory percentage was 19.6. Satisfactory protection is highest among the younger age groups. Similar figures were obtained from a later group similarly examined.

A contribution was also made in 1939 toward the budget of the Kips Bay-Yorkville Health Center in New York for a tuberculosis service. The object is to develop a tuberculosis clinic which may serve as a model for the City Health Department clinics. Further purposes are to conduct epidemiological studies, to instruct physicians and nurses of the Health Department in the epidemiology of the disease, and to develop a course in epidemiology for third-year Cornell students. The unit operates as a district diagnostic service.

A tuberculosis study by the State Department of Public Health of Tennessee, which received aid from the International Health Division, sought to acquire more exact knowledge of the pathological conditions that exist among the immediate contacts of cases of tuberculosis and,

in general, to institute an effective program of case finding in a rural community. An effort is made to learn more of the relationship between childhood tuberculosis and subsequent breakdown in adult life. Early in the year, a tuberculin test and x-ray survey was made of the children in eight white and two colored schools. This was a repetition of a survey made in the same schools during 1937. Approximately fourteen hundred children were tested and x-rayed.

During 1939 aid was given to a tuberculosis program started in the Caribbean area for the purpose of demonstrating effective, practical, and economical methods for the control of tuberculosis. The first work was conducted in certain sections of San José, Costa Rica. The emphasis is on an efficient method of locating early cases. The Costa Rican Health Department is giving full cooperation by undertaking treatment of all cases found and by assisting in the public health education part of the program. In the campaign, use is made of house-to-house canvass and fluoroscopy, supplemented by x-ray examinations on paper films. Careful records of expenditures are kept in order to provide an accurate estimate of the cost per case.

Upon invitation from the commissioner of health of the Insular Department of Health of Puerto Rico, a study of the tuberculosis program

under way in Puerto Rico was continued in 1939. A rural area was selected where suggestions regarding the finding of new cases through the examination of contacts and regarding efficient methods of reaching patients from rural districts could be tried out. In the first 650 x-ray examinations among contacts with positive cases, eleven positive cases were found. This is approximately the percentage (2 per cent) which rural surveys indicate are to be found among the general population.

Three years ago Alabama passed a law requiring owners to have their dogs vaccinated against rabies. A large element of the population challenged the efficacy of the vaccine and, with a view to applying scientific research to the biological problems involved, the Alabama authorities invited The Rockefeller Foundation to participate in a study of rabies. A laboratory was set up near Montgomery. Research is under way which includes diagnostic investigation by the mouse inoculation technique, the use of tissue culture in efforts to attenuate the virus, and studies of immunization. In Birmingham, Alabama, the incidence of rabies has been high for many years, but data for 1939 gave remarkably low figures. This drop is not due to efforts of control. In Birmingham only fifty positive cases of rabies in dogs came to the attention of the authorities

during the first seven months of 1939, as compared with 188 for the same months of 1938. To explain this discrepancy, a survey was made to determine the true prevalence of rabies. The rat has been named on several occasions as the local reservoir of rabies. Five hundred rats were trapped and examined, but results were negative. It was concluded that, in Birmingham, the rat does not play an important part in the transmission of rabies. In a further attempt to arrive at true figures, brains of 553 apparently normal dogs killed at the city pound or by the Humane Society were examined, and 5.2 per cent were found to be positive for rabies. Of 447 dogs brought to the city incinerator, representing animals which died at home, on the streets, or were killed in traffic, twenty-five, or 5.2 per cent, were positive. It appears that undiscovered rabies greatly exceeds the recorded incidence. Field studies to determine the prophylactic value of canine vaccination are of questionable value unless they give consideration to all dogs which die from any cause.

Studies in mental hygiene in which the International Health Division is interested are conducted at the Johns Hopkins School of Hygiene and Public Health and in Tennessee by the Tennessee State Health Department. At Johns Hopkins, the study is under the supervision of

Dr. A. W. Freeman of the School of Hygiene and Public Health and operates in close conjunction with the staff of the Eastern Health District of Baltimore and of the clinics of the Johns Hopkins Hospital. The broad aim is to determine the prevalence of mental disease, mental defects, and dysfunctions in an urban population; to discover the various factors, economic, social, racial, and personal, underlying these conditions; and finally to discover how the health services of the community can bring about an improvement in these conditions. The work has made considerable progress. It has led to special studies, chiefly statistical, of alcoholism, of nursery school groups, and of different types of psychopathic personalities.

Assistance is also given to a study carried out jointly by the State Health Department of Tennessee and Vanderbilt University. The work is done in Williamson County, Tennessee, and includes a survey of mental health conditions in a rural community, with emphasis on remedial and preventive measures such as can be applied by a local health department. Its objective also includes the training of personnel for rural psychiatric work.

Since 1937 the International Health Division has supported epidemiological and laboratory studies of syphilis at the Johns Hopkins School

of Hygiene and Public Health. These studies, which were continued in 1939, are under the direction of Dr. Thomas B. Turner. They include laboratory investigations on immunity in syphilis, the relationship of various members of the spirochete family to each other, and the preservation of spirochetes at low temperatures. The study also comprises a survey of the presence of syphilis in the Eastern Health District in Baltimore which, in turn, includes experiments to determine the best methods of measuring the prevalence of syphilis in a community as a prerequisite to control work. Finally, in this syphilis work, considerable stress has been placed on the training of students in the School of Hygiene and Public Health and on the postgraduate level in the School of Medicine in order to provide better qualified personnel for the many new and expanded programs of syphilis control developing throughout the country.

In laboratory work with syphilis, low temperature techniques have proved successful in preserving the causative organism. The spirochetes are not killed by rapid freezing. Tissues from diseased rabbits can be frozen to the hardness of stone and preserved in that condition for at least four years, after which, if rapidly thawed out, the spirochetes resume activity retaining their virulence. Low temperature experiments

have been made also with streptococci, diphtheria bacilli, typhoid bacilli, and mouse cancers.

The Foundation is cooperating in a study of venereal disease in the San Joaquin County Health District, California, with headquarters at Stockton. The work here is similar to that done in the Baltimore Eastern Health District. It includes a study of the prevalence of syphilis, with emphasis on standards and methods of measuring future trends, and a study of the sources of infection, which is of value in connection with the control program directed toward a reduction of such sources. The Baltimore area in which a syphilis survey is going on is a fairly representative urban community containing a large population of both whites and Negroes. The California study is conducted in an area which represents both urban and rural features typical of the far west; there are few Negroes, but many other racial strains are represented in the Mexican and Oriental populations.

During 1939 the Foundation also continued its cooperation in studies of schistosomiasis in Egypt, anemia in Puerto Rico, and dog hookworm at the Johns Hopkins School of Hygiene and Public Health.

The Foundation made an initial contribution in 1939 to the study of nutrition as a public health measure; this was in the form of aid to an

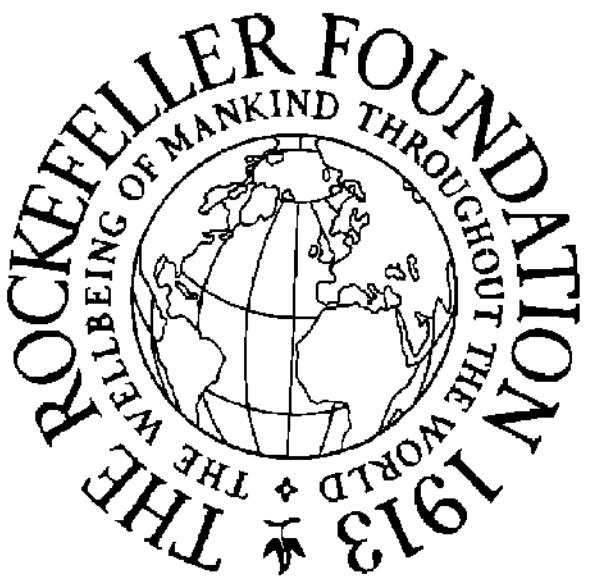
investigation organized at Vanderbilt University. During recent years, interest in the study of nutrition has been growing. In public health and public education circles, there is increased recognition of the fact that the status of human efficiency and well-being is directly influenced by the standards of nutrition. The objectives of the field study in nutrition referred to above are 1) to make careful, clinical investigations among the people to determine if there is general impairment of health due to faulty nutrition and, if so, to disclose the nature of the causes; and 2) to formulate and execute a program designed to remedy the status of nutrition if insufficient food or deficiencies in dietary elements should turn out to be of significance. Nutrition work involves close cooperation of medical, educational, and public health forces. The work at Vanderbilt University is under the direction of Dr. John B. Youmans, associate professor of medicine. It was started in April 1939. The areas selected for study are two western districts of Wilson County, about twenty miles from Nashville, with a rural population of 2,500, one-fourth of which is Negro. By early November, 520 persons had been examined, who constituted 95 per cent of those selected for study. The data collected are now under investigation.

AID TO STATE AND LOCAL HEALTH SERVICES

In 1939 the Foundation contributed further to one of its oldest interests, the development of adequate state and local health services manned by trained, full-time personnel. Aid to state health departments was given to stimulate the organization and growth of specialized services such as epidemiology, statistics, sanitation, nursing, and laboratories. The provincial health departments of Canada received the greater part of the funds designated for this purpose; in addition, grants were made to the Bureau of Nursing of the New York City Department of Health for educational work, and to India for the study of sanitation problems. The services of members of the Division's staff were again made available for surveys of public health facilities in compliance with requests of state health departments. Interest in local health departments covered a wider range of countries. Thirteen countries besides the three named above were given financial aid for the establishment or continuation of local health services. They included Mexico, Cuba, Panama, and Costa Rica in the Caribbean area, Java in the Far East, and Albania, Austria, Bulgaria, Greece, Italy, Portugal, Rumania, and Turkey.

in Europe and the Near East. The Division has aided in the organization of health units because of their value as demonstrations to health authorities of modern health services and their important function as training areas for students of public health techniques. Staff members of the Division were stationed in all but four of these countries, and were available to supervise the growth of the health services and give advice to the health authorities.

In the United States during 1939 the International Health Division assisted state authorities in making a number of state health surveys. Following the state health survey of Arkansas made in 1938, the Arkansas legislature in January 1939 passed a law creating a Division of Industrial Hygiene. The International Health Division provided a travel grant for the future director of this Division. In Colorado aid was given to a study of the health administration of Boulder County. The survey was completed during 1939. In that year also a health survey of North Carolina was carried to completion and the results were prepared for publication. A result of the study in North Carolina has been the establishment of a school health service, which operates in close conjunction with the State Department of Education in providing a unified health service for the public schools of



Photograph Excised Here

Nurses taking course in practical field training, given by the Muranao Health Unit, Cuba.

the State. The state health survey of South Dakota was completed in 1939. Results were promptly submitted to the State Board of Health and the Public Health Committee of the State Planning Board.

In a sense these surveys represent final steps in a long-term cooperation of the International Health Division with various state and county health authorities. There are at present in the United States 1,370 counties, about one-half of those composing the forty-eight states, in which public health interests of the rural population are supervised by full-time directors. These results represent an advance, compared with the situation which existed until recently. Thirty years ago, when the Rockefeller Sanitary Commission began its hookworm work in the southern part of the United States, Jefferson County in Kentucky had the only county health organization in the country which employed a full-time health officer.

The program promoting county health work, which was an outgrowth of the hookworm campaign, followed a general policy of providing sanitation inspection, public health nursing, and public health education at new high levels, such as could be provided only through a permanent health service under a full-time health officer. In 1929 the Foundation's financial participation in



Photograph Excised Here

Infant Wel-
fare Clinic,
Skidmore
College De-
partment of
Nursing,
Saratoga
Springs,
New York.



Photograph Excised Here

State Health Department Influenza Laboratory, Berkeley,
California.

this movement reached its maximum with annual grants totaling a third of a million dollars. Today the South leads the country in rural health organization.

Concomitant with this has been the program of assisting states to train public health officers and public health nurses to serve rural areas. For a time, the Foundation spent from sixty thousand dollars to ninety thousand dollars a year for this type of personnel development. Annual designations for these programs have been progressively reduced since 1929. This could be done because help came from other national organizations and, since 1934, there has been a greatly enlarged federal program in public health. A governmental appropriation of \$1,000,000 was made for the development of rural health units and even more money has since become available through social security legislation and the Venereal Disease Control Act. From \$109,000 in 1929, the Foundation's budget for rural health work in the United States dropped to \$4,570 in 1939.

Along with the movement for local health services and with the need of full-time supervision, there followed the pressure for trained men and women, for schools in which to train them, for adequate state departments of health, for laboratory facilities, statistical and other

central services. The Rockefeller Foundation has had a part in various phases of this movement.

For the coordination and supervision of cooperative health projects, a central office was established in Mexico in 1931. A staff member assigned to Mexico has been working in close cooperation with the Federal Health Department in establishing full-time health services and promoting the employment of trained personnel. An important part of the work is the administration of various cooperative projects, such as the Xochimilco Unit and the Training Station attached to it, and the Regional, State, and County Health Units project.

Work in connection with the improvement of vital statistics was aided in Canada in the Provinces of Manitoba and Nova Scotia. The Department of Health and Public Welfare in Manitoba has a Division of Statistics which was organized in 1939. The program of this Division has been broadened to include the registration of morbidity reports of acute communicable diseases. Aid was also given to this Division for a morbidity survey to determine the type and amount of illness among a group of rural people and, in this way, to obtain a clear idea of the total amount of medical care necessary and the cost of providing such medical care. A further project of this

Division consists of a study of pregnancies to supply data for the development of an effective maternal hygiene program. In Nova Scotia the Department of Health has a Section of Statistics and Epidemiology which was established as a result of recommendations in a health survey of Nova Scotia, made with International Health Division support. In this Section statistical and epidemiological services have been consolidated for the purpose of economy.

Epidemiological work was aided in the Provinces of Alberta and British Columbia, Canada. The Division of Epidemiology in Alberta received support in undertaking a study of sylvatic plague and Rocky Mountain spotted fever. At Kamloops, British Columbia, Foundation support was for the provision of personnel, supplies, and equipment, as well as for the construction of an animal house on government property. All specimens in connection with investigations of sylvatic plague and Rocky Mountain spotted fever are studied in the laboratory at Kamloops. No gross evidence of plague was found on dissection of rodents, but a final report cannot yet be given as the examination of specimens has not been completed.

The Section of Sanitary Engineering in the Provincial Department of Health of Nova Scotia received support during 1939. Chief activities

were devoted to the promotion of safe water and milk supplies and sewage disposal.

Other aid to state health services included support to the Division of Tuberculosis in the Provincial Department of Health of Quebec, which is aiming to provide closer coordination between all the agencies concerned in the tuberculosis program. Tuberculosis control is one of the leading public health problems in Quebec, which had a death rate from tuberculosis during the three-year period 1935 to 1937 of 90.8 per 100,000 population.

Aid to public health nursing was given in New York City, where the Bureau of Nursing of the Department of Health has continued its program of staff education, made possible through the use of social security funds and an International Health Division grant to the Committee on Neighborhood Health Development. During 1939 forty-four nurses were introduced to the service through the teaching centers. Four supervisors had an opportunity, through social security scholarships, to spend an academic year in advanced study at a university. One of the important contributions was the assistance given in planning public health nursing programs.

During the year there were active in the United States, Canada, and Mexico ten projects in the way of aid to local health departments, in which

the International Health Division participated. These projects operated on budgets totaling \$279,150, to which the International Health Division contribution was \$52,398, or 18 per cent. Six of these projects were in Canada, two in Mexico, one in New York State, and one in Alabama. Aid was given in the United States to a district Health Department of Alabama for a tuberculosis service which has for its purpose adaptation of the tuberculosis program previously developed in Lee County to a larger district and ultimately to the State as a whole; in New York, to the Fulton-Montgomery Health District; in British Columbia, to the Fraser Valley Health District, the Greater Vancouver Metropolitan Health District, and the Peace River Block Health District; in Nova Scotia, to the Cape Breton District Health Department; in Ontario, to the District Health Department of Eastern Ontario; in Quebec, to the Trois Rivières City Health Unit; in Mexico, to various regional, state, and municipal health units with the basic purpose of introducing into Mexico a policy which provides for the employment of trained full-time health personnel, as well as to the Xochimilco Local Health Unit which is operated as an administrative unit in connection with the Training Station.

During the year the International Health

Division had active cooperative arrangements in India with Mysore State and the Provinces of Madras, Bengal, Delhi, and Bombay. In Mysore State, the fourth year of cooperation with the Government of Mysore in the Closepet Health Unit began January 1, 1939. In the Madras Presidency, four years of cooperative work with the Government of Madras were completed during 1939 in the Rural Health Unit at Poone-mallee, 13 miles from Madras City. During this time, the Unit has succeeded in establishing on a firm basis the maternal and infant welfare, sanitation, and training aspects of its activities. In the Bengal Presidency, new activities included the establishment of the Singur Health Unit, which held its first clinic on March 20, 1939. The area covered by the work of this Unit is about 36.6 square miles; it has a population of 42,266 and is located about 25 miles from Calcutta. In Delhi Province the difficulties of setting up a standard health unit program in connection with the Najafgarh Health Unit have now been overcome. The Unit is operating on a regular health unit schedule. In the Bombay Presidency, Sirur Health Unit began its official life on the first of April 1939.

Another new project in 1939 was the initiation of sanitation research in the Bengal Presidency. This includes the study of typhoid fever, dysen-

tery, cholera, and other water-borne and soil-borne diseases in so far as they are sanitary engineering problems. Engineering studies of the direction and rapidity of the flow of ground water and its possible contamination by bored-hole latrines were continued in two areas representing the two most common types of soil in the Punjab.

PUBLIC HEALTH EDUCATION

For preparing personnel for posts in governmental health services in the many countries in which the International Health Division has a program, the fellowships and travel grants awarded by this Division have been of assistance. Since the program of giving fellowships in public health was inaugurated in 1917 the total number of fellowships awarded has been 1,474. In 1939 sixty-eight new fellowships were granted and seventy-four former fellowships were extended or renewed. The International Health Division in 1939, therefore, directed the studies of 142 individuals to whom it had granted fellowships. The subjects studied and the countries from which the fellows came are given in the table on the following page.

TABLE I

INTERNATIONAL HEALTH DIVISION FELLOWS BY COUNTRIES AND
SUBJECTS OF SPECIAL INTEREST ACTIVE DURING 1939

Country	Public Health Administration	Public Health Nursing	Public Health Laboratory	Sanitary Engineering	Vital Statistics	Industrial Hygiene	Special Syphilis Course	Special	Incomplete	Total
Argentina.....	2	..	2
Brazil.....	2	1	1	..	4
Canada.....	21	5	1	1	28
Ceylon.....	2
Chile.....	1	1
Colombia.....	1
Cuba.....	2	2
Cyprus.....	1	1
Czechoslovakia.....	1	2
Denmark.....	..	3	3
Fiji.....	..	1	1
Finland.....	1	1	2
Greece.....	..	2	2
Guatemala.....	2
Hungary.....	1
India.....	1	..	3	1	3	..	9
Japan.....	1	3	2	..	6
Java.....	1	1
Mexico.....	7	7
New Zealand.....	..	1	1
Norway.....	1	1
Panama.....	..	3	..	2	1	..	6
Peru.....	1	1	..	2
Philippines.....	3	3
Poland.....	..	1	1
Portugal.....	..	3	3
Salvador.....	1	1
Sweden.....	..	2	1	..	3
Turkey.....	1	2	..	1	..	1	5
United States.....	24	1	..	1	2	..	6	1	..	35
Venezuela.....	3	1	4
TOTALS.....	70	30	6	9	3	2	7	15	0	142

In 1939, \$210,000 was made available for fellowships and travel and training grants. During the year a total of fifty-four travel and training grants were given to individuals from nineteen countries. The estimated cost of these grants was \$38,300. The number of these grants and the countries in which they were awarded are shown in the following table:

TABLE II

INTERNATIONAL HEALTH DIVISION TRAVEL AND TRAINING GRANTS

<i>Country</i>	<i>Active in 1939</i>
Africa (Gold Coast, West Africa).....	1
Albania.....	1
Belgium.....	2
Canada.....	7
Costa Rica.....	2
Cuba.....	3
Finland.....	2
France.....	7
Hungary.....	2
India.....	3
Italy.....	1
Jamaica (B. W. I.).....	1
Mexico.....	3
Netherlands East Indies.....	1
New Zealand.....	1
Poland.....	1
Puerto Rico.....	2
Salvador.....	1
Sweden.....	4
United States.....	8
 TOTAL.....	 47

Of these grants the disposition of four is uncertain (Poland one, Belgium one, Finland two). In addition to the number mentioned above five grants were not taken up because of the war (Italy one, Rumania four).

In addition to providing substantial sums for the establishment of schools and institutes of hygiene and public health, the International Health Division since 1913 has provided a total of approximately \$852,000 for general developmental aid. Of this amount approximately \$370,000 has been given for schools and institutes in Europe. Many of the European institutes now have no access to current scientific publications. Because of the difficulty in purchasing periodicals printed in the English language, the International Health Division set aside \$1,500 in 1939 for the purpose of providing these institutes of Europe with current books and subscriptions to certain journals as well as back numbers to complete files of journals. Part of this amount is to be used for the Department of Health in Madrid, the entire library of which was destroyed during the Spanish war.

The International Health Division expended on fellowships in the United States, Canada, and Mexico in 1939 the sum of \$61,510. In these countries there were seventy fellowships active in 1939 as compared with sixty-six in 1938. Of these seventy there were thirty-five in the United States, twenty-eight in Canada, and seven in Mexico. The estimated cost of travel and training grants for the United States, Canada, and Mexico in the field of public health was \$13,500. The

awards were given to nineteen persons — eight in the United States, eight in Canada, and three in Mexico.

In the United States there was expended on four projects connected with schools of hygiene and public health \$52,000. Three of these projects were at Johns Hopkins and one at Harvard University. The aid given to Harvard was for work in connection with the field training unit at Newton, Massachusetts. This health department serves the city of Newton, which is a suburb of Boston and which has an approximate population of seventy thousand. Moreover, it serves to supply field training facilities for students of public health at the Harvard School of Public Health. In the Newton Health Department there is special emphasis on school health. There is close cooperation between the various boards of education and the Board of Health. The school health service is an integral part of the whole program for child health of the Newton Health Department. By virtue of this arrangement one group of nurses handles all the problems of the family unit, preschool, school, adult health, acute communicable diseases, and tuberculosis.

The three projects supported at the Johns Hopkins School of Hygiene and Public Health concern (1) the Eastern Health District of Baltimore, (2) a family survey in this district, and (3)

purchase of property for a health center building. The Eastern Health District of the city of Baltimore bears the same relation to Johns Hopkins that the Newton Health Department does to Harvard. The purpose was to bring together all the public health agencies in this section of the city into a single cooperative organization and to provide a training center for all types of public health students in which students could encounter every variety of public health problem. All the regular public health activities form a unified program which includes communicable disease control, tuberculosis control, maternal hygiene, infant, preschool, and school hygiene. Field studies under way in this district in 1939 related to mental hygiene, syphilis, epidemiology of tuberculosis, diphtheria, maternal and child hygiene, and dental hygiene. In accordance with the grant by The Rockefeller Foundation approved late in 1938, the sum of \$25,000 was transmitted to the Johns Hopkins School of Hygiene and Public Health in March 1939, to be used toward the purchase of a site for the proposed Eastern Health District building. A portion of the site desired was purchased with these funds.

Public health education activities of the International Health Division in Europe in 1939 included aid to the institutes of public health in Rumania and in Stockholm, to a health center

in Bucharest, and to the School of Nursing of the Prague State Institute of Public Health. Other schools of hygiene and public health aided were those at Sofia, Bulgaria; Budapest, Hungary; and Ankara, Turkey. Two schools of nursing were aided — the Aarhus Postgraduate School of Nursing in Denmark and the State School of Nursing at Bucharest.

During 1939 aid given to schools of nursing in the United States and Canada included Skidmore College Department of Nursing, University of British Columbia Department of Nursing and Health, University of California School of Nursing, University of Toronto School of Nursing, University of Washington School of Nursing Education, Vanderbilt University School of Nursing, and Western Reserve University District for Public Health Nurse Training.

Two training projects in the United States and one in Mexico received aid. The Mexico training station at Xochimilco, a community near Mexico City, has been operating since 1935 and was in operation three years before that at Cuernavaca. It is the chief training center for health officers, public health nurses, and sanitary inspectors for state and local health departments in Mexico. The program is geared especially to stimulate interest in the employment of full-time trained personnel in key positions.

In 1938 plans were made by the New York City Health Department for the establishment of training centers in five of the city districts to work in close cooperation with participating medical schools. Funds were made available by the International Health Division for a consultant to this project. Early in 1940 the Civil Service Commissioner announced that new appointments for district health officers would be open to nation-wide competition. There are seventeen such districts in the City of New York, each with a population of about two hundred and fifty thousand, and five of these districts are associated with medical schools in the metropolitan area. In October 1939 it was reported that two of the health and teaching centers, one on the lower East Side which operates in connection with New York University College of Medicine and another on Washington Heights in which Columbia University Medical College participates, had been completed and a sound working relationship established between the city Health Department and these medical schools. Good headway had also been made in connection with a health center in Brooklyn in which the Long Island University Medical School participates and with the East Harlem Nursing and Health Service in Manhattan which cooperates with the New York Medical College.

A project involving close cooperation between the State Board of Health and the State Board of Education in North Carolina also received aid. The International Health Division cooperates with the State Department of Health and the General Education Board with the State Department of Education. A coordinating agency consisting of an advisory committee of five members and a full-time operating staff was provided to integrate the facilities of these two departments in the development in the public schools of a unified health service to include health education, physical education, public health supervision, and other closely related activities such as mental hygiene.

THE MEDICAL SCIENCES

1939

THE MEDICAL SCIENCES STAFF

During 1939

Director

Alan Gregg, M.D.

Associate Director

Robert A. Lambert, M.D.

Assistant Director

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THE MEDICAL SCIENCES

NO single hour is certain to contain the blend of activities characteristic of the whole day's work. Nor does one annual report offer an exactly representative picture of the activities of the Foundation in the medical sciences during the decade now coming to a close. To locate the grants reported for 1939 in a more general framework of current program and policy, it should be noted that the main interest of this division since 1931 has lain in the development of research and teaching in psychiatry and neurology and subjects contributory to their advancement. A secondary interest has been the improvement of the teaching of public health, preventive medicine, and hygiene to medical students. Concurrently, but in a subordinate relation, aid has at times been given to other projects in medicine, sometimes because they were of exceptional promise, sometimes because they were of general but very great value to medical progress as a whole.

Nineteen thirty-nine was a year in which the uncertainties of the war in Europe intensified the difficulties incident to the falling incomes of medical schools and research institutions almost everywhere. The contrast between expenses for armaments and expenses for education and re-

search were far from encouraging to those whose interests lie in saving human lives and making them more agreeable. Indeed, war with its concomitants is so wholly destructive of the welfare of mankind and of the resources which permit man to do and to share medical research that it is difficult to review the work during 1939 without a keen sense of the mounting inadequacy of funds available for almost every line of medical research. With income from endowment down by a fourth, teaching efficiency is threatened, but research falters and often ceases even in the countries not at war. With war, confusion afflicts teaching and distraction paralyzes research plans. In this light we relate the work of a year whose last months were months of increasing difficulty.

Appropriations for the year for the twenty-five projects amounted to \$1,927,180, with \$699,330 devoted to teaching and research in psychiatry, neurology, and allied fields. Sums applied to other purposes were as follows: \$197,850 for research in neurophysiology, endocrinology, and related subjects; \$350,000 toward the establishment of a department of preventive medicine; \$15,000 for the teaching of legal medicine; \$400,000 for endowment of a school of dental medicine; \$90,000 for a fluid research fund in a medical school; \$50,000 for fellowships; and \$125,000 for small grants in aid.

TEACHING AND RESEARCH IN PSYCHIATRY AND NEUROLOGY

With an increasing realization that psychiatry is an important subject in medicine, and the growth of the conviction that the subject must be brought into closer relation to both the pre-clinical and other clinical subjects, various methods have been evolving in different institutions for bringing this objective about. Some of these methods are indicated in several of the following projects.

THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

It is chiefly for the purpose of helping to develop a center capable of affording advanced training for students seeking to establish themselves in a career of teaching and research in psychiatry that the Foundation has aided since 1933 the Pavlovian and Psychobiological Laboratories, and since 1934 child psychiatry, in the Department of Psychiatry of the Johns Hopkins University School of Medicine. Toward these three activities, the Foundation granted in 1939 \$71,000 over the two-year period beginning July 1, 1939.

While pushing forward with advances in the objective Pavlovian methods of study, the Pavlovian Laboratory is at the same time mak-

ing progress in the application of this technique (the conditioned reflex) to the study of the patient in the psychiatric clinic. It has been found that a neurosis induced in an animal is often not confined to the isolated conflict which produced the neurosis, but affects the whole organism. Study of such cases in animals provides a basis for a better understanding of similar though not necessarily identical cases in human beings.

In the Psychobiological Laboratory are conducted studies, in animals, of taste and appetite, activity, food and hunger, thirst, and cycles of behavior, which as they are elaborated may have considerable value in clinical studies. It is essential, but it is not enough, for the psychiatrist to become familiar with the behavior shown by his patients. He must find ways of thinking about the behavior of his patients — ways that are significant and illuminating, that lead to hypotheses he can test. It is in the search for new ways of thinking about behavior that these animal behavior studies promise an advance. Clinical studies of fatigue and catalepsy, and of skin resistance to electricity in persons in various conditions or with different types of psychoses also are being made in this laboratory.

Each year the clinic in child psychiatry receives for a full year's training several physicians, some of whom have been Rockefeller Foundation

and Commonwealth Fund fellows. Other graduate students are received for shorter periods of training. The intimate collaboration of child psychiatry with the Department of Pediatrics and its associations with a large number of city and state agencies which deal with children, are part of the clinic's advantages as a training center. One of the research efforts, that of following cases for the purpose of watching their development, and especially of seeking clews which will reveal serious difficulties at an earlier age than they can now be recognized, has entailed the restudy of some four hundred children.

HARVARD UNIVERSITY MEDICAL SCHOOL AND MASSACHUSETTS GENERAL HOSPITAL

Members of the staff of the Harvard Medical School and the Massachusetts General Hospital have collaborated since 1934 in an effort to make a teaching and research unit in psychiatry an essential part of the organization of a general hospital. That concept of psychiatry as having an explicit role in a general hospital is gaining more attention as experience shows its constant usefulness. Both by means of formal teaching and by the service which it gives, the psychiatric unit under Professor Stanley Cobb has sought to educate the general staff and younger physicians,

social service workers, and medical students, in an understanding of such illnesses as have a mental or emotional aspect always — or often.

As a result of the proven value of psychiatric opinion, consultations, especially with the surgical services, have been increasing rapidly. The concept of the unity of the organism, and the important role played by the emotions in apparently purely medical, and even surgical, disorders is being demonstrated by this service. An expansion of the unit by the provision of a larger ward and more laboratory space is planned during 1940 when new building will make additional space available.

An important feature of the teaching is the more intimate work of training assistants to become specialists, which is conducted in addition to the regular undergraduate and graduate instruction.

The Foundation has aided this unit since its establishment, and in 1939 granted \$68,000 (\$48,000 for the Harvard Medical School, and \$20,000 for the Massachusetts General Hospital) toward the expenses of an additional year beginning September 1, 1939.

INSTITUTE OF THE PENNSYLVANIA HOSPITAL

Founded in 1751 by Benjamin Franklin and Dr. Thomas Bond "for the relief of persons dis-

tempered in mind and for the sick and injured," the Pennsylvania Hospital has expanded into three separate, though still related, establishments. The psychiatric service operates a psychiatric outpatient clinic at the general hospital, and provides residence and treatment for the more serious mental illnesses at the Department for Mental and Nervous Diseases. The Institute, a detached unit of the Department for Mental and Nervous Diseases, treats resident patients who have neuroses, but deals chiefly with outpatients who come for hour appointments, many of whom present mild mental disturbances with personality or family problems, which often can be relieved or improved by one or more interviews.

The Institute controls all graduate and undergraduate psychiatric teaching in the University of Pennsylvania, and has affiliations also with the Woman's Medical College and Jefferson Medical College. It cooperates with the Philadelphia Child Guidance Clinic, and conducts student health work and courses in mental hygiene in various colleges and other institutions in and near Philadelphia.

With the aid of its affiliations the Institute has been able to give a many-sided training in teaching and research to young physicians. Since July 1, 1934, the Foundation has given funds which

have been devoted chiefly toward a training program through a system of fellowships. During this time the emphasis on research has been growing. Dr. Earl D. Bond, formerly administrative officer of both the Department for Mental Diseases and the Institute, has resigned his executive duties, and will devote himself to research as Medical Director of Research. For the two-year period beginning July 1, 1939, the Foundation appropriated in 1939, \$60,000 which will be devoted chiefly to the increase and improvement of full-time investigation.

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE

The problem of promoting and conducting collaboration in teaching between psychiatry and the other medical subjects, has been directly attacked at the University of Colorado by means of a separate and well-defined department, the Psychiatric Liaison Department.

Established in 1934 with aid from the Foundation, the Psychiatric Liaison Department completed its fifth year in July 1939. During this period a workable liaison in psychiatry has been developed between all the departments and staffs in the State General Hospital and the State Psychopathic Hospital, used for teaching purposes by the Department of Psychiatry; and



Photograph Excised Here

Model showing electrical activity of brain during sleep in a normal subject. Waves become slower as sleep deepens but great fluctuations occur from minute to minute.



Photograph Excised Here

Tracing heredity of epilepsy. Patient's electroencephalogram taken during mild seizure. Father and identical twin sisters have very abnormal records and are supposed "carriers." Mother's record normal.

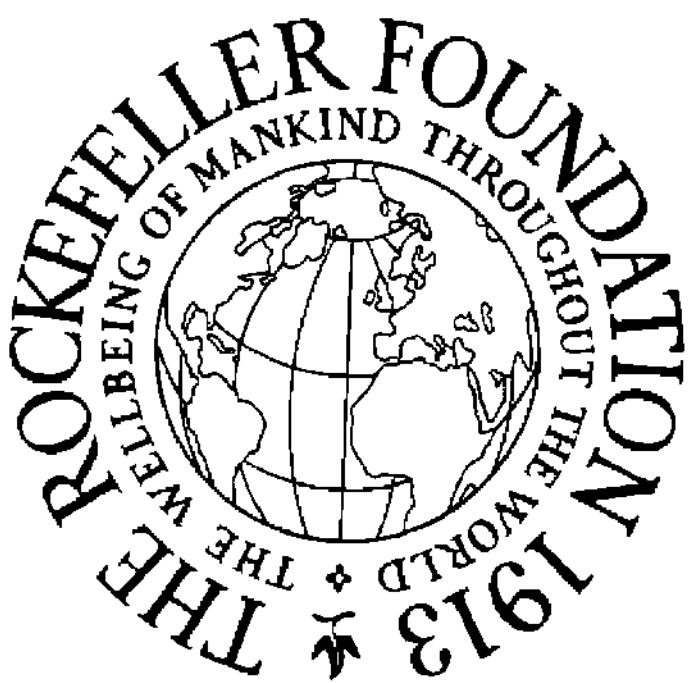
Harvard University Medical School, Department
of Neurology.

the concept of psychobiology has become a part of the teaching and clinical activities of medicine, surgery, obstetrics, and pediatrics in the School of Medicine and Colorado General Hospital.

In 1939 The Rockefeller Foundation renewed its aid toward support of the Psychiatric Liaison Department for a further period of three years beginning August 1, 1939, by a grant of \$30,000.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE

The special characteristic of the plan of the University of Illinois College of Medicine for liaison of the other departments with psychiatry is the linking of psychiatric teaching to the courses given by the basic preclinical departments, especially in physiology. Collaboration with the Department of Physiology is maintained through having a physiologist assigned to present the behavior of organisms as a subject appropriate for physiological study. In this way the medical student comes to clinical psychiatry thinking of behavior in physiological terms. A full-time and a part-time psychiatrist help in liaison with the other clinical departments. The Department of Psychiatry then emphasizes as much as possible in all its teaching the value of



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Bicycle ergometer test for heart function and vascular reaction. Child Research Council, University of Colorado School of Medicine.

the biologic approach to psychiatry as well as the close relationship of psychiatry to the other subjects of medicine, both preclinical and clinical.

In 1939 the Foundation continued aid begun in 1936 to the University of Illinois College of Medicine by a grant of \$35,000 for three years beginning September 1, 1939, to preserve this development until a new neuropsychiatric institute, to be operated jointly by the University and the Illinois Department of Public Welfare, is opened in 1941 or 1942, when it is hoped that the University of Illinois itself will be able to carry the extra expense of this improvement in teaching.

COLUMBIA UNIVERSITY: COLLEGE OF PHYSICIANS AND SURGEONS

Inspiring the researches of the Constitution Clinic under Dr. George Draper at the College of Physicians and Surgeons is the theory that the make-up of an individual, his unique individuality as a whole organism, is an important factor in the production and the particular manifestations of his own disease. The research attempts to determine what types of men or women are especially susceptible to a specific disease — what types in point of anatomical build, physiological characteristics, and emotional patterns. So far, the principal studies have been of persons who

have developed poliomyelitis, peptic ulcer, and gall bladder disease, but data are being collected also on individuals subject to pernicious anemia, acute rheumatic fever, migraine, and other disorders. The studies are based on anthropological measurements, physiological tests, immunological reactions, and psychological tests. The psychological and psychiatric tests are the more recent aspects of the studies, and probably will receive additional emphasis during the next few years.

Besides the continuing observations and studies, a large mass of anthropometric data collected in the Constitution Clinic during the past twenty years has been statistically organized and analyzed during the three years of Foundation aid beginning in 1936. In 1939 the Foundation continued its aid by a grant of \$42,000 over the three-year period beginning September 15, 1939.

TAVISTOCK CLINIC, LONDON

One of the few English outpatient department services for the treatment of the less serious mental disorders, the Tavistock Clinic, London, was established in 1920 as an outgrowth of the interest in psychological medicine stimulated by experience with war neuroses. It is a clinic primarily for patients of limited means, and operates without profit. Most of the patients are

adults, but children also are treated, and work in child guidance receives serious consideration. Postgraduate training has been one of the most important tasks of the Clinic, and the year's postgraduate course in psychotherapeutic theory and method is recognized by the University of London as meeting the requirements of training for the Diploma in Psychological Medicine.

In recent years the Clinic has been making serious efforts to develop investigation. Various avenues of research are being followed, among them studies of the relationship between the two sets of clinical data, organic and psychological, on such common disorders as peptic ulcer, diabetes mellitus, exophthalmic goitre, and essential hypertension, diseases known to be accompanied by clinical signs of an anxiety state. Since 1936 the Foundation has given small grants in aid toward the work of a physiologist, Dr. A. T. M. Wilson, who is now head of the laboratories. To promote further development of research, the Foundation granted in 1939, \$19,500 (£3,900) over a three-year period beginning approximately September 1, 1939.

Although war was declared after this grant was made, and the work of the Clinic transferred to another part of London, it has not been stopped, and it is probable that if the research is shifted to disorders precipitated by war stress,

opportunities for investigation would not be changed in value, but in direction only.

**THE TULANE UNIVERSITY OF LOUISIANA
SCHOOL OF MEDICINE**

During its initial three years, the Division of Psychiatry, established in the School of Medicine of Tulane University with Foundation assistance, has become a satisfactorily operating unit. In 1939 the Foundation made a further grant of \$30,000 over the three-year period beginning September 1, 1939.

A staff of three professors, two instructors, two assistants, a psychologist, and a psychiatric social worker, has been assembled. The principal outpatient clinic is in the clinic building for the School of Medicine, the Josephine Hutchinson Memorial Building, and an outpatient clinic is conducted also at the Charity Hospital in New Orleans. Besides supervising three wards at the Charity Hospital, Dr. T. A. Watters gives instruction in neurology in its school of nursing. Beds also are available at the Touro Infirmary and the Flint Goodridge Hospital, and local funds have been given for the hospitalization at these two institutions of certain clinic patients. The teaching in the child psychiatric clinic, which is a part of the general psychiatric clinic facilities, will be closely related to the Guidance

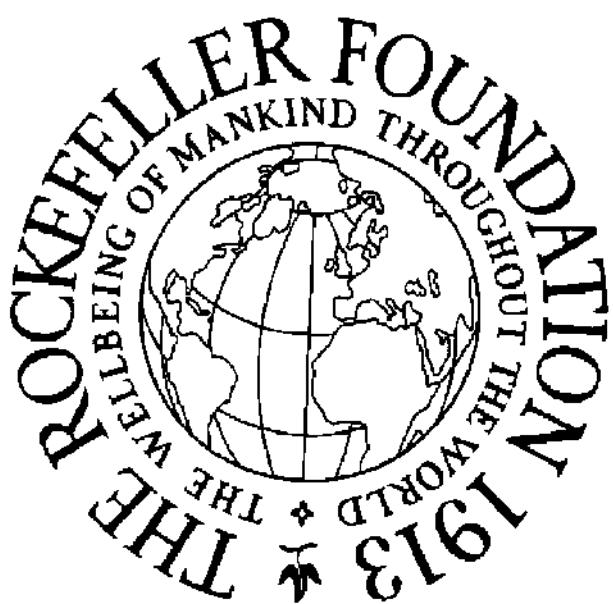
Center, which was opened early in 1939 in the same building. The teaching opportunities provided by these facilities and the additional staff are incomparably better than the former resources for teaching Tulane students and treating the patients in the affiliated hospitals.

The need for psychiatric teaching and therapy in New Orleans and the South generally is very great. That the interest of local physicians and laymen in the work of this department has been aroused is evidenced by developments such as the establishment of the Guidance Center with the aid of local private funds.

UNIVERSITY OF TORONTO

Toward the establishment of a research unit, chiefly for the study of insulin shock treatment in schizophrenia at the University of Toronto, the Foundation in 1939 granted \$106,080 (\$104,000 Canadian) to be used over the period January 1, 1939, to June 30, 1944.

For this joint research endeavor the Ontario Department of Health provides laboratories and a ward for at least twenty patients, besides nursing care and maintenance; and the Department of Research Medicine of the University applies in the clinical field, in cooperation with the psychiatric service, neurophysiological investigations, including studies of carbohydrate metab-



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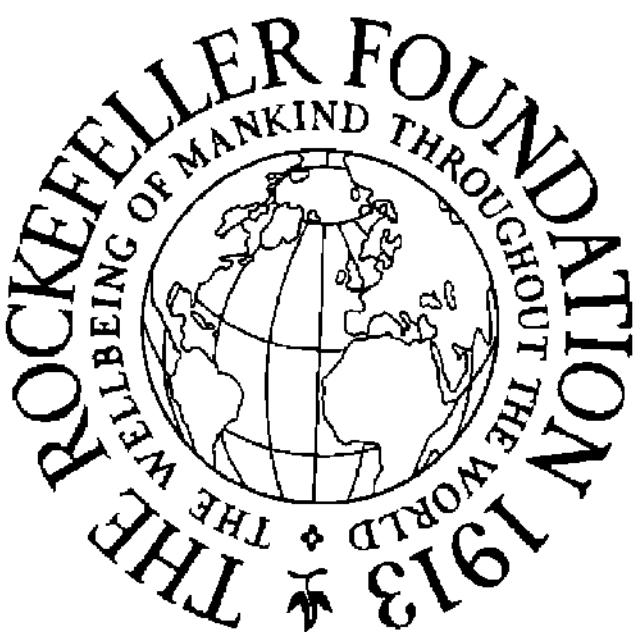
Laboratory, Toronto Psychiatric Hospital.

olism, which have been going on since 1933 under the direction of Sir Frederick Banting, head of the Department. In this way, the body of physiological knowledge, including biochemistry and electroencephalography, is brought to bear on the problem of insulin therapy, and other aspects of the role of carbohydrate metabolism in mental disease. The laboratories and ward of the unit are located in the Toronto Psychiatric Hospital, which is on University grounds and operated through cooperation of the University, city, and province.

The unit affords a further service in that the training of physicians and nurses of the provincial mental hospital system, which has been an important feature of the Department of Psychiatry in the University of Toronto, is extended into the research ward. The unit will be able to draw on material from all the provincial mental hospitals, and will give direction to research undertaken in these hospitals.

MASSACHUSETTS DEPARTMENT OF MENTAL DISEASES: BOSTON STATE HOSPITAL

In the Division of Psychiatric Research at the Boston State Hospital investigation is going forward in the fields of pharmacology, neuropathology, biochemistry, and endocrinology in their relation to the nervous system. Continuing



Photograph Excised Here

Treatment ward, Toronto Psychiatric Hospital.

aid begun in 1934 toward the salaries of the director and other research personnel, The Rockefeller Foundation granted in 1939, \$27,400 over a further period of two years beginning September 1, 1939.

As has been brought out in previous reports, one of the purposes of giving aid to research in state mental hospitals is to stimulate interest in the problems of mental disease in these hospitals, and thus indirectly improve the care of patients. A method of clinical research on schizophrenia developed by the unit at the Boston City Hospital, termed the "total push" method, has served to demonstrate, perhaps more graphically than other work, the possibilities in this direction. On the theory that the personality retreat of the schizophrenic is enhanced in all directions by the usual hospital care which he receives, selected patients were subjected to care, influences, and psychological motivation and stimulation calculated to push them on all fronts of their make-up out of their retreat into more normal social personalities. Although a cure of the underlying psychosis is not expected from this procedure alone, the improvement of the patients under these measures has been marked. The fact that a treatment using only the ordinary methods for improving health and mental attitude can reverse a deterioration commonly supposed

to be practically unalterable has improved the morale and energy of the institution as a whole.

UNIVERSITY OF LUND

The University of Lund is the intellectual center of south Sweden, and the Faculty of Medicine with its institutes and 1,100-bed hospital is the medical center of the region. Research in the Department of Medicine of the University, under Professor Sven Ingvar, has for some years given much attention to studies of the nervous system. Professor Ingvar is especially interested in brain tumors and neuropathology of the mid-brain. Foundation fellowships have been awarded in the past few years to three assistants, two of whom studied neurology and neuropathology.

The County Council of Lund and the Swedish Government gave sums for the remodeling of Professor Ingvar's clinic to furnish more space and for necessary additional equipment, with a view to building up a research and training center in neurological medicine. The Foundation appropriated in 1939, \$27,000 to provide 100,000 Swedish crowns, 40,000 crowns to be used for the construction and equipment of an animal house, and 60,000 crowns to be used at the rate of 20,000 crowns annually for the salaries of technical assistants and research supplies, over the three-year period July 1, 1939, to June 30, 1942.

DIKEMARK MENTAL HOSPITAL

As in the work at the Boston City Hospital, one of the chief aims of research at the Dikemark Mental Hospital, Asker, Norway, on the outskirts of Oslo, is to discover the cause or causes, and pathological processes of the "unknown" disease, schizophrenia. The approach has been mainly through a study of the fundamental disturbances in metabolism, particularly that of the amino acids. The Dikemark Hospital is one of the few municipal hospitals in Europe which is conducting significant research in mental diseases.

The hospital accommodates nearly eight hundred patients, and provides treatment and observation of some twelve hundred additional patients who are boarded out. Four to six junior positions on the staff are reserved for promising students from the University of Oslo. The hospital serves, therefore, as an adjunct to University training, and research at the hospital has the co-operation of psychiatry, anatomy, and other departments of the University. Dr. Asbjorn Fölling, professor of the physiology of nutrition at the University, and a former fellow of The Rockefeller Foundation, is research consultant in physiological chemistry.

In 1939 the Foundation appropriated \$17,150 to provide 66,000 Norwegian crowns over the five-year period beginning July 1, 1939, to enable

Dr. Rolf Gjessing, director of the hospital, to intensify and expand the research under his direction. About half of the grant in the first year is to be devoted to additional equipment; the employment of an organic chemist and other technical assistants will be made possible for the entire period.

UNIVERSITY OF OXFORD

Within the past few years a unit for research in brain chemistry under Professor R. A. Peters has grown up in the Department of Biochemistry at the University of Oxford. The researches of Dr. Peters and his group on vitamin B₁ led to an investigation of the metabolic changes associated with disturbances in the nervous system caused by a deficiency in this vitamin, and an increasing interest in its relation to metabolism in the brain. The work has now progressed to fundamental studies of the chemistry of the brain.

Relatively little research in brain chemistry is being done. At the same time results of recent work have shown that much help in the solution of problems of mental and nervous diseases may be expected from further studies in this field.

In each of the years 1937 and 1938 the Foundation made a small grant in aid to the work at the University of Oxford chiefly for the specific prob-

lem of the metabolism of pyruvic acid in the brain. In order to make possible further progress in the research which has so far proved fruitful, the Foundation granted in 1939, \$12,000 to purchase up to £2,400, to be available during the four-year period beginning July 1, 1939.

In the early 1920's the Foundation gave aid toward the construction of a building for the Department of Biochemistry, and endowment for that Department.

RESEARCH IN NEUROPHYSIOLOGY, ENDOCRINOLOGY, ETC.

YALE UNIVERSITY

The Adolescence Study Unit of Yale University is a cooperative enterprise of the School of Medicine, which provides the personnel for the physiological and anatomical studies, and the Institute of Human Relations, which gives other assistance, particularly the services of a psychologist.

Biochemical tests for male and female hormones have been developed and improved. Assays of these substances are compared with the developmental status of the child as determined by physiological and anatomical studies and measurements. Results of the many detailed tests and measurements indicate a close rela-

tionship between the degree of physical maturity of the child (regardless of chronological age) and the degree of emotional maturity.

Some of the methods which have been devised seem likely to be of practical value in other fields of study, and a small group of younger workers under Dr. William W. Greulich is being trained to use them.

The General Education Board aided this project during its initial three years. For completion of the studies the Foundation made to Yale University in 1939 a terminal grant of \$36,000 covering the two-year period beginning July 1, 1939, to be applied toward the salaries and research expenses which the School of Medicine contributes to the work.

UNIVERSITY OF BRUSSELS

Research in neurophysiology and endocrinology and the relationship of neurophysiological and endocrinological functions to each other has been actively pursued under Professor Frédéric Bremer in the Laboratory of General Pathology at the University of Brussels. Studies are being made of the cerebral cortex with a view to obtaining further knowledge of epilepsy and hysteria; of the centers in the hypothalamus and their relation to the problem of sleep; of the mechanism of heat control; and of the connection

of the visual and auditory pathways with other parts of the nervous system.

Toward Professor Bremer's research the Foundation contributed in 1939, \$24,850 to provide 710,000 Belgian francs to be used in decreasing amounts over the five-year period beginning October 15, 1939. A small grant in aid was made by the Paris office to give temporary assistance until the larger grant should become effective. The Foundation's aid will be used chiefly for equipment and supplies during the first year, and will provide over the full period salaries for research assistants.

MEDICAL RESEARCH COUNCIL OF GREAT BRITAIN

The Medical Research Council of Great Britain, established in 1913 and supported by the British Government, conducts, promotes, and aids medical research in Great Britain. Research is carried on directly under the auspices of the Council at the National Institute for Medical Research, Hampstead, London, and by members of its external research staff stationed in various clinics and other institutions. In carrying out its function of promoting and aiding research, the Council awards about 30 per cent of its funds in grants to investigators in universities, medical schools, hospitals, and other insti-

tutions throughout the country. Since 1923 the Council has administered fellowship funds provided by the Foundation for medical fellowships in Great Britain. The Foundation has also made grants to the Council for the administration of specified research projects in other institutions, and for research under its own auspices.

During the past two years the Medical Research Council found that a large number of worthy applications could not be considered because of insufficient funds. As many of these projects are in the fields of psychiatry, neurology, and endocrinology in which the Foundation is interested, the Foundation granted in 1939, \$50,000 to provide £10,000 over a period of five years beginning February 1, 1939, to be allotted by the Council to research in these subjects.

NATIONAL COMMITTEE ON MATERNAL HEALTH

Toward research expenses of special studies conducted under the auspices of the National Committee on Maternal Health, New York, the Foundation granted in 1939, \$12,000 over the two-year period ending September 30, 1941. A concurrent grant made in 1938 toward administrative expenses of the Committee also expires on the same date.

The special studies in the psychological aspects

of sterility and the relation of sex phenomena to anxiety states which this grant assists received previously a grant in aid for one year. The funds are to be used for three investigators, a full-time fellow in obstetrics and a part-time fellow in psychiatry at the College of Physicians and Surgeons, Columbia University, and a part-time fellow in obstetrics at Cornell University Medical College.

UNIVERSITY OF CALIFORNIA: INSTITUTE OF EXPERIMENTAL BIOLOGY

In continuation of aid begun ten years ago the Foundation in 1939 appropriated \$75,000 over a period of five years beginning July 1, 1939, to the work of the Institute of Experimental Biology, University of California, under the direction of Dr. Herbert M. Evans. During the period of the latest previous grant (1936 to 1939) the Institute has reported progress in studies of the hypophysis, the thyroid hormone, the adrenal gland and its secretion, made further refinements in certain tests for sex hormones, and published studies indicating that vitamin E, besides its relation to reproduction, has a general metabolic importance.

For the future, the laboratory hopes to gain more definite information about the chief differences in the chemical structure and the biological

action of the five best known pituitary hormones, and add to present knowledge of the chemical and biological nature of the vitamins, through its systematic study of purified hormone samples and vitamin concentrates. In addition, Dr. Evans plans to conduct neuroanatomical studies of vertebrates suffering from vitamin deficiency.

TEACHING AND RESEARCH IN CHILD PSYCHIATRY AND NEUROLOGY

CATHOLIC UNIVERSITY OF AMERICA

To help in establishing a center for teaching and research in psychiatry and child guidance which is being developed in the Catholic University of America, Washington, D. C., under the direction of the Rev. Thomas V. Moore, professor and head of the Department of Psychology and Psychiatry, the Foundation granted in 1939, \$85,000 for a period of five years beginning September 1, 1939. This aid makes possible the provision of a psychiatrist, a psychologist, a remedial teacher, a psychiatric social worker, a secretary and technician, and an assistant social worker. The University hopes also that a fellowship may be set aside from these funds to enable a psychiatrist to become familiar with the methods of this clinic.

The objectives of the work in child guidance

are not only to treat the child, but to help in adjustment within the family, and to try to remove specific difficulties by remedial teaching. These aims are assisted by arrangements for cooperation with the Departments of Sociology and Education.

The Catholic University, besides its regular undergraduate work, is a center for advanced and postgraduate courses, and many of the students are being trained as future leaders and teachers in the Catholic priesthood, schools, and welfare administration. To the National Catholic School of Social Service, which is an integral part of the University and cooperates closely with the Department of Psychology and Psychiatry, come a large proportion of the Catholic women going into this work.

CHILD RESEARCH COUNCIL OF DENVER

A detailed study of one hundred children from birth to maturity is the well-defined undertaking of the Child Research Council of Denver. Various studies and tests are made from as many viewpoints as possible, ranging from anthropometric measurements of structure and bones to observation of the child in relation to his environment. Studies are made of the teeth and jaws, nose, throat, ears, sinuses, lungs, heart, and other

organs; basal metabolism and various other tests are made; photographs and x-ray pictures are taken. All the observations and tests are made at regular, frequent intervals. The aim of these studies is to chart more accurately the boundary of the zone separating health from disease; to recognize the variations consistent with healthy growth, and those conditions which need adjustment by outside interference. Numerous parallel laboratory research projects are constantly conducted by the regular and volunteer staff.

While the Council is an independent institute, supported in the main by the Commonwealth Fund, it is housed in the School of Medicine of the University of Colorado; its director is associate professor of pediatrics in the School of Medicine, and its salaried staff of twenty is augmented by a volunteer staff of about thirty, most of whom are members of the faculty of the medical school. This close relationship with the School of Medicine gives the Child Research Council ready access to representatives of all the medical sciences.

For aid toward the salary of a psychologist and small incidental expenses, the Foundation appropriated in 1939, \$19,200 to be used over a six-year period beginning October 1, 1939. The Foundation is also aiding the Psychiatric Liaison

Department of the University of Colorado. The presence of the Child Research Council in the medical school, with its voluminous data, and its relationships to the several departments is, in a less direct way, of value in contributing to the ideal of synthesis in medical teaching.

THE FORMAN SCHOOLS LITCHFIELD, CONNECTICUT

Among groups of children it has been found that some who are entirely normal or above normal in intelligence often have special difficulties in reading, spelling, or writing, which interfere seriously with their expected performance of school work. Other children have a greater or less degree of lack of coordination in muscle control, especially in performing some of the finer movements such as writing. Often the potentialities of such children, subsequently found to be brilliant, have been seriously underrated because of these barriers to the acquirement of a conventional school training.

The Forman Schools, Litchfield, Connecticut, organized for operation on a nonprofit basis, accommodate about seventy boys in four separate age groups from eight to seventeen. Like other boys' schools in the quality and capacities of the pupils, the Forman Schools are perhaps

exceptional in the interest taken in detecting and correcting these particular difficulties among their pupils. It was precisely because of this interest and because the Forman Schools have not modified their selection of students, and thus represent a characteristic and normal sample of scholars, that it was selected as a place in which to extend these special studies.

The Foundation granted to the Forman Schools in 1939, \$50,000 over the five-year period beginning September 1, 1939, to make possible the devotion of part of the time of Dr. Samuel T. Orton, formerly professor of neurology and neuropathology at Columbia University, and long interested in disabilities of speech and reading, and the full time of an assistant to a study both of these difficulties and of methods of corrective training. The funds provided will be sufficient for some additional apparatus, supplies, and other expenses incident to the research. While the Foundation's interest is more particularly in the neurological aspect of the work and the training which the assistant will receive, the grant also should contribute toward the development of improved methods of secondary teaching, especially in the less pronounced cases of muscular incoordination, as in the cases of reading, speech, and similar difficulties.

TEACHING OF PREVENTIVE MEDICINE

THE JOHNS HOPKINS UNIVERSITY
SCHOOL OF MEDICINE

While a graduate School of Hygiene and Public Health has been a part of the Johns Hopkins University since 1916, until 1939 no formal department existed in the School of Medicine for the teaching of public health to undergraduate students of medicine. Such instruction was provided through a series of lectures given chiefly by members of the staff of the School of Hygiene to third-year students. Early in 1939 the Foundation appropriated to Johns Hopkins University \$350,000, to be expended at the rate of not more than \$35,000 a year after July 1, 1939, for the establishment of a Department of Preventive Medicine in the School of Medicine. The Foundation's grant will be used for salaries of staff, including a professor of preventive medicine, and incidental expenses.

The Foundation has recently aided at the Johns Hopkins University two projects which are directly connected with the work of the new Department. The International Health Division of the Foundation in 1938 supplied funds for the purchase of land on which the city is to build a headquarters for the Eastern Health District, a combined enterprise of the School of Hygiene

and the city of Baltimore. Space will be provided in this building for the Department of Preventive Medicine. Also, the Division of Medical Sciences has been aiding, as an experimental study of social, economic, and environmental factors which affect the well-being of the individual patient, a program of lectures, demonstrations, and practical home visits given as a part of the third-year course in preventive medicine. At Johns Hopkins University are other activities which, though less directly, can be of particular advantage to a department of preventive medicine: a strong department of psychiatry can assist in mental hygiene; help from the School of Hygiene can be had in special fields; and the Department of the History of Medicine can contribute through its interest in social medicine.

TEACHING OF LEGAL MEDICINE

HARVARD UNIVERSITY MEDICAL SCHOOL

The coroner system, thought to have originated in the reign of Henry I of England, early in the twelfth century, is the system most commonly used in the United States to determine the cause of deaths occurring under suspicious or unusual circumstances. A thorough examination in a case of suspected crime would assume the services of a competent pathologist with a

thoroughly trained staff to which subsidiary scientific investigations might be detailed. However, the coroner is usually an elected individual and a layman, who uses the ordinary practicing physician as an assistant. He is, besides, expected to perform all those vitally important functions of a bureau of criminal investigation up to and including identification of the person causing the death. Only in a few states and cities in the United States has this inexcusably medieval system been replaced by the medical examiner system.

Legal medicine in continental Europe has had a comparatively long development. Many institutes of legal medicine were founded there in the nineteenth century. The first chair of legal medicine in the United States was established at Harvard University in 1937, in memory of one of the pioneers among medical examiners, Dr. George B. Magrath.

The Department at Harvard is headed by a pathologist, Dr. Alan R. Moritz, who has spent two years in Europe to secure necessary supplemental training in legal medicine. In 1939 the Foundation granted \$15,000 over a period of approximately four years ending June 30, 1943, to be used toward the salaries of two assistants. A substantial start has been made in a branch of medicine of great potential value in the protec-

tion of human life and the administration of justice. It is to be hoped that increasing demand for medical examiners will follow the creation of the means to train them.

TEACHING OF DENTAL MEDICINE

HARVARD UNIVERSITY SCHOOL OF DENTAL MEDICINE

Dental diseases, which afflict practically everyone, constitute one of the great public health tasks of the future. Present methods of repair and correction, though valuable and excellent, contribute but little toward prevention. The leaders of the dental profession have long been desirous of improving the character of dental education, and no one among them would see with reluctance larger resources for investigation in dental problems. Most students of dental education believe that a shift from emphasis upon mechanical ingenuity to emphasis upon the biological sciences underlying medicine itself but equally applicable to dentistry would form the wisest course for the improvement in dental education. The dentist stands to gain from a wider knowledge of medicine — and he knows it. The physician would profit from a better knowledge of the factors underlying the anatomy, physiology, and pathology of the oral cavity — whether he

knows it or not. The time has arrived for some active and intelligent team play between a well-supported school of dentistry and a school of medicine.

The Foundation has aided dental research at Yale University and the University of Rochester for the purpose of finding and training teachers and investigators in dentistry of a calibre and outlook similar to the best traditions of medicine. In the absence, however, of a dental school where teaching and investigation of a high order could be carried out, suitable opportunities have been lacking for personnel so trained.

In recognition of the present situation in dentistry Harvard University has drafted a reorganization of its dental school, which will place dentistry on the basis of a specialty of medicine. The Dental School will become the School of Dental Medicine, and graduates of the School of Dental Medicine, after finishing the same preclinical courses and much of the same clinical work given the medical students, will be entitled to the degree of Doctor of Dental Medicine. No longer apart from the advantages of the Medical School, and no longer with courses shorter or more limited in scope, the dental students in this new departure in dental education will be encouraged to a new status. Exclusively dental training, especially the technical and

mechanical procedures, will be given principally in a fifth year. Four full-time professorships in dental medicine will be called for, and research will be better supported.

The aim of the School is to produce graduates who will be prepared as teachers, investigators, and broadly trained clinical specialists. It will bring medical training to bear on the problems of dentistry, and tend to infuse the biological and preventive outlook into dental teaching and research. To aid this reorganization in dental teaching, the Foundation granted in 1939, \$400,000 as endowment to the School of Dental Medicine of Harvard University, on condition that the University increase endowment of the School by \$2,150,000, \$1,000,000 to be transferred from University funds, and \$1,150,000 to be secured elsewhere before October 1, 1941.

MEDICAL RESEARCH — FLUID FUND

THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

Like many other medical schools at this time, the Johns Hopkins University School of Medicine has found it necessary to cut budgets considerably as a result of lowered income. The economy measures tend to keep research at a minimum, and to prohibit expenses for any new

projects, or the extension and development of research already under way. The scientific potentialities of a good staff are especially hampered in such a situation.

At present practically all those funds of the School of Medicine which are restricted to research are designated for specific studies and can not be applied to any of the needs which arise in various departments from time to time. A fluid research fund can be used for any department and applied wherever the promise of excellent research is thought to be greatest. As a form of aid which is most helpful in a time of financial stringency, the Foundation granted early in 1939, \$90,000 to the School of Medicine of Johns Hopkins University over the six-year period ending December 31, 1944, for a fluid research fund.

It might be added for the guidance of donors interested in medical research that few ways of spending money on the part of persons not prepared to supervise the expenditure of large sums, can be found to be more productive than the fluid research fund.

FELLOWSHIPS

As the war in Europe has made it unlikely that the fellowship program there can be continued except for a few isolated cases, and as it is also impossible to send fellows from the United

States to centers in Europe where in normal times they would wish to study, it is expected that the fellowship program for 1940 will be much reduced. Only \$50,000, therefore, was appropriated in December 1939 for fellowships in the medical sciences during the year 1940, as contrasted with \$120,000 provided for each of the years 1938 and 1939.

Sixty fellowships were administered directly by the Division of Medical Sciences during the year 1939. They were granted to individuals from seventeen different countries, who studied in six different countries. The countries of origin and the numbers from each were as follows: Great Britain, eight; France, five; Finland and Sweden, four each; the Netherlands, three; Canada and Japan, two each; Argentina, Belgium, Germany, Italy, Java, Latvia, Mexico, Portugal, and Switzerland, one each; and the United States, twenty-three. Of these fellows forty-seven studied in countries other than their own: in Great Britain, fifteen; France, four; Canada, three; the Netherlands and Sweden, one each; and the United States, twenty-three. Thirteen fellows appointed in the United States worked at training centers in their own country.

Of the total of sixty individuals, forty-two devoted their fellowships to work in neurology and psychiatry and related subjects; six to public

health teaching and research; four to endocrinology; two each to chest surgery and medical library administration; and one each to legal medicine, cancer research, histology and endocrinology, and nutrition in relation to alcoholism.

In 1937 the Foundation provided funds to the National Research Council, Washington, D. C., for fellowships in the medical sciences over the period July 1, 1938, to June 30, 1941. Twenty-two fellows were at work during all or part of the year 1939 on fellowships awarded from these funds. Thirteen fellowships were continued from the previous year, and nine began in 1939. Awards are made to selected applicants in the United States and Canada. Twenty-one fellows studied in the United States and one in Sweden.

Also in 1937 the Foundation granted funds for fellowships to the Medical Research Council of Great Britain for a three-year period ending June 30, 1940. Seven fellows were at work during some time in 1939. Six continued their work from the previous year, and one began in 1939. Six studied in the United States, and one in France. One fellow returned home because of the war before the expiration of his fellowship; three other fellows who sailed for home in September had practically completed their periods of study. Five appointments which had been made for study in the United States were cancelled.

The fellowship program at the Peiping Union Medical College, Peiping, China, conducted with funds provided by the Foundation, was larger in 1939 than in previous years, although the expenditure for this purpose was very much smaller because of the extreme drop in exchange. Eight grants were in effect in 1939 for research fellowships at the College, and 135 smaller grants for other postgraduate fellowships. The 143 individuals represented sixty-four different institutions in China. Practically all departments of the College received fellowship workers; the largest numbers in any one department were eleven in physiology and ten in public health. Of the 143 total, fifty-eight were nurses who received graduate training in the School of Nursing. Fifteen members of the staff of the Peiping Union Medical College received fellowships for study abroad during 1939, thirteen in the United States, one in Canada, and one in both the United States and Germany.

GRANTS IN AID

It is expected that the grant in aid program may be used in Europe to deal with emergency situations brought about as a result of the war to keep a productive research group together, or to provide funds when advance is blocked by failure of adequate resources; and in the United States

possibly to accelerate work offsetting the inevitable decline in research in Europe. Although some of the normal demands on the fund, such as exploration of projects previous to recommending grants by the trustees, may be less, emergency needs might well exceed the usual allowance, and for this reason, \$125,000 as compared with \$90,000 in 1938, was appropriated in 1939 for the requirements of 1940.

From funds provided in 1938, thirty-five grants in aid in the medical sciences were allotted by the officers in 1939. They ranged in amount from \$250 to \$5,000, and totaled \$74,-360. Of the twenty-six grants for research in Europe, all were for one year or less; of the nine grants in the United States, four were for two years, three for one year, and two for shorter periods. The funds were to be used chiefly for technical assistance, laboratory equipment, and supplies.

The research aided was in the fields of concentration of the Division of the Medical Sciences, psychiatry, neurology, and related subjects, with the exception of one grant for the organization of a cooperative medical library service in London, one in nutrition, one for the study of genetic-endocrinological relations, and two in endocrinology. Eight of the scientists whose work was aided had been fellows of either The Rocke-

feller Foundation or the Medical Research Council of Great Britain, the fellowship funds of which are contributed by the Foundation.

The thirty-five grants were distributed among ten countries, as follows: England, twelve; France, five; Denmark, three; Germany, two; Belgium, Canada, the Netherlands, Norway, and Switzerland, one each; and the United States, eight.

As most of the European grants were made early in 1939 and covered only one year, some of the institutions which received grants in aid for this period reported but slight disturbance to the work caused by changes to a war basis. It is inevitable, however, that war and research do not go well together, and the effectiveness of many research projects diminished as the year drew to a close.

From a special fund provided for the travel of individuals and commissions, a small sum was granted to enable a Canadian professor to visit the United States to observe the teaching of preventive medicine in a few university medical schools where this subject is well organized.

THE NATURAL SCIENCES

THE NATURAL SCIENCES STAFF
During 1939

Director

WARREN WEAVER

Associate Director

FRANK BLAIR HANSON

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NATURAL SCIENCES

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THE NATURAL SCIENCES

FOR the support of its program in the natural sciences the Foundation appropriated \$2,005,831 in 1939. The greater part of this amount was contributed for work in experimental biology, the field of study on which the program places its chief emphasis at the present time. The choice of this field for concentration of interest was determined by the belief that the health and happiness of man depend in a fundamental way on his understanding of life processes and the mechanism of such phenomena as heredity and the growth and development of the minute structures that constitute his bodily make-up. The Foundation aims to further this understanding by helping to bring to bear on the unsolved problems of biology the powerful research techniques which have been developed in modern physical and chemical laboratories, and by fostering cooperative attack on these problems by investigators working from many angles.

EXPERIMENTAL BIOLOGY

AID TO GROUPS

LELAND STANFORD JUNIOR UNIVERSITY: THE BIOLOGICAL SCIENCES

The first president of Stanford University, David Starr Jordan, was a naturalist, deeply

interested in the living world. It is only natural that under his leadership the biological sciences at Stanford had a vigorous and successful early development. This development, moreover, has been a continuous one to the present time, the biological group there having a particular interest in drawing upon the experimental methods of the chemist and physicist in their endeavors to solve basic biological problems. In the School of Biological Sciences a closely collaborating group of biologists has been formed which studies problems centering principally around the "simplest protoplasmic unit or primordial cell." At present seven separate lines of research are represented by this group: plant physiology, especially bioelectric phenomena and photosynthesis; photobiology, especially the effects of ultraviolet light upon microorganisms; experimental morphology, using the method of transplant reactivities between species and their hybrids, and looking toward analysis of the phenomena of development in chemical and physical terms; microbiology, especially chemical activities of bacteria and the pigments; experimental embryology, especially induced cell polarity and differentiation; physiological genetics, especially the chemical nature of gene action; and experimental protistology, especially induced protoplasmic reorganization in relation to the effects of x-rays.

The chemicophysical attack upon biological problems often requires methods and equipment even more refined and precise than those employed in the study of nonliving matter. Constant temperature rooms and air conditioning make delicate work possible; and x-ray equipment, apparatus for radiating ultraviolet light, and other precision equipment are necessary for the experiments. Since 1934 the Foundation has contributed toward equipment, technical assistance, and other general expenses. In 1939 the Foundation gave \$200,000 toward the work of this group of investigators of fundamental biological problems. The amount has been paid to the University in a lump sum subject only to the condition that not more than \$20,000 shall be used in any one year.

AMHERST COLLEGE:
DEPARTMENT OF BIOLOGY

An example of significant scientific investigation carried out in a department of a comparatively small institution is furnished by the Department of Biology at Amherst College. Here active research is going on in growth, embryology, and genetics. Among other studies on growth by Professor Otto Glaser, head of the Department, are those relating to the discovery that in the chick, the relationship between age

and weight appears to be, simply stated, similar to compound interest with a systematic decline in rate. Studies in embryology carried out by Associate Professor O. E. Schotté have centered particularly around regeneration and the action of organizers. Tissue transplanting experiments seem to show that regenerating cells of adult amphibians are really capable of undergoing a renewed embryonic differentiation long after they have apparently been destined to become "leg" or "tail" cells. These results should throw light eventually on the processes of morphogenesis and of cell differentiation of proliferating tissues. In genetics Professor H. H. Plough has developed a new and more accurate method of determining the number of mutations in any one generation of fruit flies, which makes more nearly exact the tracing of mutations caused by exposure of larvae to sublethal high and low temperatures and other treatment.

Aid given by the Foundation for the three-year period ending December 31, 1939, provided apparatus, including a room having temperature and humidity control, and research and technical assistance. In 1939 the Foundation continued aid for equipment and other general expenses including salaries of research and technical assistants, in the amount of \$32,500 over the period January 1, 1940, to June 30, 1945, with the under-

standing that \$1,500 should be devoted to permanent equipment.

LONG ISLAND BIOLOGICAL ASSOCIATION: SUMMER SYMPOSIUM

A five-week symposium bringing together investigators actively interested in selected fields of quantitative biology, or in methods and theories applicable to work in these fields, is held each summer at the Biological Laboratory in Cold Spring Harbor, under the sponsorship of the Long Island Biological Association. These meetings are part of the Laboratory's policy of fostering a closer relation between biology and the basic sciences, and at each one effort is made to have every important aspect of the particular subject under consideration adequately represented from the physical and chemical, as well as from the biological, point of view.

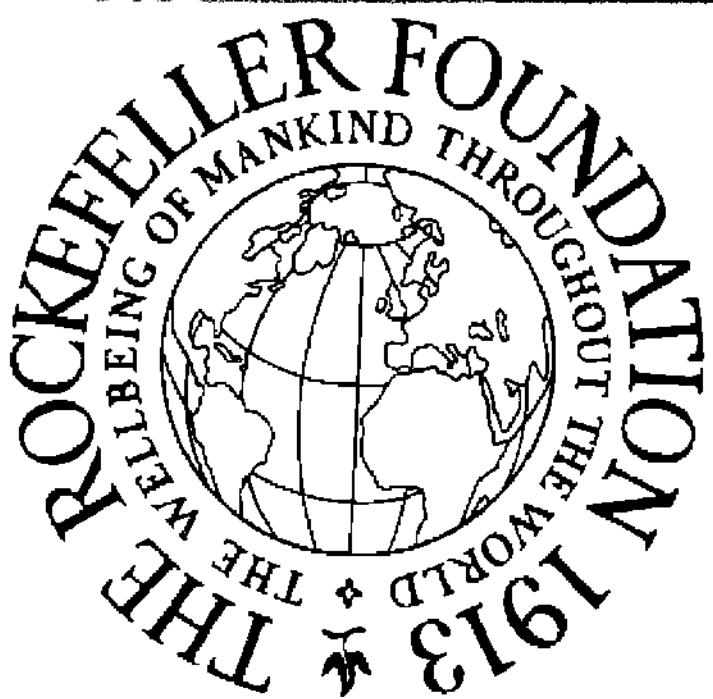
About thirty persons, acknowledged experts in the field which is to be the subject of discussion, are invited to each summer symposium. In accordance with a program carefully prepared in advance a paper is read each day by some member of this group, and a general discussion follows, which often lasts for several hours. Abstracts of the discussion are prepared, and these, together with the papers themselves, are printed in an annual volume.

The symposia have been held yearly since 1933 and have dealt with the following subjects: surface chemistry and its bearing on biological phenomena; general problems of growth; photochemistry and photosynthesis; excitation phenomena; enzymes, hormones, and vitamins; protein chemistry; and biological oxidations. The Rockefeller Foundation has contributed toward the support of the symposia since 1934. During the past year it appropriated \$10,000 toward the costs of the 1940 session, which is to be devoted to the consideration of cell membrane structure and permeability. The funds provided by the Foundation are used for the traveling and living expenses of the participants in the symposia, for research expenses during a brief period following the sessions, for clerical and administrative costs, and for the publication of the annual volumes containing the papers and the discussions.

GENETICS

UNIVERSITY OF MISSOURI

Research in genetics at the University of Missouri, Columbia, is an important and expanding field. The work represents a collaboration of interests in departments of the College of Arts and Sciences, the College of Agriculture, and the

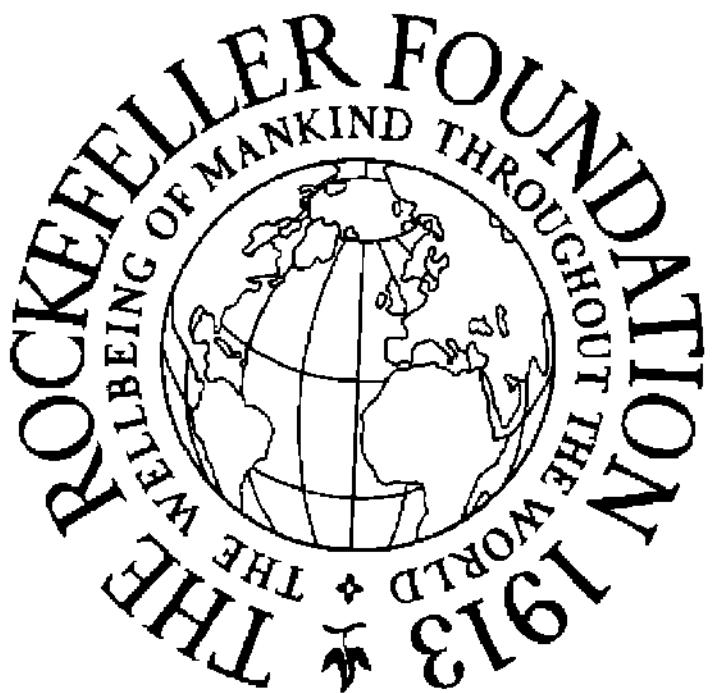


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Research at the School of Biological Sciences, Stanford University, California

Agricultural Experiment Station. The principal lines of investigation are the genetic nature of induced and spontaneous mutations; chromosomal derangement; the genetic effects of ultra-violet radiation; and the genetics of polyploidy, or the phenomena of multiple chromosomes. The general program is under the direction of Dr. Lewis J. Stadler, professor of field crops, aided by the assistant professor of botany, who is especially interested in x-ray induced chromosomal derangements; the assistant professor of physics, a biophysicist, interested chiefly in experiments with ultraviolet radiation; and a group of well-trained younger investigators. Research in genetics is also stressed in the Department of Zoology, which works closely with this group.

The significance and nature of this work suggested that it should be housed in one building with greenhouses and experiment fields and gardens conveniently at hand. As the building program of the University has been restricted, it has not been possible to bring the investigators together, and the work has been proceeding with much inconvenience. The individuals concerned are located in three different buildings, one of them unsuited for laboratory work, and in space which is needed by other departments; and the radiation equipment is housed at an inconvenient



Photograph Excised Here

Genetics Building, University of Missouri.

distance from the plots and greenhouses where it is chiefly used.

As suitable and convenient laboratory quarters seem necessary for further efficient development of this important program, the Foundation granted \$80,000 for the construction and equipment of a genetics laboratory building. The Foundation also continued its aid to research, entered upon in 1936, by a grant of \$20,000, over the five-year period beginning July 1, 1939, to be expended at the rate of \$5,000 a year for the first three years, and at a decreasing rate thereafter, with the expectation that the University will correspondingly increase its support of the work.

BROWN UNIVERSITY

With the assistance of allotments by the officers of the Foundation in 1936 and 1938 from funds for grants in aid, Professor Paul Sawin of Brown University, Providence, has been able to take over and continue research on unique stocks of rabbits representing genetic strains built up over some thirty-five years of research by Dr. William E. Castle, professor emeritus of genetics, of Harvard University. In 1939 the Foundation granted \$9,000 for studies in genetics at Brown University under Dr. Sawin over the five-year period beginning June 1, 1939. Of

this grant \$1,000 was to be used for enlarging the quarters of the colony so as to make conveniently accessible all animals under close observation. For the expenses of housing and feeding the approximately three hundred to four hundred rabbits, and for part-time research assistance, \$8,000 was granted to be used in amounts decreasing annually to allow the University gradually to take over the complete expense, of which it is at present contributing about three-eighths.

This research lies principally in the relatively new field of immunogenetics. It has long been known that some rabbits normally possess type specific agglutinins for human blood cells, but as the blood of all rabbits does not have this characteristic, the studies at Brown seek to discover and develop strains of rabbits which can be depended upon to produce the desired sera. The lack of such strains has recently been felt to be a considerable handicap in the study of type specific substances in man, and these studies in immunogenetics should be of importance, therefore, from the medical as well as the biological standpoint.

Dr. Sawin and his assistants at Brown will continue further the study of the mutations obtained by Professor Castle, and will investigate also the inheritance of certain anatomical differences.

CHEMISTRY IN ITS RELATION TO BIOLOGY

THE JOHNS HOPKINS UNIVERSITY: STUDIES OF THE CHEMICAL STRUCTURE OF PHYSIOLOGICALLY ACTIVE SUBSTANCES

The structure and function of biological substances present a particular challenge to chemistry. In addition to the importance of knowing more about life processes is the fact that the complexity of the large molecules which compose biological compounds provides an exceptional opportunity for studying the operation of many of the more subtle laws of chemistry and physics. The pattern and organization of the molecules of these substances make possible a class of structure-dependent phenomena which cannot exist in simple molecules. Thus from the standpoint of both the chemist and the biologist, biochemistry opens up rich fields for exploration.

The relation of chemistry to the problems of biology is one of the Foundation's chief interests in the field of the natural sciences, and several of the appropriations of the past year were made to further research in this general area. Among these was a grant of \$30,000 to the Johns Hopkins University for studies in the Department of Chemistry, under the direction of Professor

D. H. Andrews, on the chemical structure of physiologically active proteins.

The organic chemist has determined the structure of thousands of organic compounds. He has learned the make-up of the molecules of which they are composed, and in a very large number of instances he is able to synthesize the substances. But the molecular structure of the proteins, that group of substances of paramount importance to plant and animal life, still remains a mystery.

The proteins have an outstanding role in plant and animal physiology, for they are present in almost every organ and have a part in practically every vital process. They are the basic materials of which man's muscles, tendons, and connective tissues are made, and they are important constituents of the blood, digestive juices, and other body fluids. In addition to many substances necessary to the life of plants and animals, the proteins also include such enemies as toxins and viruses. It is the structural properties of the complicated protein molecules which make possible their many different uses, such as carrying oxygen in the blood stream, assisting in the metabolism of the food taken into the body, and protecting the body against the invasion of harmful foreign substances. Thus a knowledge of their structure is of major importance.

Studies in the field of protein structure have shown the complexity of this subject and have led to the development of various specialized methods. These include, among others, the techniques of organic chemistry, microchemistry, crystallography, x-ray analysis, spectroscopy, radiochemistry, and thermodynamics. Professor Andrews and his colleagues are applying these particular techniques to the investigation of many of the physiologically significant proteins. An important feature of their work is the study of the numerous pigments which play a leading role in the life processes of plants and animals. Among these substances are hemoglobin, the oxygen-carrying pigment of the blood; cytochromes, pigments which enable the muscles to utilize the oxygen for purposes of combustion; chlorophyll, which makes it possible for plants to accomplish photosynthesis, that is, to build up chemical substances with the aid of light; catalase, by means of which the plant protects itself against the hydrogen peroxide formed in the course of photosynthesis; and a widely scattered group of enzymes, the peroxidases and oxidases, which permit plants to perform oxidations at room temperature.

The Foundation's grant toward the support of Professor Andrews' work will be available over the four-year period ending June 30, 1943, for the

purchase of equipment and for the salaries of research assistants.

**CALIFORNIA INSTITUTE OF TECHNOLOGY:
DEVELOPMENT OF ORGANIC CHEMISTRY IN
RELATION TO BIOLOGICAL PROBLEMS**

Research in the molecular structure of the proteins is receiving Foundation support also at the California Institute of Technology, where work in this field is being carried out as a part of a broad program in bio-organic chemistry, which the Institute is developing with Foundation assistance. Under the direction of Professor Linus Pauling, a group of workers in the Institute's Crellin Laboratory of Chemistry are attacking the problem of protein structure through x-ray studies of simpler related substances, such as the amino acids and the peptides, combinations of two or more amino acids. Chemical investigation has established the fact that proteins are made up of amino acids held together in chains by linkage between their carbon and nitrogen atoms, but it has not been possible to discover by chemical techniques alone the configuration of these chains or the nature of the linkage existing within them. With their x-ray methods, however, Professor Pauling and his associates are making significant progress. They have already succeeded in determining the structure of crys-

tals of the amino acids glycine and alanine, and the related diketopiperazine, and are studying the structure of other amino acids and peptides.

Some of the other work included in the Institute's program in bio-organic chemistry are studies by Professor E. R. Buchman on the physiological action of analogues of vitamin B₁, which are giving clues to the mechanism of the activity of this vitamin; research by Professors A. J. Haagen-Smit and J. B. Koepfli on plant growth substances; investigations by Professor C. G. Niemann on the nature of the fatty substances of brain and nerve tissue; and studies by Professor L. Zechmeister on substances related to the carotenoids, the forerunners of vitamin A.

In December 1937 the trustees of The Rockefeller Foundation authorized the executive committee to appropriate to the California Institute of Technology sums totaling not more than \$300,000 during the six-year period beginning July 1, 1938, for the development of chemistry in its relation to biological problems, the amount in any year of the period not to exceed \$70,000. In both 1938 and 1939 a grant of \$70,000 was made toward the fulfilment of this commitment. These sums were budgeted by the University for salaries of research assistants and for equipment and supplies.



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Crellin Laboratory, California Institute of Technology. At work on the nature of the fatty substances in brain and nerve tissue.

UNIVERSITY OF MINNESOTA: STUDIES OF LIPID METABOLISM

Among the materials which go into the make-up of plant and animal tissues are a group of substances known as the lipids. They include such compounds as the fatty acids, the neutral fats, and the various sterols, and they are known to have a vital role in protoplasmic behavior. Their multiple functions cannot be understood, however, until far more is known about their elementary chemistry and the factors that control their transport, rearrangements, and synthesis into the final complexes found in the cells. At the University of Minnesota, Professor George O. Burr and his associates in the Department of Botany are using spectrographic methods and other modern techniques in the study of the chemical structure and the behavior of these cell constituents. To assist the University in the support of this work over a five-year period beginning July 1, 1939, the Foundation appropriated \$15,000 to cover the salary of a research assistant for Professor Burr and toward the purchase of supplies and equipment.

Professor Burr is at present devoting his attention to the isolation of the fatty acids and their isomers, that is, substances having the same chemical composition but differing in their physical properties because of a different arrangement



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Conductivity measurements. Department of Physiology, University of Minnesota.

of the atoms in the molecule; to the determination of the organic structure of the newly isolated substances; to the synthesis of these substances; and to the study of their biological activity. He is seeking to develop more accurate and delicate spectroscopic techniques for the identification of unknown lipid constituents and for following the rate of transport and metabolism of known spectroscopically active fatty acids. He is using radioactive phosphorus as an aid in the synthesis of lipids.

Members of the Departments of Anatomy, Physiology, and Pediatrics at the University of Minnesota and of the Department of Physiology at Ohio State University are cooperating with Professor Burr in this work.

UNIVERSITY OF Utrecht: RESEARCH IN THE BIOCHEMISTRY OF PLANT GROWTH SUBSTANCES

For several years Professor Fritz Kögl, director of the Department of Organic Chemistry of the University of Utrecht, has been engaged in biochemical studies of the growth-promoting substances with which plants are provided, notably the hormone-like auxin, of which there are at least two forms, and the vitamin-like biotin. His early work was concerned with the isolation of these substances and the study of their chemical structures. More recently he has

been investigating their roles in the physiology of both plants and animals. These later investigations have opened up new lines of research along which Professor Kögl now plans to work. To aid the University in providing additional research assistance and certain essential equipment for this broader program the Foundation appropriated \$21,375 for its use during the five years 1939-1943.

Professor Kögl's new program, now well under way, includes (1) investigations of the relation of the hormone-resembling auxins to such phenomena as the turning of plants toward the light, and the invariable upward growth of their shoots and downward growth of their roots; (2) research on other plant hormones, particularly those that stimulate cell division; (3) studies of the significance of biotin in the germination and physiology of higher plants and in the growth of bacteria; (4) attempts to breed pathogenic bacteria in a synthetic medium by means of the growth substances now known; and (5) investigation of growth substances occurring in extracts of embryos.

The University has provided new quarters for the Laboratory of Chemistry, where Professor Kögl has space for large extraction equipment, three well-designed rooms for microanalysis, a balance room, a physical chemistry room, a

general research room for fifteen persons, and private research rooms for a dozen more.

UNIVERSITY OF MINNESOTA: INVESTIGATIONS OF THE MECHANISM OF OSMOSIS

In order to maintain its integrity the living organism must keep its internal environment relatively constant in composition. One of the mechanisms by which it moves materials within its system to accomplish this end is osmosis, or diffusion through cell membranes, separating two solutions, which tends to equalize the concentrations of these solutions. For example, through osmotic work the higher animals and man are able to keep their salt content constant by preventing its loss from the intestines and kidneys when the rate of its intake is low and by bringing about its excretion when its intake is high.

The ability of the organism to carry on osmotic transportation in order to keep its content of certain substances constant is one of its most important characteristics. In fact, life under changing circumstances would be impossible without this ability. The mechanism of the function is imperfectly understood, however, although it has been studied extensively.

At the University of Minnesota osmotic work has been under investigation for a number of years in the Department of Physiology under

the direction of Professor M. B. Visscher. Papers have been published by the staff on certain phases of this research, but many problems require further study. To assist Professor Visscher in extending the scope of his investigations the Foundation made a grant of \$16,500 to the University to be available during the three years beginning July 1, 1939.

Professor Visscher plans to investigate further the factors involved in selective osmotic work in living systems through extension of fundamental knowledge of the physical chemistry of membranes of the types present in living systems, and through analysis of the behavior of the living systems themselves in the light of information obtained in the physicochemical studies. The two kinds of work can be carried on simultaneously with profit, for each is dependent on the other. The Foundation's grant will be used for salaries of research assistants, for additional equipment for electrical measurements, for the construction of electroosmotic cells and auxiliary apparatus, and for materials to be used in the studies.

UNIVERSITY OF OXFORD: ADDITION TO THE LABORATORY OF ORGANIC CHEMISTRY

To enable the University of Oxford to add a new wing to the Dyson Perrins Laboratory, an important center of research in organic chemis-

try, the Foundation appropriated \$115,000 toward the cost of erecting and equipping this addition. The new space will aid studies in the field of organic chemistry as applied to biological problems.

At the present time a large group of workers is carrying on special research of this kind at the Laboratory under the leadership of Sir Robert Robinson, its director. Many of these persons occupy research rooms that house not only their own particular equipment but also such general service equipment as centrifuges, microanalysis equipment, and high pressure distillation apparatus. It often results, under these circumstances, either that special research must be interrupted to permit the use of the general service apparatus for other purposes, or that this apparatus becomes unavailable until an opportune break can be made in the special work. Moreover, there are certain important types of research that cannot be carried on satisfactorily in a general chemical laboratory.

The new wing will permit the separation of such special services from general research and teaching, and will thus promote the efficiency of all phases of the Laboratory's work. It will provide rooms for microanalysis and semimicroanalysis, for microbalances, for catalysis-hydrogenation, high vacuum distillation, spectrography and polarimetry, and for bacteriology and other mi-

microorganism cultures, as well as five research laboratories for senior workers.

The Foundation's active connection with Professor Robinson's work goes back to 1933, when a small grant in aid was made to the Dyson Perrins Laboratory to provide equipment and special supplies for research on the chemistry of organic coloring substances of plants and related vitamins. In 1936 a second grant was made to the Laboratory, to be available over a five-year period for the support of studies of protein structure and of synthetic analogues of the sex hormones and corticosterone, a crystalline steroid with the activity of the adrenocortical hormone.

PHYSICS IN ITS RELATION TO BIOLOGY

UNIVERSITY OF CALIFORNIA: CYCLOTRON RESEARCH

Although several cyclotrons have been built at the University of California, where the theory of the machine was first worked out by Professor E. O. Lawrence, director of the Radiation Laboratory, the technical capabilities of the cyclotron and its use in other departments of research, such as medical and biological, are in only the earliest stages of development. A powerful cyclotron, suitable for medical and biological research, was completed in the early part of 1939, and was

producing a few months later deuteron rays of 16,000,000 volts. As has been described in previous reports, the cyclotron is a machine which by whirling at extremely high speeds the nuclei (deuterons or alpha particles) of such atoms as heavy hydrogen or helium, imparts to these nuclei enormous energies, and directs this stream of ultra high speed particles at a target. The impact of these particles causes changes in the element used as a target; different substances may become radioactive for varying lengths of time, from seconds to many years, or may even be changed in character entirely, constituting a true transmutation of elements. Neutrons (elementary particles with mass but with no electrical charge) are knocked out of the atomic nuclei of certain elements in great numbers. The neutron beam thus formed appears to have effects on biological tissue which differ in certain important respects from the effects of x-rays or other forms of radiant energy.

Investigators at the University of California are studying the effects of neutron rays on biological material, and endeavoring to discover whether they may have important uses in therapy. Both medical and biological research at the University is using, in many different types of investigation, synthetic radioactive substances as "tagged atoms." For instance, radioactive

iodine can be traced in animals in a study of iodine metabolism in its relation to the thyroid and thyroid disease. The possibility of administering harmless synthetic radioactive substances as a therapeutic measure in certain diseases is also being explored.

Toward the expenses of a research program in biology and medicine based on the use of the cyclotron and its products, the Foundation granted to the University of California in 1939 \$50,000 to be used over a period of three years beginning July 1, 1939. Aid toward the construction of the present medical cyclotron in the Radiation Laboratory of the University of California was given in 1938.

WASHINGTON UNIVERSITY, ST. LOUIS: CONSTRUCTION OF CYCLOTRON

Washington University recently found itself ready to develop further its Institute of Radiology. After a year of study, it was decided that the cyclotron offered important possibilities for further medical and clinical research in radiation and radioactive substances, and that a cyclotron would be additionally valuable because of the wide range of use to which its products could be put in other departments. The research will be in some respects similar to that carried on at the University of California in the medical and

biological sciences; but it is clearly desirable that several centers undertake investigation in this as yet little explored field.

Studies with animals will be made of the effects of the neutron beams, especially of the possibilities of their use in the treatment of malignant and other diseases. Some of the results already obtained at the University of California offer a certain amount of tentative encouragement in this direction. The clinical departments at St. Louis will experiment also with the synthetic radioactive substances produced by the cyclotron. Laboratory workers, particularly in the departments of biochemistry and physiology, are eager to secure tagged atoms as research tools in many of their problems.

Aside from the purely medical field, the cyclotron and its products are desired for problems such as the following: in experimental biology, to observe the localization of substances in the cell membrane; in experimental embryology, to observe certain stages in the development of cells and the mechanism of chromosome action; in genetics, to study the production of mutations by radiation with high voltage neutron, deuteron, or proton beams. The labeled atoms are further desired for use in research in chemistry, botany, zoology, and dental science.

Income from an endowment for the Edward Mallinckrodt Institute of Radiology will support the operation of the cyclotron. Toward the cost of its construction the Foundation granted \$60,000 to Washington University in 1939, to be available until June 30, 1941.

UNIVERSITY OF CHICAGO: STUDIES IN MOLECULAR SPECTRA

Physiologists, pharmacologists, and biochemists are greatly interested in the relationship between the structure of substances and their physiological activity. Recent advances in experimental and theoretical techniques have made it possible to study, by means of their spectra, not only the structure of atoms, but also the structure of certain molecules. In the Department of Physics of the University of Chicago investigations are going forward under Professor Robert S. Mulliken on simple polyatomic molecules which can be studied in the vapor state. Many of the substances studied, such as carbon dioxide, water, and oxygen, are of obviously great importance in biological chemistry. It is planned to investigate also some of the "free radicals," the building stones of complex biological molecules, for example, NH_2 and CH_3 . Study and analysis of the data obtained may well help in an

understanding of photochemical processes, of the fundamental electrical structure of molecules, and in general of the mechanism of chemical reactions.

For this work it is necessary to have a powerful source of light to produce the spectra with sufficient intensity; expertly designed and constructed apparatus in order to separate the innumerable fine lines of the spectra clearly; and experienced workers to carry out the measurements and interpret the results.

To help in the advancement of this research, the Foundation granted in 1939, \$24,000 over the three-year period beginning July 1, 1939, to provide further equipment, especially materials for the construction of new and larger spectrographs, supplies, and additional personnel, including a research assistant, computer, and mechanic.

SPECTROSCOPIC AND CHEMICAL STUDIES IN CERTAIN DISEASES

Rockefeller Institute for Medical Research. Studies of certain anemias at The Rockefeller Institute for Medical Research under Dr. C. P. Rhoads have indicated that a principal factor in these diseases seems to be the presence of an agent which actively destroys the blood cells, rather than a failure of the body to produce them in sufficient numbers. The destructive substance

may enter the body from the outside, but may be due to a "conditioned deficiency," a deficiency in vitamins which reduces the body's ability to counteract the toxic effect of an ordinarily harmless substance within the body. The deficiency may exist in spite of suitable and adequate diet when the protective substance does not reach the proper place in a usable form; or specific vitamin needs may be greatly increased beyond the ordinarily adequate dietary supply because of chemical abnormalities of the body. Destruction of the blood in the circulation appears to be controlled by the amount of destructive substance in the blood, and the ability of the body to counteract it.

The spectroscope has been found to afford a simplified and time-saving method of analyzing and identifying the constituents of body fluids. An important part of Dr. Rhoads' work has been clinical and animal studies of what the body does with the substances which are toxic in certain circumstances. Through elaborate and precise chemical techniques, substances are isolated from the body fluids, the blood, urine, etc., and are studied in the spectroscope. It is hoped that this procedure will throw light on abnormalities in metabolism which upset the balance between the toxic and toxic-controlling substances in the body.

Evidence from other laboratories has indicated that chemicals derived from coal tar cause leukemia in mice. These compounds also cause cancer in mice; and these and similar chemicals are seen to cause anemia in man. The possibility of relationship between these chemicals and their action and effect in the body, and the problem of malignant disease in general suggested further study in this direction.

For these spectroscopic and chemical studies the Foundation granted to the Rockefeller Institute \$15,000 over a three-year period beginning January 1, 1939.

Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York. Before the close of the year 1939 Dr. C. P. Rhoads became director of the Memorial Hospital. As he did not wish to interrupt his research, and it was established that his research assistant and technician, toward whose salaries the Foundation was contributing, would continue with him, the grant to the Rockefeller Institute was cancelled as of November 1, 1939, and a new grant was made to the Memorial Hospital of \$11,465.45, the balance of the grant made previously to the Institute, for the period November 1, 1939, to December 31, 1941. The Institute will loan to Dr. Rhoads the spectroscope which he has been using, and which is necessary for the continuation of his work.

FELLOWSHIPS

Because of anticipated reductions in the fellowship program due to present world conditions, \$50,000 was appropriated in 1939 for fellowships in the natural sciences during the year 1940, as compared with \$140,000 provided for the year 1939. Eighty-seven per cent of the fellowships were granted for study in countries other than the fellow's own in 1939, but if war continues, the interchange between European countries and between European countries and America will be reduced to a very few instances, if not completely interrupted.

Thirty-five new fellowships were granted in 1939, of which two were to individuals who had held fellowships previously; and forty-two fellowships were carried over from the previous year. A total of seventy-seven advanced workers, therefore, were receiving training and experience in research through these fellowships during either all or part of the year.

The fellows represented eighteen different countries, and studied in seven different countries. The distribution of fellowships by countries of origin was as follows: from Great Britain, twenty-one; Denmark, Germany, and the Netherlands, five each; Peru and Sweden, three each; Czechoslovakia, France, Hungary, Latvia, and

Switzerland, two each; Bulgaria, Canada, Finland, Italy, Lithuania, and Norway, one each; and the United States, nineteen. Twelve fellows studied in England; five each in Denmark, the Netherlands, and Sweden; two in Switzerland; one in Canada; two in both the Netherlands and Denmark, and one in both England and Sweden; and forty-four in the United States.

The subjects in which these workers conducted their research covered a large number of the special fields in the natural sciences. They may be grouped roughly as follows: biochemistry, twenty-five; physiology, twenty-four; experimental biology and experimental embryology, four each; chemistry and physics, three each; genetics and biophysics, two each; and physical chemistry applied to biology, physico-biochemistry, histology, experimental morphology, endocrinology, tissue metabolism, filtrable viruses, cytology, plant pathology, and biomathematics, one each.

Besides the fellowships which it administers directly in the natural sciences, the Foundation has contributed to the National Research Council since 1919 for a fellowship program in the physical sciences (physics, chemistry, and mathematics), and since 1923 for fellowships in the biological sciences. In 1939, \$180,000 was appropriated to the Council for fellowships in the

natural sciences to cover the period July 1, 1940, to June 30, 1943, at a rate of not more than \$60,-000 a year.

From funds provided by the Foundation for the year 1939 the National Research Council supported fifty-four fellowships, thirty of which were carried over from the previous year, and twenty-four begun in 1939. Six fellows studied abroad, three in England, two in Germany, and one in Sweden. The fellowships were granted for research in the following subjects: zoology and botany, ten each; physics and astronomy, nine; chemistry, nine; geology and geography, seven; anthropology and psychology, six; and mathematics, three.

GRANTS IN AID

In addition to appropriations discussed in the preceding pages, which provided assistance for research projects in fields of the natural sciences over varying periods of years, the Foundation made fifty-eight grants in aid during 1939 to give short-term support to investigators who were undertaking promising new studies in certain of these fields or bringing work of importance to completion. These grants ranged from \$375 to \$7,500 and amounted in all to \$154,756.

All but three of these contributions were for the support of work in experimental biology or

of projects related to this field. Thirteen of the grants were for research in physics or physical chemistry having a bearing on biological problems, twelve for studies in biochemistry, nine for work in general physiology, five for research in genetics, four for research in embryology, four for studies in the chemistry of natural products, four for projects in molecular and mathematical biology, two for investigations of the effects of radiation on biological processes, one for studies in endocrinology, and one for work in nutrition. Of the three grants for projects falling outside the general program in experimental biology, one was for research in meteorology, one to make possible the completion of an improved differential analyzer under construction at the Massachusetts Institute of Technology, and one for the support of a special microfilm project in connection with the publication of the new journal, *Mathematical Reviews*.

The fifty-eight grants were distributed among the following countries: the United States, thirty-three; England, four; France, four; Denmark, three; Netherlands, Peru, Poland, Scotland, and Sweden, two each; Austria, Belgium, Canada, and Switzerland, one each.

The Foundation appropriated \$160,000 in 1939 to finance grants in aid in the natural sciences during the coming year.

GENERAL PROGRAM

AMERICAN MATHEMATICAL SOCIETY:

INTERNATIONAL MATHEMATICAL

REVIEW JOURNAL

In 1939 the Foundation made three appropriations in the field of the natural sciences for work not directly within its special sphere of interest — experimental biology. One of these was a grant of \$12,000 to the American Mathematical Society, to be available during the period July 1, 1939, to June 30, 1942, toward the establishment of an international review journal of mathematics to be published in the United States under the editorship of Professor Otto Neugebauer and Professor J. D. Tamarkin of Brown University. This journal is sponsored by the American Mathematical Society and by other scientific organizations. The Carnegie Corporation made an appropriation of \$60,000 toward the founding of the journal, and the American Mathematical Society and the Mathematical Association of America will each contribute \$1,000 a year toward publication costs. Brown University is providing the necessary office space and the services of the two editors. The subscriptions have come in at a very gratifying rate, and the journal already has a wider circulation than any other mathematical journal published.

The new journal will summarize and coordinate the mathematical research literature of the world. It will cover not only pure mathematics but also the many phases of applied mathematics in so far as they are of definite mathematical interest. It will appear monthly in a large double column format. The editors have brought together a group of over three hundred collaborators who will write the reviews. These persons have been chosen from practically all nations of the world and include leading specialists in all the most important fields of mathematical sciences.

Mathematical Reviews will be of interest and value not only to the mathematician but to theoretical physicists, astronomers, chemists, economists, and biologists. Advances in mathematical knowledge and techniques have for their ultimate field of application the whole range of quantitative science. Progress in all of the analytical and quantitative branches of science depends in a fundamental and limiting way upon advances in mathematics.

BROWN UNIVERSITY: ESTABLISHMENT OF A MICROFILM PHOTOGRAPHIC LABORATORY

A second grant made during the year in a field outside the regular program in the natural sciences went to Brown University for the installa-

tion of a microfilm photographic laboratory and the operation over a five-year period of a service for supplying microfilm copies of mathematical literature to scholars in all parts of the world. This appropriation amounted to \$49,500 and will be available until June 30, 1944.

Brown University has an excellent mathematical library of some eighteen thousand volumes. By establishing a microfilm laboratory it will be able to supplement these works with film material so that it will have a collection that will be essentially complete as a mathematical scholar's library, and it will be able to furnish microfilm or other photographic copies of any of the material in this collection on a cost basis.

The microfilm service will be an important adjunct to the new international journal, *Mathematical Reviews*, which has its headquarters at Brown University; for the journal will have full use of the laboratory facilities in order that it may offer, as a regular service to its subscribers, opportunity to obtain at cost a microfilm copy of the full text of any article abstracted and reviewed in its pages. The American Mathematical Society, which is sponsoring *Mathematical Reviews*, is arranging to procure satisfactory machines for reading the films, which can be supplied at low cost.

NATIONAL RESEARCH COUNCIL: SUPPORT OF GENERAL ACTIVITIES

The Rockefeller Foundation has contributed toward the work of the National Research Council over a period of many years. In 1939 it appropriated funds totaling \$61,956.54 toward the administrative budget of the Council and for the support of conferences and committees organized by the Council, for special studies, and for contributions to international scientific projects. Of this sum \$11,956.54 was appropriated for immediate payment to the Council to restore to it a balance of a previous grant toward its administrative budget which, through an inadvertency, had been refunded to the Foundation. The remaining \$50,000 was granted for use during the two years July 1, 1940, to June 30, 1942.

The National Research Council is an organization of the scientific men of America. It was established in 1916 by the National Academy of Sciences at the request of the President of the United States, and is supported by the cooperation of the major scientific and technical societies of the country and by special gifts. Its general purpose is to stimulate research in the mathematical, physical, and biological sciences and in the application of these sciences to engineering, agriculture, medicine, and other fields.

The Council is composed of nine major divi-

sions arranged in two groups. One of these comprises seven divisions representing, respectively, physics, mathematics, and astronomy; engineering and industrial research; chemistry and chemical technology; geology and geography; the medical sciences; biology and agriculture; and anthropology and psychology. The other group comprises two divisions representing, respectively, foreign relations and educational relations. With the divisions are associated various technical committees, appointed to have charge of projects undertaken by the Council.

The Council has as its aims to survey the larger possibilities of science, to formulate comprehensive projects of research, to develop effective means of utilizing the scientific and technical resources of the country for dealing with these projects, to promote cooperation in research in the United States and abroad, and to give encouragement to individual initiative as fundamentally important to the advancement of science.

FORMER PROGRAM

THE JOHNS HOPKINS UNIVERSITY: THE BIOLOGICAL SCIENCES

In 1930 the Foundation granted to the Johns Hopkins University for research in the biological

sciences \$387,500 over the period July 1, 1930, to June 30, 1940. The sums paid yearly by the Foundation were allotted by the authorities of the University to the undergraduate and graduate biological sciences of the University, and to the Department of Biology in the School of Hygiene and Public Health.

Also in 1930, the Foundation pledged the sum of \$500,000 as an endowment, to be paid on or before the expiration of the ten-year grant on July 1, 1940, on condition that an equal amount be designated by the University for the same purpose. As it had then received funds which could be devoted to this purpose, the University in the fall of 1939 set aside \$500,000 to match the Foundation's pledge. The Foundation, therefore, fulfilled its pledge by appropriating \$500,000 toward endowment of the Departments of the Biological Sciences of the Johns Hopkins University, payment to be made as of June 30, 1940.

YALE UNIVERSITY: LABORATORIES OF PRIMATE BIOLOGY

In the belief that long-continued observation of one or more of the primates most closely related to man would be of significance to the progress of the biological sciences in general, and especially for investigation of psychobiological, physiological, pathological, medical, and other

problems, many of which cannot be attacked with human subjects, a breeding and experiment station for chimpanzees was established near Orange Park, Florida, in 1929, with aid from the Foundation. A smaller anthropoid laboratory had been established earlier in New Haven for observation and study by workers at the University, and has been conducted as a part of the larger project.

The actual work of the experiment station at Orange Park was begun with a colony of about fourteen chimpanzees. The station has demonstrated that chimpanzees can be successfully reared in a subtropical climate, and in captivity. On June 30, 1939, the number of animals which had been born at the station totaled twenty-seven, of which seventeen were living. Because the life span of these apes is comparatively long (at least one animal is known to have lived to the age of thirty-five years in captivity), a thorough biological study of chimpanzees whose life history is completely known, is necessarily a somewhat deliberate affair. However, valuable information relative to the biology of the chimpanzee has accumulated steadily and at an increasing rate, and is now ample to form a background against which the specialized studies may be interpreted. Among research problems which have been attacked during this period are studies

in the physiology of reproduction, measurements of basal metabolism, studies of drug addiction, learning and memory, sensory capacities and perceptual abilities, social factors in behavior.

The close of the first decade afforded to the Yale Corporation and the incorporators of the Laboratories an opportunity for appraisal of the work already done and a restatement of objectives in the light of past progress. The appraisal recognized that the chimpanzee has special usefulness and importance for the advancement of research in several different fields because the brain, nervous system, and mental processes are structurally and phylogenetically close to those of man, and the sexual cycle and reproductive physiology of the chimpanzee are very similar to the human patterns. For the future, research will tend to be concentrated within the fields of general psychobiology, neuropsychobiology, psychopathology, biology of reproduction, and experimental sociology. In so far as practicable, the Laboratories plan to develop further their services to investigators elsewhere, in this country and abroad, through cooperative undertakings and common use of facilities, such as the loan, gift, or sale of animals, the furnishing of anatomical materials and physiological products, and provision at the Laboratories for visiting workers.

To accommodate the research program, and especially to make room for visiting investigators, another laboratory building is necessary. Early in 1939 the Foundation appropriated to Yale University toward its Laboratories of Primate Biology \$35,000 for the erection of a physiological laboratory at Orange Park, Florida, and \$189,000 toward expenses over a five-year period beginning with \$50,000 for the year 1939-1940 and decreasing yearly to \$25,000 for the year 1943-1944.

THE SOCIAL SCIENCES

THE SOCIAL SCIENCES STAFF

During 1939

Director

JOSEPH H. WILLITS

Associate Director

SYDNOR H. WALKER

Assistant Directors

TRACY B. KITTREDGE

STACY MAY

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THE SOCIAL SCIENCES

DURING 1939 The Rockefeller Foundation appropriated \$2,027,700 for support of its program in the social sciences. It is not possible to separate grants sharply into disciplinary fields, for the various recognized disciplinary fields are, fortunately, discovering that they are parts of one whole. But for purposes of convenient classification, the traditional fields have some indicative value and may, therefore, be used. The greater part of this sum was voted for the support of economic research of diverse kinds. The largest of the sums for economic research was for the National Bureau of Economic Research, to which appropriations totaled \$940,000, some of this amount being for support over a ten-year period. The Brookings Institution received a grant of \$225,000, this being for general support of its budget over a three-year period. Other institutions receiving assistance for economic research were the London School of Economics and Political Science, the University of Oxford, the Dutch Economic Institute, the University of Wisconsin, and the University of Pennsylvania.

For research and training in the field of government, especially public administration, grants totaled \$234,000. In this field support was voted

to the Social Science Research Council, the Graduate School of Public Affairs of Harvard University, Syracuse University, the University of California, and the University of Virginia.

For studies in the field of international relations, sums were voted to the Foreign Policy Association, the Council on Foreign Relations, and the Canadian Institute of International Affairs. These grants totaled \$85,100.

Grants to the Social Science Research Council amounted to \$270,000, for general support and for specific purposes.

The Foundation operates a fellowship program in the social sciences, chiefly for the development of able young workers in this field in Europe. For this purpose \$50,000 was appropriated in 1939. This was in addition to the sum of \$75,000 previously voted to the Social Science Research Council for the fellowship program which it operates in this country.

Finally, \$125,000 was appropriated for grants in aid to be made directly by the Foundation, in addition to the sum of \$25,000 appropriated to the Social Science Research Council for the same purpose. Grants in aid are relatively modest sums granted to individual scholars, within universities or organizations, who are working on a wide variety of topics. Their purpose is to permit, for example, the furnishing of interim support, dur-

ing temporarily abnormal circumstances; to supply small sums to complete minor but worthwhile projects, and to make exploratory investigations into problems which may subsequently be found to be desirable for support through regular appropriations.

INSTITUTIONAL GRANTS

SOCIAL SCIENCE RESEARCH COUNCIL NEW YORK

1. *Committee on Social Security.* — The Foundation appropriated \$60,000 to the Social Science Research Council over the two-year period July 1, 1940, to June 30, 1942, for work in the field of social security. Since 1935 the Social Science Research Council has had a separately financed Committee on Social Security concerned with the examination of the problems involved in social insurance and relief, the relations of the various social insurances to each other and to relief, and the effects of insurance and relief on economic stability. This Committee endeavors to envisage the problem of social security in its entirety with a view to integrating the field and initiating desirable research. The Committee has maintained contact with public officials and private agencies functioning in this area. Upon the completion of the task of coordination and

assembly, the results of research are brought to the attention of officials and others in a position to utilize them.

Four substantial books have been published, and two additional volumes are in preparation. The Committee's monographs, pamphlets, and articles have influenced other research in social security as well as aided in the development of governmental programs. In the period for which the current grant has been made the Committee expects to engage less in research projects under its own immediate direction and to devote its resources instead to planning, stimulating, and consultative activities. The foci of interest might be indicated as follows: (a) the economic implications of the social security and relief problems; (b) the relation of social security and relief programs to special types of economic insecurity; (c) the general administrative problems of social insurance and relief programs; (d) a series of special problems in unemployment insurance, old age benefits, unemployment relief, and public assistance; (e) the exploration of the desirability and feasibility of research concerning health insurance and medical relief matters.

2. *Committee on Social Security: Special Studies.* — For initiating a study of the interrelations between the social security program and the national income in the United States the Founda-

tion has appropriated \$15,000 to the Social Science Research Council for the use of its Committee on Social Security for a period of two years beginning November 1, 1939. This project is a step in the Committee's plan of focusing its attention in the immediate future on the economic implications of the social security plan. The fundamental statistics necessary for the understanding of the social security program were first developed; specialized projects are now in order. The new study will be closely linked with research upon the relation between the social security program and national income. The Foundation has been supporting research into national income as part of the program of the National Bureau of Economic Research. Close collaboration of the two groups is assured and the project has also the assurance of active support by the Social Security Board.

3. *Committee on Social Security: Fluid Fund.*— An appropriation of \$15,000 was made to the Social Science Research Council for the use of its Committee on Social Security for a period of approximately one year for organizing exploratory studies, conferences, and small projects in the field of social security. Similar funds in the past have enabled the Committee to operate with desirable flexibility and to provide for a series of undertakings, each small in itself, but

as a group important in contributing to the broad program of the Committee. With the new emphasis upon the stimulation, rather than the actual performance, of research the fluid fund will be employed chiefly for the support of conferences and for the preparation of memoranda critically appraising the present status of research and proposals for future research.

4. *Public Administration Committee.* — The Foundation appropriated \$60,000 to the Social Science Research Council over the two-year period July 1, 1940, to June 30, 1942, for the use of its Public Administration Committee. The Committee has undertaken a series of substantial studies grouped under two general headings: (1) administrative problems of new and emerging governmental activities; and (2) appraisal and review of significant developments in administration during the last three decades.

A considerable portion of the energies of the Committee has been devoted to charting areas of needed research and stimulating scholars in the fields concerned to undertake such research. After the studies now under way have been completed, the Committee proposes to emphasize the planning and stimulation rather than the execution of research.

5. *Public Administration Committee: Fluid Fund.* — For exploratory studies, conferences, and

small projects in the field of public administration, The Rockefeller Foundation made a grant of \$15,000 to the Social Science Research Council for the use of its Public Administration Committee for a period of approximately one year. Such fluid funds when provided in the past have been used for exploring the possibilities of larger research ventures, calling groups together for conferences that would help develop useful programs, and support of small projects of importance to the larger strategy of the Committee's activities.

6. *Administrative Budget.* — The Foundation appropriated \$105,000 to the Social Science Research Council for general administrative expenses during a period of three and one-half years beginning January 1, 1940. The Council is organized as a planning body representing the entire area of the social sciences and concentrates upon the stimulation and direction of research. During the past fifteen years it has undertaken to promote work in neglected fields, to improve research methods, and to develop satisfactory research personnel. There has been a conscious effort to stimulate cooperation among the several disciplines in the social sciences. The Council disburses funds for fellowships, grants in aid, and specific programs, but its chief function is to provide leadership in social research.

To accomplish its program the Council has a permanent secretariat and numerous committees of more or less permanent structure which plan research in selected areas. A relatively large proportion of the funds at the disposal of the Council is expended upon committees and conferences. The present grant is for the maintenance of a central secretariat in New York whose regular members are supplemented from time to time by special technical personnel.

NATIONAL BUREAU OF ECONOMIC RESEARCH

1. *Research and Cooperative Programs.* — The Foundation appropriated \$870,000 in 1939 to the National Bureau of Economic Research toward its general support over a ten-year period beginning January 1, 1940.

As a national center of economic research, the Bureau has for twenty years cooperated with governments, universities, learned societies, and individuals in conducting exact and impartial investigations in the field of economic, social, and industrial problems. Its Board is composed of men of widely different interests and points of view; its research staff is drawn from the faculties of various universities. Publications up to the present include more than forty major titles and seventy bulletins.

The program of the National Bureau is con-



Photograph Excised Here

Studies published by the National Bureau of Economic Research.

cerned with such central economic subjects as production, changing productivity, national income and its distribution, wages, profits, professional incomes, the proportions of national income which go for consumption and savings, gross and net capital formation and obsolescence, the behavior of prices and credit, especially consumer credit, bond yields and bond prices, the ebb and flow of trade unionism — and, underlying all, the fluctuations of prosperity and depression. This program, which involves continuing study of the dynamics of economic change, has developed significantly over a score of years.

The National Bureau is a coordinating body as well as an independent research agency. Since 1935 it has increasingly emphasized interinstitutional cooperation in economic research by drawing together university faculty members who are working on a particular problem.

Three functions of the Bureau stand out: the execution of a program of research initiated and developed by the Bureau itself; the occasional pursuit of research projects originating externally, or at least initiated not wholly by the Bureau itself as a part of its own integrated program; and finally, the sponsoring of continuing conferences, such as those on prices, on national wealth and income, on financial research, and on

fiscal policy, by which leading technical workers in an area — men and women with a variety of methods of work, of experience, and of points of view — are brought together to plan research and division of labor in research more intelligently.

2. *Financial Research.* — For the support of the staff and studies of the Committee on Financial Research over a two-year period beginning in January 1940, the Foundation appropriated the sum of \$70,000. The cooperative financial research program, begun in 1937 at the suggestion and with the support of the Association of Reserve City Bankers and with the active co-operation of government specialists, will be continued. The first study, "Consumer Credit and Installment Financing," was completed during the winter of 1939-1940. The results of this study are expected to lead to a better understanding of credit problems in a relatively new area of banking and finance and to the development of higher credit standards and sounder supervisory policies. The project brought together a research staff composed of economists from the Federal Reserve Board, Harvard and Columbia Universities, the University of Pennsylvania, and Swarthmore College.

A second study, now well under way, is concerned with the market record of domestic corporation bonds for the period 1900-1939, and is

being carried on with the cooperation and financial support of several federal government agencies and private financial advisory services. The results should furnish useful materials for the development of higher standards and better investment procedures by banks and investors generally.

Plans for a third study, "The Changing Financial Requirements of American Business," have been completed and will be executed with the collaboration and support of the Association of Reserve City Bankers and the cooperation of government agencies and numerous individuals interested in this field. Changes in financial structure from 1900 to 1939 will be analyzed.

Taken as a whole, these studies should lead to a clearer understanding of the ways in which financial organization and policy, public and private, affect economic maladjustment and depressions.

BROOKINGS INSTITUTION

To the Brookings Institution there was appropriated the sum of \$225,000 toward the support of its general program after July 1, 1939, for three years, with the understanding that not more than \$75,000 shall be expended in any year. The Brookings Institution was created in 1928 through the consolidation of the Institute of Gov-

ernment Research, the Institute of Economics, and the Robert Brookings Graduate School of Economics and Government into a single organization. The program includes the development of organized research and training for research in various divisions of the social sciences, the facilitation and stimulation of scientific activities in the country as a whole, and constructive leadership in the solution of economic, social, and political problems. The Institution was designed to serve as a center through which the resources of Washington could be made available to visiting scholars from all over the world.

In the twelve years since its establishment the Brookings Institution has been chiefly productive in the area of economic research. Publications have been predominantly economic and have concerned questions of prime public importance. The Institution, in cooperation with some twenty of the country's leading universities, provides an opportunity for postdoctoral students who desire a period of work in Washington under the direction of the experienced staff of the Institution. About fifteen fellowships are made available annually.

COUNCIL ON FOREIGN RELATIONS

For a number of years the support of certain national centers for the study of international

problems has been an important part of the Foundation's program in the social sciences. With such assistance Chatham House in London, the Centre d'Études de Politique Étrangère in Paris, three Scandinavian centers, the Council on Foreign Relations and the Foreign Policy Association in New York, as well as centers in Canada, Australia, Rumania, and Poland, have developed programs of study, research, and publication. There has been considerable co-ordination of effort and communication among these organizations.

In 1939 the Foundation made a grant of \$44,500 to the Council on Foreign Relations toward the support of groups engaged in the study of problems involved in the present war and in the peace settlement to follow. The Council, with headquarters at 45 East 65th Street, New York City, is a nonpartisan and noncommercial organization whose program of research, study, and publication is directed toward promoting intelligent thinking upon American foreign policy. Its membership, limited by charter to 400 resident and 250 nonresident members, is composed of men of many professions with a variety of interests and views. Conferences and special meetings are also included among the Council's activities.

Its regular publications are the quarterly re-

view, *Foreign Affairs*, and two annuals, *The Political Handbook of the World* and *The United States in World Affairs*. The Council also stimulates and publishes special studies on international questions.

In view of the war in Europe, the Council on Foreign Relations has organized special groups for studying the course of the war and the effect of hostilities upon the United States, with the purpose of working out concrete proposals designed to safeguard American interests in the settlement which will be undertaken at the close of hostilities. The special groups are unified through a central planning committee.

CANADIAN INSTITUTE OF INTERNATIONAL AFFAIRS

The Canadian Institute of International Affairs, Toronto, has received \$30,600 (Can. \$30,000) from The Rockefeller Foundation for its general budget during the three-year period July 1, 1939, to June 30, 1942. This Institute has just celebrated its tenth anniversary as an unofficial and nonpartisan organization for the study of British Commonwealth and international affairs and their relation to Canada. Its position and procedure are similar to the Royal Institute of International Affairs (Chatham House), London, with which it is affiliated.

The Canadian Institute is, however, organized on a federal basis adapted to conditions in Canada and has seventeen branches from Halifax to Victoria, with a membership representative of widely different communities. It is responsible for Canadian collaboration with the Institute of Pacific Relations and the International Studies Conference and also maintains close contacts with the Foreign Policy Association and the Council on Foreign Relations, New York, through joint research undertakings and study groups. The general objective of the Institute is to create intelligent public opinion in Canada on international affairs. Study groups, lectures, and publications furnish the material for the discussion in which the Institute members participate.

Even though Canada has become involved in the war, the Canadian Institute of International Affairs expects to continue its activities with two goals in mind: (1) the maintenance of a completely free and balanced discussion in its private branch meetings and study groups; (2) the concentration of its activities, through research, discussion groups, speakers' programs, and public education, upon the problems of the settlement that may come after the war and the effect of the war upon Canada. The Institute serves as a clearinghouse for Canadian institu-

tions which will carry on research on peace and war conditions.

FOREIGN POLICY ASSOCIATION, NEW YORK:
LATIN AMERICAN INFORMATION SERVICE

The Foundation has contributed to the Research Department of the Foreign Policy Association for a number of years, as well as to certain experimental programs which it has initiated. Recently the Foreign Policy Association has undertaken to develop a specific Latin-American program of research and educational activities. For some time its staff has included an expert responsible for research and publication on Latin America. Reports on Latin America have been issued, and among its "Headline Books" series there appeared in 1939 the survey entitled, *The Good Neighbors, the Story of the Two Americas*.

An appropriation of \$10,000 was made in 1939 to the Foreign Policy Association for the support of a single development of the Latin-American program, the publication of "Pan American News," in the period from September 1, 1939, to December 31, 1941. The "News" takes the form of a fortnightly letter similar to the "Washington News Letter" now prepared by the Foreign Policy Association for the National Peace Conference. The "Pan American News" goes to newspapers and cultural and educational institu-

tions in both the United States and Latin America. The digest for distribution in the United States is based upon study of selected Latin-American newspapers supplemented by information obtained directly from other sources. The material includes direct quotation from the papers of Latin-American countries and selection of interpretative material. The news letter, in mimeographed form, is offered for subscription to various groups and individuals as inexpensively as possible. The Latin American Information Service also plans to provide a news letter in Spanish and Portuguese for distribution to leading Latin-American newspapers and cultural and educational institutions, presenting an objective review of outstanding developments in Washington affecting American foreign policy, with particular attention to issues of interest to Central and South American countries. The first issue appeared February 1, 1940.

UNIVERSITY OF WISCONSIN

The Foundation appropriated \$29,100 to the University of Wisconsin, available during the two-year period beginning October 1, 1939, for a study of the amount and distribution of income within Wisconsin. National income estimates up to comparatively recent years have been limited to crude over-all approximations available only

at intermittent dates. Measures have been developed, however, in the last two decades providing significant breakdowns of the national total and available annually over a substantial period of time. The continuing availability of this body of knowledge is basic in efforts to place the study of economic processes and economic policy upon a factual foundation.

Although the estimates of national income in this country are now held to be fairly dependable, further refinement is needed if the accuracy and serviceability of this knowledge is to be what it should and can become. Information as to distribution of income by size is largely limited to income of persons in the higher income brackets. In addition to accurate knowledge of income in the lower brackets, better breakdowns of the origin and distribution of income in various parts of the country are needed. The Wisconsin data cover substantial parts of the income distribution not covered by federal data and it is the intention to explore them as thoroughly as possible.

The University of Wisconsin and the Wisconsin Tax Commission have already spent approximately \$200,000 in preparing and analyzing income data collected by the Commission, under a Works Progress Administration grant. The study for which a Foundation grant is now made

is to be built upon this earlier study and to utilize its results. The work is under the supervision of the University of Wisconsin and will be directed by the Wisconsin Income Committee.

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

The Foundation made an appropriation of \$51,250 as an emergency grant to the London School of Economics and Political Science. Owing to the war, an appreciable loss of income from tuitions was handicapping the activities of the School. The war had also made it necessary to move the physical headquarters out of London. The present grant is considered an emergency one, and is given to insure the continuity of the work of the School so far as is possible in view of the war situation.

As a center of research in the social sciences, the London School, a division of the University of London, has a unique status among British institutions. Last year the School published an extensive review of its development during the past fifteen years, which included the erection of new buildings, a new library, enlarged book collections, new equipment, new professorships, new courses of instruction, new projects in research, and a greatly enlarged endowment. Of a total of 3,000 students over 700 were registered

from countries outside Great Britain. Of the 300 postgraduate and research students, about half come from foreign countries. The international character of the School is evidenced by the equally wide distribution of its graduates. An internationally recognized staff includes seventy-six full-time teachers in "normal" times.

DUTCH ECONOMIC INSTITUTE

In spite of the hazards to scientific work which the war creates, a grant was made in the latter part of 1939 to the Dutch Economic Institute hoping to enable it to continue at full activity. The sum of \$18,000 was appropriated to this Institute toward its general budget for the three-year period beginning September 1, 1939.

The Dutch Economic Institute has all of the Netherlands for its laboratory. It has established cooperative relations with government and with business and has access to essential data for the study of Dutch economic problems. Leaders of industry and labor are members of its Board. In the eight years of its existence the Institute has published studies on wholesale and retail prices in the Netherlands and Belgium, on seasonal cycles of economic life in the Netherlands, on specific industries, on expansion of public works and the resulting effect on the national economy and public finances, on the quantitative relation

between public and private investment, on mortgage companies and urban real estate financing, and on the age of capital goods as an index of a moving equilibrium. The Institute has published regularly an *Economic Statistical Monthly Review*.

The new grant is intended to enable the Institute to complete various projects on which work has already been begun and to proceed with a new program of studies of the financial and capital structure of the Netherlands. There are projected a number of studies on the effect of the war, particularly of the blockade, upon the economic life of the Netherlands.

UNIVERSITY OF PENNSYLVANIA: INDUSTRIAL RESEARCH DEPARTMENT

The Industrial Research Department of the University of Pennsylvania received a grant of \$11,000 for a study of old Philadelphia business records and a study of the character of persistent unemployment in Philadelphia between 1919 and 1939.

A well-known business concern (The A. P. Wetherill Company) in continuous operation from 1777 to the present decade has donated its complete records up to 1900, including its dealings with other enterprises — wholesale, retail, and manufacturing — to the Industrial Research Department of the University of Pennsylvania.

These materials will afford an opportunity to study the way in which wages, hours, employment, costs, production, prices, profits, stocks, and many other factors have interacted over a long period of time, and especially before, during, and after depressions and also during and after great wars. It is expected that subsequent records of this company up to the time of this depression will be made available to the Department.

The other study involves the analysis of available Philadelphia labor market materials collected over a period of ten years. To understand the nature of the "hard core" of unemployment which is likely to remain, the character of persons unemployed and the reasons for the unemployment must be studied not only extensively on a national basis but intensively in local labor markets. This intensive study is possible because of the availability of rich materials upon the Philadelphia labor market; their interpretation and analysis should throw light on relief and social security policies.

UNIVERSITY OF OXFORD: TRADE CYCLE RESEARCH

The University of Oxford was given a grant of \$4,250 toward the cost of completing a program of trade cycle studies.

A series of research projects related to the problems of the trade cycle in England in the

postwar period was outlined late in 1936 by the Economic Research Group at Oxford, and work has proceeded since 1937. These projects included a study of capital market fluctuations and labor market fluctuations; a cooperative investigation into British business activity since 1924 and the influence of variations in interest rates on economic activity; and a study of the origin and course of recovery in British economic activity since 1931. Four volumes have already been published.

The trade cycle program has been mainly concerned with fundamental statistical investigations and with empirical studies of the actual behavior of entrepreneurs at different phases of the trade cycle. An effort has been made to check the assumptions of business cycle theory in the light of experience subsequent to the World War.

UNIVERSITY OF CHICAGO: SCHOOL OF SOCIAL SERVICE ADMINISTRATION

A grant of \$60,000, on a matching basis, was made to the University of Chicago toward the budget of the School of Social Service Administration over the three-year period July 1, 1939, to June 30, 1942. Interest in the development of the School dates from 1926, when its opportunity for leadership was recognized. It is a division of graduate education in the University of Chicago, and has set standards accepted throughout the

country both as to admission requirements and curriculum content. The School has provided personnel for the public welfare programs, which have expanded in an unprecedented manner within the past five years, and also faculty for new training schools which have sprung up to meet the increased demand for social workers.

In a ten-year period (1928-1938) the full-time student enrollment increased from 95 to 729. The students come from every state in the United States, from Alaska, Hawaii, Puerto Rico, Cuba, Canada, and various European countries.

Social research is an integrated part of the School's program, and several publication series, which include the *Social Service Review*, the "Social Service Series," and "Social Service Monographs," have been inaugurated. The *Review* is a scientific quarterly journal with a subscription list of nearly two thousand. The "Social Service Series," begun in 1925, was planned as a pioneer collection of source materials. Of the "Social Service Monographs," thirty-three volumes have been published in the past seven years.

SYRACUSE UNIVERSITY: SCHOOL OF CITIZENSHIP AND PUBLIC AFFAIRS

In 1939 The Rockefeller Foundation made a grant of \$50,000 to Syracuse University on a contingent basis for use by its School of Citizenship and Public Affairs in conducting a training

course in public administration over a period of five years beginning July 1, 1939.

Among American universities, Syracuse University has pioneered in offering graduate training designed to equip college graduates for public careers. Up to 1939 there were ninety-nine graduates, most of whom entered and remained in the public service field.

The courses at Syracuse are oriented from the point of view of the practical administrator who must know something about many fields, and they deal essentially with administrative procedures. The School attempts to give the student some knowledge of the entire range of administrative procedure instead of concentrating upon two or three specialized areas.

The course at Syracuse represents only one of a variety of experiments in training for public administration. The School of Citizenship is cooperating in the introduction into professional schools of courses in administrative procedure covering such subjects as social work, forestry, civil engineering, and public health, and is also active in preparing teachers' handbooks.

UNIVERSITY OF CALIFORNIA: BUREAU OF PUBLIC ADMINISTRATION

The sum of \$30,000 has been appropriated to the University of California for the use of its Bureau of Public Administration in establishing

measurement standards for local government activities in the San Francisco-Oakland metropolitan region over a three-year period beginning July 1, 1939. The functions of government that will be studied are: fire protection, welfare activities, police protection, public works relating to streets (including construction, maintenance, lighting, and cleaning), public health, library service, public personnel, city planning and zoning, finance-bonded indebtedness, and finance-tax delinquencies.

Previous attempts to construct standards for measuring local government efficiency have proved ineffective because of inadequacies and lack of standardization in public records and accounting, the unwillingness of public officials to cooperate, the many variables in the background conditions from one jurisdiction to another, and the difficulty of devising significant indices of efficiency. The present project, however, promises results both because the area under consideration is favorable for this type of study, and because certain types of basic data have already been collected and are available. If this study successfully surmounts obstacles inherent in the problem it is attacking, it should provide a model that has long been awaited and which should find wide use throughout the country.

**HARVARD UNIVERSITY: GRADUATE SCHOOL
OF PUBLIC ADMINISTRATION**

The Foundation provided \$55,000 to Harvard University toward the annual budget of its Graduate School of Public Administration over a period of five years beginning July 1, 1940. This School was organized in 1937 for the purpose of developing and coordinating University interests in training for public administration and in promoting research in that field. The Department of Government of Harvard University, which had been conducting a training program in public administration, was formally merged with the Graduate School of Public Administration in 1939. The School has the status of a separate entity within the University, but its faculty in general have dual appointments in other schools or departments. The School is housed in the new Littauer Center of Public Administration.

Public administration at Harvard is regarded as related primarily to the formulation of public policy rather than as a special discipline dealing with administrative organization and procedure. Research seminars are organized around such topics as agricultural, forestry, and land policy, the economics of collective bargaining, fiscal policy, government control of private enterprise, the legislative process, political parties, price

policies, public contracts, federal administration. These research seminars make continuous use of consultants recruited from men who have had practical experience in dealing with the problems under discussion.

There have been eighteen graduates of the School of Public Administration, of whom fifteen hold responsible administrative positions in government. The University now offers a doctorate in political economy and government.

UNIVERSITY OF VIRGINIA: BUREAU OF PUBLIC ADMINISTRATION

The University of Virginia was given \$24,000 toward support of its Bureau of Public Administration over a four-year period beginning July 1, 1940. This Bureau is now in its fourth year of operation, under its reorganized and reoriented program of public administration research.

Toward the end of 1938 the Governor constituted the Virginia Council on Public Administration, composed of the presidents of the University of Virginia, the College of William and Mary, and the Virginia Polytechnic Institute, the deans of Washington and Lee University and the University of Richmond, and the ranking heads of the official research agencies of government within the State. The staff of the Bureau of Pub-

lic Administration has been officially designated as the Council's secretariat, although the Bureau remains a part of the University of Virginia, which provides its quarters and budget.

Under the Council's direction the Bureau has embarked upon a program of research that will serve as a guide to governmental agencies in promoting the welfare of the Commonwealth. The task of the Bureau is to find research men within the State who are willing and competent to undertake such studies, to facilitate their efforts in every way, and to see that the findings are put into a form most likely to be useful to government officials and citizens.

The Bureau has completed ten substantial studies on matters of importance in Virginia affairs. A larger number of studies are in progress, with the active cooperation of representatives from eighteen separate institutions within the State. In addition, a number of unpublished studies have been completed as service jobs for governmental officials or agencies.

FELLOWSHIPS

In 1939 the Foundation appropriated \$50,000 for the support of fellowships in the social sciences during the year 1940. It also administered fifty-eight fellowships in this field from funds

which had been allocated previously. Of these fifty-eight fellowships, twenty-one were new appointments in 1939, two were reappointments, and thirty-five were carried over from the previous year.

The countries represented by the men and women who worked in the social sciences under this 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.....	19	Australia.....	3	England.....	2
		Bulgaria.....	2	Latin America....	4
Public Administration.....	6	Canada.....	1	Scandinavian Countries.....	2
Economics.....	27	Denmark.....	2	Switzerland.....	2
Social Work.....	3	France.....	2	United States.....	47
Sociology	1	Germany.....	1	Several European Countries.....	1
Cultural Anthropology.....	2	Great Britain.....	5		—
		Greece.....	1		—
		Lithuania.....	1		—
		Mexico.....	2		58
		Netherlands.....	2		
		Norway.....	1		
		Poland.....	3		
		Rumania.....	2		
		Sweden.....	2		
		Switzerland.....	5		
		United States.....	21		
		Yugoslavia.....	2		
			—		
			58		

From funds provided by the Foundation for fellowships during the period April 1, 1938, to March 31, 1941, the Social Science Research

Council administered fourteen postdoctoral research training fellowships and thirty-five predoctoral field fellowships during the year 1939. Twenty of these fellows continued their work from 1938; twenty-eight began their studies in 1939, and one in January 1940. Of the Council fellowships forty-seven were granted to citizens of the United States and two 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>Subject of Study</i>	<i>No. of Fellows</i>	<i>Country of Study</i>	<i>No. of Fellows</i>
Political Science.....	10	United States.....	28
Economics.....	23	England.....	9
Economic History.....	1	Nigeria.....	2
Social Psychology.....	1	Sweden.....	2
Clinical Psychiatry.....	1	Switzerland.....	2
Geography.....	2	Canada.....	1
History.....	5	France.....	1
Anthropology.....	6	Japan.....	1
	—	Mexico.....	1
	49	Timbuctoo.....	1
		Turkey.....	1
			—
			49

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	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	Total
Rockefeller Foundation....	177	43	44	73	60	44	53	35	22	24	29	21	625	
Social Science Research Council.....	61	25	28	25	30	15	13	13	19	12	21	29	291	916

GRANTS IN AID

The Foundation administered twenty-six grants in aid in the social sciences in 1939, the amounts ranging from \$400 to \$7,500 and totaling \$97,965. These grants were distributed among eleven nations: England, four; Switzerland, three; Australia, Denmark, Finland, France, Germany, Poland, Rumania, and Sweden, one each; and the United States, eleven.

Over half of the grants were concerned with problems in international relations, direct research activities constituting nearly three-quarters of the projects aided. Research into problems of balance of power policy, into neutrality, diplomatic relations, regional federation, and refugee adjustment were among the timely topics. Several conferences to discuss international problems were also supported.

Among the remainder, grants were made to finance income studies, including several income-tax studies, business cycle studies, Latin-American studies, social security studies, a project in

public administration, and one in industrial relations.

The grants in aid were practically equally divided between projects under the auspices of American and of foreign universities, but in the case of grants in aid to research institutes and national committees (nonuniversity) the distribution was nearly two to one in favor of the foreign agencies. This is largely due to the war conditions in Europe, where it is only possible to support certain institutions on a year to year basis, and for projects of limited extent which can be completed within a given time.

THE HUMANITIES

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THE HUMANITIES

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THE HUMANITIES

IT IS the peculiar function of the humanities to help maintain a balance of values. Today their opportunity is unusually great to promote human welfare by widening the channels of communication and by protecting the sources that sustain moral, spiritual, and intellectual vitality. Facts of the present press upon our knowledge of mankind from past generations so insistently that proportions may easily be lost. Some nations have yielded to this pressure: all are affected by it. More than ever, the humanities should now draw on past and present to outline the future, by increasing the appreciation of man and his qualities and by stimulating individuals to free expression.

The work of The Rockefeller Foundation in the humanities during 1939 followed the pattern of earlier grants directed toward the development of a wider diffusion of knowledge and a freer expression of individual abilities through the arts. The program deals with the possibilities of print, film, and radio for improved cultural communication among nations; the control of languages to serve universal needs for the exchange of ideas; and the cultivation of regional and national inter-

pretations of American life through the arts of drama.

Progress toward these aims appears in grants of the year. Many of these are the outcome of earlier work aided by smaller grants and by fellowships. In drama, the strength of the independent theatre in all parts of the United States now assures a steady development of creative work. The Federal Theatre opened avenues that are being used by the National Theatre Conference and the Dramatists Guild to give American drama a new regional character. National organizations to direct noncommerical uses of film are now ready not only for distribution but for production and for international exchange. Film is being linked to theatre as universities extend their training in playmaking to script writing, while many of them regularly produce by broadcast as well as on the stage. Indeed, the most rapid development of program has been in radio, through studies of its influence and potential values to society. This research already demonstrates the importance of efforts to bring this new means of communication into use with the same freedom and diversity as the printed page, the documentary film, or the staged play.

Less rapid but as significant for the future of cultural interchange are developments in the field of language. We now have sufficient personnel

in American universities to stimulate Chinese studies in various fields of contemporary importance. General projects are becoming feasible as research in language touches primary sources. To a less degree the same is true of Japanese studies and of Russian. The survey courses on the Far East for first- and second-year students in our universities are yielding materials that will be useful in colleges and thereafter in secondary schools. As production of materials in English increases, the claim of the Far East on the attention of this coming generation will be realized. Similarly, though of a less degree, there is a growing knowledge of Latin-American culture. For this extension of American understanding throughout both continents, there is need for easy use of the essential languages by scholars who desire to transmute learning into common knowledge for all.

It is for such purposes that The Rockefeller Foundation's program in the humanities will continue its aid to language projects and to applications of language control for international communication involving the use of English, Spanish, Chinese, Japanese, and Russian. To a certain degree this will undoubtedly require parallel work for development of libraries and archives, and some satisfactory beginnings have been made during the year with plans of this nature.

DRAMA

NATIONAL THEATRE CONFERENCE: FELLOWSHIPS FOR ADVANCED TRAINING IN DRAMA

The Foundation has contributed toward the advancement of American drama by assisting a few universities and other organizations to extend their facilities for training men and women for leadership in the field of the theatre. In 1939 aid of this kind was given through a grant of \$25,000 to the National Theatre Conference to enable it to provide fellowships during a period of three years for persons of demonstrated ability preparing for careers as directors or technical workers in nonprofit community or university theatres.

The National Theatre Conference is an organization of limited membership representing the interests of the independent theatre and of drama in education. It has been in existence since 1932 and now has national offices in Cleveland, Ohio, at Western Reserve University. Originally it set out to act in an advisory capacity to all nonprofessional dramatic groups through nine regional offices in various parts of the country, to raise the standard of work of these groups, and to open professional outlets for graduates of university departments of drama. Since 1935 it has concentrated its efforts on the development of

higher standards of training in the theatre arts in the graduate schools and on advisory service to all schools, colleges, settlement houses, and rural drama groups.

Because of the growing demand in the United States for personnel of administrative and technical ability to direct such work in drama, the Conference now proposes to maintain a fellowship program to train men and women for posts through advanced study. It expects to make about seven awards a year. During their periods of study the fellows will work in community or university theatres accredited by the Conference.

The first committee appointed to direct the fellowship program of the Conference included Paul Green of the University of North Carolina, Frederic McConnell of the Cleveland Playhouse, Allardyce Nicoll of Yale University, John Dolman of the University of Pennsylvania, and E. C. Mabie of the University of Iowa.

STUDIO THEATRE SCHOOL, BUFFALO: SCHOOL AND COMMUNITY PROGRAM IN DRAMA

A number of centers throughout the United States are doing significant work in demonstrating the place of drama in community life. One of these, the Studio Theatre School in Buffalo, New York, received a Foundation grant in 1939 to assist it in expanding its teaching services. This

School, now in its thirteenth year, is providing training in theatre arts through courses of study and participation in its annual productions.

The School is incorporated as an educational institution by the New York State Board of Regents. It aims to give the public an understanding and appreciation of the theatre and to develop individual talents in dramatic arts. Its interests are entirely nonprofessional; its instruction is on the professional level, however, and many former students are working in the commercial theatre, in radio, in adult education, or as teachers in public schools.

Throughout the academic year the School offers regular courses in theatre arts for students in the University of Buffalo, for pupils of the elementary and high schools, and for adults. The School also gives extension courses for the employees of large business organizations and of city institutions. Tuition fees cover a part of the running expenses of the School.

The full-length productions of the School are given by advanced students and nonprofessional actors of the community. These productions are supported by the dues of some 950 subscribing members and by individual admission fees. Nine plays, classical and modern, have nine or ten productions each during a winter season. The School also maintains a summer theatre where

public performances and courses in drama are given from June to September. During the past twelve years over four hundred persons have acted in seventy-nine full-length School plays in public performance, and more than a hundred have worked on costuming, stage design, scene building, and painting.

Two years ago, with the aid of subscriptions from over two thousand residents of Buffalo and the vicinity, the School purchased and remodeled a building suited to its work. This provided a theatre and workrooms of ample size. But \$23,000 remained to be paid on the property, and the annual interest on this sum, together with the payments for debt retirement, left the School with insufficient funds from income for the necessary increase of staff. The Foundation therefore made a grant of \$25,000 to the School to enable it to pay off the debt and to purchase essential equipment. The resulting release of income for operating expenses permits the School to strengthen its staff and insure the continuance of teaching and production on a high level.

**STEVENS INSTITUTE OF TECHNOLOGY:
CONTROL OF SOUND AND LIGHT FOR
DRAMATIC PURPOSES**

The reaction of an audience to a stage play is strongly influenced by the lighting and sound

effects employed in its production. In the modern theatre the use of controlled light to create mood and atmosphere has reached a high degree of development, but only recently has serious attention been given to the potentialities of controlled sound as a means of stimulating the emotional response of the audience. Although resonating contrivances, explosions, and crashes have been employed in the theatre from the early days of the drama, the users of these devices have been concerned with variety in sound rather than with its scientific control. This lag in the development of an important aid to dramatic effectiveness has been largely the result of the limitations to control inherent in the sources of sound.

At Stevens Institute of Technology, during the past few years, Professor Harold Burris-Meyer and his associates have been testing methods for controlling sound in the theatre so that it may be as dramatically useful as light. They have developed a technique whereby they can greatly increase the artistic and dramatic effectiveness of a play through control of the intensity, source, and quality of any sounds. Further research is needed, however, on the techniques of sound production and control; also, before the dramatic use of controlled sound can be put to general use there must be careful measurement of the physical and psychological

effects of sound upon audiences. To assist Professor Burris-Meyer in continuing his investigations during the three-year period beginning July 1, 1939, the Foundation made a grant of \$30,000 to Stevens Institute of Technology.

By observation of the reactions of individuals and of large groups during repeated testings Professor Burris-Meyer will collect data on the part that sound may have in the total effect of the sensory appeals of the theatre. His further work on the mechanical and physical conditions of sound control will include experiments on stages in New York City and in academic theatres of the nearby areas. Substitution of light effects for stage sets will also be employed in some productions, with the purpose of developing techniques to reduce production costs while giving the artist a more flexible mode of stage expression.

VASSAR COLLEGE: HISTORY AND INDEX OF THE WORK OF THE FEDERAL THEATRE

The Federal Theatre was established as one of four undertakings in the field of the arts with the central aim of relief. Its operations began in August 1935 and were concluded on June 30, 1939. The artistic aim of the project was to reach the entire country with a program of play production. During the four years of its existence it expended approximately \$30,000,000. Ninety

per cent of this sum was for labor costs on the relief basis, with a maximum of 13,700 persons on the employed lists. Only 35 per cent of the productions had entrance charges, and these were kept at low levels; yet over \$2,000,000 was paid in by the public in admission fees, or sufficient to cover all but the labor costs of the project.

While the Federal Theatre was in operation, 2,560 persons on its rolls who had formerly been employed by commercial theatres returned to their professional status or received assignments in radio or film studios. A fair number of others obtained posts as teachers in community work or in professional schools.

Apart from the value of its relief aspects, this government project created a new tradition in the American theatre that may have nation-wide influence. If this is to be so, it is necessary to make use now of opportunities to conserve the results of the project. It is clearly in the interests of the theatre and of the fine arts in general that a permanent record of the project be compiled and that the valuable material collected in the course of its operation be made available to educational, civic, and other groups.

Vassar College, which has on loan from the government a full set of Federal Theatre records, is sponsoring the preparation of a complete factual history of the project and an index of the

materials in its records. Professor Hallie Flanagan of the faculty of the College, who was director of the Federal Theatre for the entire period of its existence, will write the history. Mr. Emmet Lavery, former director of its National Service Bureau, will compile the index and prepare bulletins on the material in the records. The Foundation has made a grant of \$17,500 toward the expenses of these undertakings.

The collection of Federal Theatre records comprises some ten thousand volumes, bound and unbound. It contains source material on the origin and development of the first government-sponsored theatre in the United States; a library of approximately one thousand plays produced under the auspices of the Federal Theatre, each book complete with text, director's and technician's score, designer's sketches for sets and costumes, electrical and property plots, programs, and press notices; a collection of several hundred press books, giving reviews, editorials, and general articles on the Federal Theatre from its inception; a complete photographic record of activities; complete sets of Federal Theatre magazines and publications; complete reports of the very considerable research by staff workers, including some twenty volumes ready for publication; and a library of some five thousand volumes presented to the Federal Theatre project.

LIBRARIES AND MUSEUMS

BIBLIOTHÈQUE POUR TOUS: SERVICE
FOR YOUNG READERS

Since its establishment in 1920 the Bibliothèque pour Tous has promoted education among all classes in Switzerland through its circulating book service, which provides reading matter impartially for the three Swiss language groups, French, German, and Italian. It is an independent library, receiving its income in part from the Swiss Confederation and the various cantons, and in part from voluntary contributions of associations and individuals. It is restricted by no allegiance to political, religious, or class interest. Its books are selected by a committee representing all points of view.

From its central headquarters in Bern and from seven regional stations, shipments of from 20 to 100 volumes go regularly to local libraries, schools, clubs, business houses, and community groups. Systematic rotation gives each station a changing stock of books throughout the year. In addition, professional books are sent from Bern to individuals on special order.

The books in the Bibliothèque's collection of some one hundred and fifty thousand volumes are for readers sixteen years of age and over, as

its regulations originally restricted its services to this age group. For some time, however, the governing board has been working on plans for extending the library's facilities to younger readers. To aid the board in putting these plans into effect The Rockefeller Foundation made a grant of \$25,000 to the Bibliothèque to be available during a three-year period for the purchase of a collection of books for children between the ages of eleven and sixteen and for other expenses incidental to the establishing of a youth library on the pattern developed for older readers.

Books for this youth library will be selected from a list of titles compiled by a committee of the Swiss Teachers' Association for readers between the ages of eleven and eighteen, and from a list of works in English drawn from the carefully prepared compilations of the American Library Association. A library of this kind will give the youth of the country a wide choice of both standard and contemporary works and will encourage freedom of selection and thought at an age level when habits in reading and thinking are commonly determined.

AMERICAN LIBRARY ASSOCIATION: AMERICAN BOOKS FOR EUROPEAN LIBRARIES

The American Library Association maintains a Committee on International Relations for

study of all forms of library development. Through recent surveys this Committee determined that the Library Association would perform a very useful service if it could facilitate the acquisition and circulation of American books by European libraries and so give the people of many countries freer access to American thought.

Acting on this decision, the Association worked out a plan to allot to central library agencies in certain countries funds ranging from \$500 to \$1,500 per country yearly, over a period of three years, for the purchase of books in the United States. Libraries to be selected will be those organized to distribute books to a large public through such facilities as interlibrary loan systems or traveling collections. The libraries participating in the plan will send their orders for books to the office of the American Library Association's Committee on International Relations, in New York City, which will arrange for their purchase and shipment. To assist the Association in developing this plan The Rockefeller Foundation made an appropriation of \$60,000, available for three years.

It was decided to introduce the plan first in several countries of Northern and Western Europe that had given special evidence of interest in American publications. Negotiations were

begun September 1, 1939, and by the end of the year funds had been allotted to libraries in Great Britain, France, Eire, Norway, Sweden, Denmark, Netherlands, Switzerland, and Finland. Orders were also received from most of the libraries, and shipments were made despite delays caused by the war.

Two requirements are made of the libraries receiving grants: that they do not reduce their regular purchase of American books and that they request books of general, and not limited or scholarly, appeal. For selection of titles, the libraries have the current issues of *Booklist* and the *American Book Review Digest*, which are sent to them by the Association, and accumulated requests of their own readers.

AMERICAN LIBRARY ASSOCIATION: UNION LIST OF SERIALS

The Foundation made another appropriation to the American Library Association in 1939, amounting to \$38,600, for the preparation of a new edition of the Union List of Serials in the United States and Canada. It had previously made two grants in aid to the Association, totaling \$7,500, for preliminary work on this project, which was begun in June 1938. The List is an index to all material in serial form, with the

exception of newspapers, in the important libraries of this country and Canada. It is the only resource that exists for locating files of serials, and is consequently of great value in making all periodical literature of the world available on loan.

The first edition of the Union List of Serials, published in 1927, is a volume of 1,588 pages naming the journals, periodicals, and other serials issued up to and including the year 1925 that are held by 226 libraries. During the years since the publication of the first edition of this List, all the reporting institutions have made extensive additions to their collections of serials and many libraries that did not report their holdings for that edition wish to be included in the new one. As the original supporting libraries are not in a position to contribute toward this revision, the Foundation is providing the funds required for the work.

Responsibility for the new edition is divided between the American Library Association, which will direct the preparation of copy, and the H. W. Wilson Company, which will take care of printing and publishing. The Library of Congress furnishes quarters for the editorial staff, the assistance of its Serials Division, and service from all its collections. The project also involves a contribution in time, materials, and labor on

the part of each library whose periodical holdings are to be reported.

NEW YORK PUBLIC LIBRARY: DEVELOPMENT OF A MICROFILM SERVICE

In microphotography a library has an important means of increasing its service to scholarship and research, for through this process it can make the rare and valuable materials in its collections readily available to other libraries, to academic and research institutions, and to individual scholars anywhere in the world.

During the past year The Rockefeller Foundation made a grant of \$15,000 to the New York Public Library to provide its Reference Department at the central building with modern facilities for microfilm copying; \$10,000 of this sum is for fitting out a laboratory and \$5,000 for a revolving fund to produce materials for sale to other libraries and to make negative films of its extensive collections for a file that will slowly become a source of income.

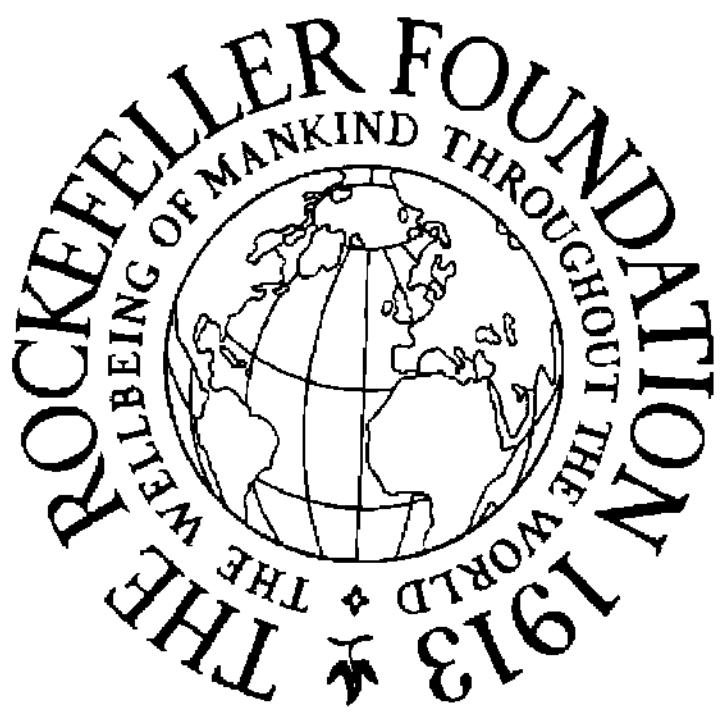
Noteworthy collections in the Library having national and international use are the maps, manuscripts, genealogical and local records, music scores, drama documents, and periodicals. Its collections of periodicals and newspapers are exceptional, and requests for copies of mate-

rial from these sources are constantly received. These demands have been met in so far as possible by the Photographic Division of the Library, which has been handicapped by its lack of modern filming mechanism for handling long runs of material. Despite this disadvantage the Division has a good record of performance in microcopying. It handled the filming of the *New York Times* for the years 1914 to 1918 and is now directing the filming of back files of the *New York Tribune* from 1841 to 1934 and of its successor the *Herald Tribune*.

With its new equipment the Photographic Division will be able to develop an adequate service for outside applicants, and it can also restore to use a great quantity of material now held out of circulation, such as old newspapers and literature on poor paper, which are in many instances among the most valuable possessions of the Library. In addition to preserving original material, this system will conserve space, as the papers will be removed from the active shelves.

NEW YORK MUSEUM OF SCIENCE AND INDUSTRY: NEW METHODS OF MUSEUM MANAGEMENT

In recent years museums have been giving increasing thought to the problem of making their cultural resources of greater educational value to the public. New methods of operation and new

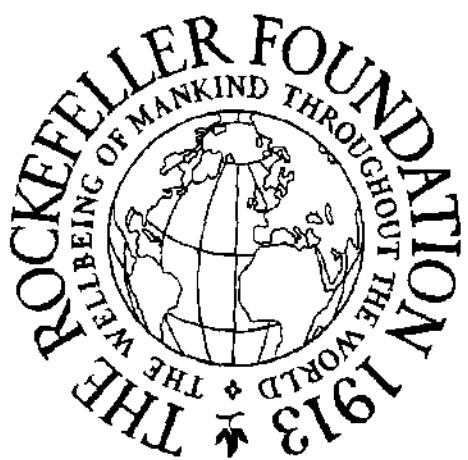


Photograph Excised Here

New York Museum of Science and Industry. Demonstrating to school children the basic principles in electrical science.

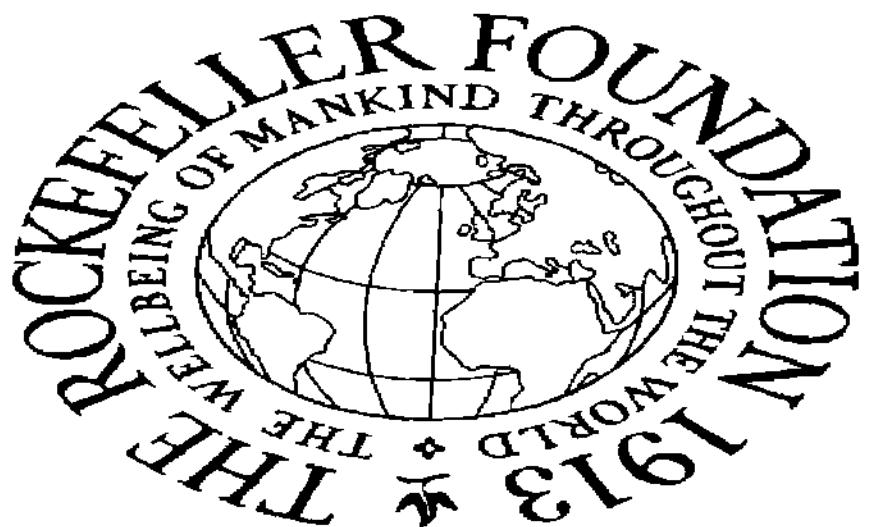
display techniques are being tried out with this end in view. The Rockefeller Foundation has aided experimentation at several centers. It has made two grants, one of \$50,000 in 1935 and another of \$25,000 this year, to the New York Museum of Science and Industry, which has been instituting marked innovations in methods of display and financing, and in public relations.

The New York Museum of Science and Industry is reporting and interpreting to the man in the street the achievements of the man in the research laboratory. In experiment with methods of display and of educational presentation, its staff has a remarkable record for variety and ingenuity. Permanent exhibits in eleven divisions within small areas deal with such subjects as food, industries, textiles, transportation, communication, and aviation. This permanent background of fundamentals of science and industry is a resource comparable to the reference value of a library. Temporary exhibits from outstanding research laboratories and industries give the public constant demonstrations of new discoveries and important technical developments. Such exhibits for fixed periods have been supplied by some fifty major industries. The museum is not intended as a place where scientific oddities may be seen, nor is it intended to supplant technical schooling, but to give a comprehensive view of



Photograph Excised Here

The American Library Association studies relations with Latin-American countries. Uruguay contributes to the Latin-American exhibit at the Enoch Pratt Free Library.



Photograph Excised Here

Oriental Library, Claremont Colleges, California. The 4,200 volumes emphasize sources and treatment of modern (mainly since 1850) political, economic, geographic, and historical problems of the Far East.

the development of scientific and industrial skills and of their relation to daily life.

The Museum charges a small admission fee to provide for maintenance costs and also to limit the visitors to those especially interested in its exhibits. It is open twelve hours a day. From February 1936 to October 31, 1939, it had an average monthly attendance of 38,597. Of the total of 1,717,550 admissions during that period, only 258,477 were without charge; this total of free admissions represents the average yearly attendance of 60,000 New York school children. These facts are of importance as proof that vitality of museum work can bring public financing, at least in a metropolitan center; and, further, that a museum can compete in evening hours with the great variety of interests appealing to working people for their free time.

MUSEUM OF MODERN ART: EDUCATIONAL PROGRAM

Another museum receiving a Foundation grant during the past year for the furtherance of its educational work was the Museum of Modern Art, which was founded in 1929 to encourage interest in the arts of the present day and to develop esthetic values in American life.

Working through those forces that condition public taste, and using new methods as well as

new mediums, the Museum is attacking the fundamental cultural question of how art can be brought intimately into the life of a community. By frequent change of exhibits it seeks to reach a wide public and to satisfy diverse artistic tastes. In the country at large as well as in New York City, it has the advantage of moving with the needs and opportunities of the times rather than over the full record of art history. Though the Museum has a permanent collection to which carefully selected additions are made from time to time, it does not plan to keep this intact indefinitely. For the historical scholar, however, it is accumulating materials on various aspects of contemporary art. It has a library of significant motion picture films of the past forty years from many countries, an exceptional collection of prints, and a stock of lantern slides for its educational work. Nationally, its publications and circulating exhibitions have stimulated interest in contemporary art by their critical valuations and discriminating treatment of modern forms.

Recently the work of the Museum was given a permanent home in a new building, erected by subscription, that will satisfy the varied demands for service. Though the building provides increased facilities, it requires materially larger maintenance expenditures. Funds for operation come from a small endowment, subscriptions,

membership dues, and admission fees. In order to stabilize the yearly budget, the trustees plan to increase the regular income from various sources as rapidly as possible. To assist the program temporarily, the Foundation will contribute \$75,000 over a two-year period. Of this sum, \$30,000 is for rotating funds of \$15,000 each, for the expense of circulating exhibitions and of publications; \$45,000 will go toward current operating expenses from July 1, 1939, to June 30, 1941.

RADIO AND FILMS

PRINCETON UNIVERSITY: STUDY OF THE VALUE OF RADIO TO LISTENERS

With some seven hundred broadcasting stations in operation in the United States and millions of homes equipped with receivers, there can be little question of radio's importance as a means of mass communication. What radio is doing for its listeners is a matter of considerable interest. In September 1937 the School of Public and International Affairs at Princeton University, with the aid of a two-year grant from The Rockefeller Foundation, undertook to answer such relevant questions as: What people listen? What do they listen to? Why do they listen? and How are they affected by what they hear?

By the summer of 1939 the School had completed some ninety investigations bearing on the role which radio plays in the lives of listeners. These studies dealt with such subjects as the factors on which listening interest seems to depend, the characteristics of listeners attracted by different types of programs, news broadcasting and its relation to news in print, and music in broadcasting. One special study investigated the "panic" occasioned by Orson Welles' broadcast "The War of the Worlds." In some cases it was necessary to develop new methods for securing the necessary data, but in other cases reliable evidence could be obtained from work done by the radio industry or other research agencies.

To enable the School to interpret the general findings and to prepare the material for publication, the Foundation, in 1939, made a further grant of \$17,500 which finances the work through February 1940. A series of books and research monographs will be the result. Typical of the books to appear is a volume scheduled for early publication dealing with the role of radio as a means of mass communication in the United States in comparison with the role of print. Another, to be published by the Princeton University Press, gives a full report of the studies of the "panic" mentioned above. Perhaps of more special interest are such research monographs as

one already issued under the title of *The Social Stratification of the Radio Audience*. Other more technical monographs will deal with the methods which the project has developed and tested in its work.

HARVARD UNIVERSITY: LECTURESHIP IN BROADCASTING

What radio is doing as a medium of mass communication has recently become a subject of growing interest to student and faculty groups in a number of departments of Harvard University. A group in the Department of Government has been investigating the part of radio in the formation of public opinion. In the Department of Psychology, studies have been made of the psychology of broadcasting. The School of Education has been exploring the possibilities of radio in formal education; and the University's collaboration, through its Radio Committee, with the World Wide Broadcasting Foundation has acquainted members of its faculty with the problems of planning and producing radio programs. On the technical side, the Cruft Laboratory, administered jointly by the Graduate School of Engineering and the Department of Physics, has made important contributions.

To coordinate these various interests and to establish broadcasting as a subject of serious

study, the University in 1939 created a lecture-ship in broadcasting. The Rockefeller Foundation made a grant of \$24,000 to the University to support the work of this lecturer during the three-year period ending August 31, 1943. The primary purpose of the program will be to encourage and give direction to studies of broadcasting as a means of mass communication.

AMERICAN FILM CENTER: PRODUCTION AND USE OF MOTION PICTURES

The Foundation made appropriations in 1939 to three organizations concerned with development of a wider range of use for motion pictures. The American Film Center, a non-profit organization established in August 1938 to promote the production and use of films of educational value, received a grant of \$60,000 toward its work over the two-year period ending December 31, 1940.

The purposes and methods of work of the American Film Center were recently outlined in the following paragraphs:

The Film Center encourages production in wider educational fields and promotes fuller use and appreciation of such [educational] film by schools and organizations. It enlists financial and educational sponsors for such motion pictures. By lending its cooperation and endorsement, it becomes a representative of education among the makers, distributors, and consumers of films.

The Center works with established producers as adminis-

trator, consultant, and researcher, but it is not a producer. It brings distributors and consumers together, but it is not a film exchange. It assists museums, clubs, schools, and such agencies to round out logical, correlated educational film programs, but it is not an exhibitor.

Education implies the awareness and information that make independent citizens. Yet, although the cinema is an able aid in this process, its resources as teacher have been tapped but little.

The sound picture in particular created new audience desires and opened up wider horizons for education. Several noteworthy movements sprang up to exploit these new possibilities. Educators, industries, Hollywood producers, and government agencies have subsidized and supported such programs. However, they have not achieved complete success because producers and consumers have not found a common meeting ground.

The American Film Center is providing that meeting ground. Its purpose is two-fold — to increase the educational value of films of all kinds, and to make the public aware of these values in documentary and theatrical motion pictures.

The American Film Center, as a liaison between sponsors and film makers and between film makers and consumers, works through committees of specialists created to guarantee the educational quality of films which bear the Center's endorsement. Each committee, in its field, works with producers of anything from a one-reel film to a major feature — from planning a production program, consulting on script writing, doing research and editing, to final approval of the finished product.

Thus the Film Center, by viewing a specific educational field as a whole, can correlate already produced films and indicate what new films will fit into the program. To put its committees' findings into action, the Center evolves production programs in which separate films add up to a whole

story — of housing, health, public administration, jobs, or anything else that goes into civilized life.

The next stage is to promote full audience understanding. To this end, the Film Center cooperates with film libraries, commercial exchanges, and government agencies. The Center publishes guides for leaders of clubs and study groups, and its doors are always open to them for the use of films in their programs. As part of this program, the American Film Center is a clearinghouse for inquiries about films and film programs, publishes a News Letter, and from time to time gets out catalogues that integrate educational films in various fields.

The basic budget of the Film Center is at present met by the grant of the Foundation. Special projects have been financed by the Committee on Scientific Aids to Learning, and the National Committee of the United States of America on International Intellectual Cooperation.

**NATIONAL COMMITTEE OF THE UNITED STATES
OF AMERICA ON INTERNATIONAL
INTELLECTUAL COOPERATION:
INTERNATIONAL FILM EXCHANGE**

Easy international interchange of educational films depends on two things: a recognized agency to certify that the films to be circulated are of an educational nature, and a coordinating body through which importers and exporters may officially deal with each other. The twenty odd countries which are signatories of the League of Nations' Convention for Facilitating the Inter-

national Circulation of Films of an Educational Character enjoy these advantages through the League-sponsored Paris Institute of Cinematography, which issues certificates as to the educational character of films and acts as a clearinghouse for distributors. Importers and exporters in the United States do not have access to these services because this country has not ratified the Convention. They are handicapped by tariffs and by delays incident to establishing the educational status of films they wish to interchange. Under the Convention, educational films circulate between signatories duty free.

The Foundation made a grant of \$7,500 to the National Committee of the United States of America on International Intellectual Cooperation to enable it to develop, jointly with the American Film Center, means for facilitating the exchange between the United States and other countries, of motion picture films of educational and cultural importance. In November 1939 the International Film Center was incorporated, by the National Committee and the American Film Center, to work in these fields.

NATIONAL FILM SOCIETY OF CANADA: DEVELOPMENT OF EDUCATIONAL FILM SERVICES

The National Film Society of Canada, chartered by the Canadian Government in 1935 to

encourage and promote the study, appreciation, and use of motion pictures as educational and cultural forces, received a Foundation grant of \$19,380 for use during the two-year period beginning September 1, 1939. The first aim of the Society is to give advice and service to Canadian schools, colleges, and other educational groups, on films produced in other countries.

The Film Society has its headquarters in Ottawa and branches in ten other Canadian cities. It now maintains libraries of film for rental in five of the nine Canadian provinces and expects shortly to establish similar depots for the others. This service is now offered to over four thousand members.

The work of the Society during its first years consisted mainly in obtaining and renting Canadian films wanted for showing by its members. In 1938, with the help of a grant in aid from the Foundation, it investigated the possibilities of improving its service, especially through the international exchange of educational films. It now cooperates with such agencies as the Film Library of the Museum of Modern Art, the Association of School Film Libraries, and the Motion Picture Project of the American Council on Education.

Through the instrumentality of the British Imperial Relations Trust, a Canadian Film Com-

mittee has recently been established to serve as a liaison agent between the government, organizations interested in educational films, national education institutions, and the National Film Society. This Committee has designated the Film Society to act as its executive agent for all projects within the scope of the Society's interest.

LATIN-AMERICAN INTERESTS

LIBRARY OF CONGRESS: HISPANIC FOUNDATION

An important step in the development of better inter-American cultural understanding was taken during the past year by the opening at the Library of Congress in Washington, D. C., of the Hispanic Foundation, a division created to organize and concentrate in one location the Library's extensive facilities for studies in the field of Hispanic cultures.

The Hispanic Foundation was created at the Library of Congress by a series of gifts. The first of these was an endowment received in 1927 from Mr. Archer M. Huntington, founder of the Hispanic Society of America, for the purchase of Spanish, Portuguese, and Latin-American books. A subsequent endowment from the same source provided for a consultant in Hispanic literature, and an anonymous donor contributed funds for the room where the general Hispanic collection

of the Library is now centered. Congress appropriated funds, as of July 1, 1939, for the salaries of a director of the new foundation and of a consultant in Portuguese studies, as well as for minimum operating costs.

A large mass of Hispanic material scattered throughout the Library in books, serial issues, and journals must be properly catalogued to put these resources at the disposal of the public. For this purpose a competent cataloguer, well versed in Hispanic cultures, is needed to organize this special collection effectively and to develop the necessary techniques for its utilization. Bibliographical services are being developed to make accurate information quickly available and to complete an analysis that will produce an index for future purchases. An annual guide to Hispanic periodicals and a record of current investigations in the field of Hispanic cultures will also be prepared. To assist the Library of Congress for a period of two years in providing the personnel necessary for preparing the catalogue, bibliographies, and other compilations, the Foundation made it a grant of \$22,000.

AMERICAN LIBRARY ASSOCIATION: LIBRARY COOPERATION WITH LATIN AMERICA

The Rockefeller Foundation has contributed funds for surveys of library resources, training of personnel, and improvement of cataloguing

services in a few Latin-American institutions. It has paralleled this assistance with grants to a few centers in the United States actively extending knowledge of Latin America in this country and improving inter-American intellectual cooperation through specific projects.

In 1939 it appropriated \$30,000 to the American Library Association for studies covering the general field of relations with Latin-American countries. A committee of the Association will undertake to direct, over a period of three years, a series of exploratory studies of library conditions and distribution methods affecting the exchange of books and other materials in print between the United States and Latin America. Among other matters, it plans to investigate exchange relations now existing between important libraries of the United States and Latin America, both public and private; possibilities of improving the systematic exchange of publications; distribution of scholarly journals; usefulness of existing Latin-American collections in the United States; growth of public interest in the United States in Latin-American subjects as shown by purchases and circulation figures of libraries; opportunities to serve both Spanish and English readers through encouraging translation of works for trade distribution. The Library of Congress is providing quarters for the staff en-

gaged in these studies, as well as the free service of its consultants and bibliographers.

Results of these studies will influence the future work of the Library of Congress in its new Latin-American section, by defining desirable lines for continuing services to scholars, to general readers, and to the book trade. The studies are closely related to projects that the Foundation has aided earlier for the improvement of international copyright agreements and for free interchange of children's literature in translation.

UNIVERSITY OF CHILE: DEVELOPMENT OF A CENTRAL LIBRARY

The Foundation made a grant of \$8,000 to the University of Chile to assist it, during a two-year period ending December 31, 1941, in developing a central library.

This University, now about a century old, is one of the leading institutions of its kind in South America, with a student body representative of the continent. It has an enrollment of approximately six thousand students, about one thousand of whom are foreigners, chiefly from Latin-American countries, some coming from as far north as Costa Rica.

The seven departments that constitute the University, each with its own library, are scattered about the Chilean capital. The need to bring together in a central building the various

collections of books, totaling about one hundred thousand volumes, has long been felt by the University administration. Now, suitable quarters in the main building have been made available, and some equipment in the form of shelving, desks, and tables is at hand. The University budget provides for maintenance.

In connection with the new library, the administration proposes to establish a school of librarianship. First, however, it plans to organize the library as a highly efficient unit, to serve both as a training center and a model for libraries throughout Chile. To realize these objectives the purchase of new library equipment and standard works of reference is essential. The Foundation has made a grant to assist the University to obtain the materials necessary for the successful organization of the library and, temporarily, to pay salaries of assistants for the preliminary work.

FAR EASTERN STUDIES

AMERICAN COUNCIL, INSTITUTE OF PACIFIC RELATIONS: SOURCE MATERIAL ON CHINESE HISTORY

Under the auspices of the American Council of the Institute of Pacific Relations and the International Institute of Social Research, Dr. Karl A. Wittfogel and several Chinese associates collected, during the years 1935-1938, extensive

source material on Chinese social, economic, and cultural history. This material, consisting of over fifty thousand excerpts varying in length from a few lines of translation to more than two hundred pages, was taken from the twenty-six *Dynastic Histories*, the collected biographies attached to these histories, and special treatises. These source works furnish first-hand records of Chinese civilization from 300 B.C. to 1911 A.D.

Dr. Wittfogel, now working at Columbia University in the quarters which the University provides for the International Institute of Social Research, is preparing the original extracts and parallel English translations for publication. This task involves verifying the extracts and the translations; supplying footnotes on proper names, institutions, technical terms, and passages of especial difficulty; and making up page copy to bring together on a given page the original text, its translation, and footnotes. The Foundation has made a grant of \$31,700 to the American Council of the Institute of Pacific Relations to enable it to provide Dr. Wittfogel with editorial assistance for this work during the three-year period ending June 30, 1942.

As a final check on the material, microfilm copies of the manuscript will be sent to other scholars in Great Britain, China, and the United States for reading. Thus, in its completed form,

the work will represent results possible only through collaboration between philologists familiar with the original texts and persons experienced in modern methods of historical research. It will make available to Western scholars a large amount of source material on Chinese society and history buried in documents to which few Occidentals have access, and it will provide students of the Far Eastern problems of today with a historical background necessary to the understanding of these problems.

DEVELOPMENT OF CHINESE AND JAPANESE STUDIES IN AMERICAN UNIVERSITIES AND COLLEGES

The Foundation appropriated funds to three educational centers in the United States during the year to aid them in extending their facilities for the study of Far Eastern history, language, and culture.

Stanford University received a grant of \$15,000 to be available for five years, beginning July 1, 1939, for the purchase of Chinese works and for the salary of a recent Chinese appointee to the Department of English, Dr. Shau Wing Chan, who is developing courses in Chinese literature in translation and in the Chinese language. Dr. Chan has prepared an introductory primer and a syllabus for teaching the Chinese classics, popular

literature, and philosophy. These will be brought into print for general use, with the purpose of advancing Far Eastern studies at the undergraduate level in other universities and colleges as well as at Stanford.

A grant of \$15,000 was made also to Claremont Colleges, toward stabilizing a Far Eastern program that has been under development for several years. Of this sum, \$5,000 will be used to supplement salary funds during the period 1939-1942, and \$10,000 for the purchase of library materials as needed. This part of the Far Eastern program at the Claremont Colleges is under the direction of Dr. Charles F. Fahs, whose appointment in 1936 as instructor in Oriental affairs at Pomona College, after the completion of his training in the Far East under a General Education Board fellowship, was made possible by a three-year Foundation grant. The courses in Far Eastern subjects fall into two groups. At the junior college level, sophomores are admitted to year surveys of Oriental civilization, Oriental history, and Oriental literature in translation. Senior college and graduate students are eligible for the courses in economic problems of the Orient, Oriental philosophy, Far Eastern diplomatic history, Chinese political theory, and the Chinese and Japanese languages.

Columbia University received a grant of \$9,000

for the support of a part-time visiting lectureship in Japanese cultural history during the period January 1, 1940, to June 30, 1943. The lecturer designated under this grant is Sir George Sansom, who held a term appointment of this kind at the University during 1935-1936 through Foundation support. Sir George's duties over a period of thirty-five years in Japan as counsellor to the British Embassy have given him a thorough understanding of the history and the cultural movements of that country. Under his new appointment he will devote half of each year to lecturing in the Graduate School on the Japanese language, history, and institutions.

The creation of this lectureship will advance Japanese studies in the University substantially. The Foundation has made previous grants, totaling \$42,500, to Columbia University for the development of Chinese and Japanese studies. The greater part of this sum was given for the purchase of books and periodicals in these languages. The University library now has over seventy thousand Chinese books, about thirty thousand Japanese books, and a representative collection of periodicals and serial publications in both languages.

GRANTS IN AID

The Foundation made forty-three grants in aid during 1939 to individuals or institutions for

special studies or preparatory work bearing on programs in the humanities to which it is giving developmental support, or to make possible the completion of research or publication related to these programs. The grants varied in amount from \$300 to \$7,500 and totaled \$109,247.55.

Five of the grants were for projects to extend international library service, five for projects in microphotography as related to library service, and one for the analysis of the results of recent research in reading. Four grants were made to further inter-American cultural understanding; four to advance cultural interchange between America and the Far East; one for studies of Turkish history and language; six for work connected with the development of regional drama, and one for study of the relations between commercial and non-professional groups active in the development of American drama; four for the investigation of matters pertaining to international broadcasting and one for the development of a regional broadcasting program in the United States; two for studies of the role of motion pictures in American life and three for projects relating to the production and distribution of educational films. There were two grants for studies to further the educational work of museums; and one grant for each of the following purposes: studies in connection with the excava-

tion of the Athenian Agora; the completion of a book on German cultural influence in the United States; the purchase of a collection of American books for a proposed Anglo-American Institute at the University of Gröningen; and the expenses of a delegate to a conference of the International Institute of Intellectual Cooperation, on the interpretation of the natural sciences to the general public.

FELLOWSHIPS

During 1939 the Foundation supported sixty-eight fellowships in fields of the humanities to which it is giving developmental aid. Fifty-three of the men and women holding these appointments were citizens of continental United States, four were from Puerto Rico, three from Canada, two each from Argentina and Chile, and one each from China, France, Great Britain, and Japan. Thirty-four of the fellowships were new awards of 1939, and thirty-four were held by recipients of aid in previous years.

The fellowships were distributed among the following fields: radio production and research on radio listening, eighteen; dramatic art, thirteen; motion picture production, twelve; library administration, nine; research on simplified methods of teaching languages, seven; study of Far Eastern languages, for work in connection with

the promotion of international cultural relations, six; Hispanic studies, two; history of art, one.

Fifty-seven of the fellows spent the entire year in the United States. Of the others, three worked in both the United States and England, two in the United States and Canada, one in the United States and Mexico, one in England, one partly in England and partly in Ireland, one in Mexico, Guatemala, and Peru, one in Chile, Argentina, and Brazil, and one in Japan.

GENERAL PROGRAM

PAYNE FUND: EXPERIMENTS IN NEW METHODS OF TEACHING ENGLISH TO FOREIGN-BORN ADULTS

In 1938 the Payne Fund, with the aid of a small Foundation grant, undertook, in cooperation with the Massachusetts State Department of Education, a preliminary inquiry into the practicability of improving English texts and manuals for teaching English to foreign-born adults in the United States. Trial of the plan showed its possibilities not only for the foreign-born adult but also for the child who is learning English as his mother tongue. To assist the Fund in a wider testing of the plan and in developing programs for training teachers for the work, the Foundation appropriated \$22,000 for use during the period February 1, 1939, to June 30, 1944.

Under the direction of the Fund, experimental materials and methods are being tested in classes of foreign-born adults at a number of centers in Massachusetts having diversified types of population. A similar program is being conducted with classes of adults and children in Washington. Trial and observation on an extended scale will give validity to the results and will also produce the necessary guides for proper training of teachers. This program of work has direct bearing on researches of Dr. I. A. Richards, under Foundation support, to develop the freer use of English as an auxiliary language for all purposes of international communication.

HARVARD UNIVERSITY: STUDIES IN CRITICISM AND THE USES OF LANGUAGE

For some years the Foundation has been aiding plans to simplify the teaching of English in foreign countries, particularly in the Far East. During 1939 an extension of such work to Latin-American countries and in our border states started with the appointment of research fellows for work on English and Spanish texts. These fellowships were made possible by the appointment at Harvard University of Dr. I. A. Richards, who will continue to direct work in China while entering on new investigations of the uses of language generally. These studies will bear

upon the development of literary criticism as well as upon the meanings of language.

Dr. Richards is concerned with the ways of comprehension, and particularly with the part that language as a system of symbols plays in comprehension. In one phase of his present program, he is holding seminars for teachers of English in American schools that are extending his methods for the improvement of learning processes through English studies to general applications in the school curriculum. An analysis of the processes by which words come to have different senses in our understanding develops an ability for interpretation in other subjects and in the daily operations of life. The method also provides foreign language groups with a first step toward learning normal English by giving a control of meanings and structure. Persons having need of English as their primary auxiliary language benefit from the application of these methods within the special pattern of their primary language. For all students of literature, such preliminary analysis of the full meaning of words in their common usage is equally effective toward a method of literary criticism concerned with the total effect of materials on the mind of the reader.

A grant of \$50,000 from the Foundation is to supplement funds of Harvard University to maintain the work over a period of five years.

**PRINCETON UNIVERSITY: STUDIES
OF PUBLIC OPINION**

Although the study of public opinion in the United States has been increasing during the past twenty years, basic information on its formation and operation are lacking. The war in Europe has given this country an unusual opportunity for studying the development of public opinion, the changes which opinion undergoes under varying conditions, and the reasons for change. Research of this kind was undertaken at the School of Public and International Affairs of Princeton University under the direction of Professor Hadley Cantril, who plans to draw from such agencies as the American Institute of Public Opinion the data for judging the influence of three major media of mass communication—radio, print, and film—on the formation of public opinion regarding the war.

The Institute of Public Opinion has used in its interviews many questions touching on such topics as neutrality and rearmament, but it has drawn off from its returns only the data required for its news releases. In these releases, it usually gives a gross percentile score of the division of opinion, sometimes adding percentile subscores for the distribution of results under subheadings of region, age group, or political party. Professor Cantril, after examining the ballots taken by the

Institute over a five-year period, concluded that retabulation of the data would supply essential facts on the formation and trend of opinion from peace to war time and from one stage to another under the force of successive war crises. It is expected that further analysis of the data will demonstrate the influence of such factors as family relationship, educational experience, and occupation; the group origins of reported intensity of opinion or apparent lack of it on many issues. Additional questions leading to evidence of this nature will be used from time to time during the course of the analysis.

To assist the School of Public and International Affairs in obtaining the equipment necessary for duplicating and retabulating records and in providing research and clerical assistance, the Foundation made a grant of \$15,000 to Princeton University for the use of the School during the year 1940.

BOSTON SYMPHONY ORCHESTRA: ESTABLISHMENT OF BERKSHIRE MUSIC CENTER

Through an appropriation of \$60,000 The Rockefeller Foundation is assisting the Boston Symphony Orchestra to establish a summer center of musical education, under the direction of Serge Koussevitsky and others, at Tanglewood,

Massachusetts, where for several years the Orchestra has held a symphonic festival in August. The sessions of the Center in 1940 will continue from July 8 until August 18. Three week ends of festival concerts will come within this period.

The Center will have two sections: one, known as the Institute for Advanced Study, will be limited to persons having a thorough preliminary musical training and studying to make music their career; the other, the Academy, will be for music lovers with less specific qualifications but possessing an intelligent interest in music and a wish to increase their power of interpretation. Of some three hundred students to be chosen from the applicants for admission to the Center, a committee will select fifty for work at the Institute.

The Institute will offer classes in orchestral conducting and instruction in individual and group performance, in dramatic interpretation, and in advanced composition. The Academy, or general school, will also give opportunity for individual and collective performances of students enrolled in large units to study choral, orchestral, and chamber music. They will have lectures on musical development, form, and style, and on the underlying aesthetic principles. There will be no attempt to cover in a systematic way the history or theory of music, but rather to

stimulate participation, expression, and creativeness. Each Academy student will belong to either the school orchestra or the Festival chorus.

A faculty of persons outstanding in musical education and production has been secured for instruction in composition, direction, and individual performance. A group of special guest lectures will hold a series of general sessions. Intensive development of individual abilities will be the constant aim of the Director and the staff.

The Foundation's appropriation to the Center is for the two years 1940 and 1941: \$10,000 will be provided during the first year for remodeling three buildings for assembly and classes, and for the construction of a small theatre for school rehearsals, chamber concerts, and presentations by the class in opera dramatics; \$25,000 will be available for each of the two years toward faculty salaries and for a scholarship fund.

AMERICAN COUNCIL OF LEARNED SOCIETIES: FELLOWSHIPS, PLANNING COMMITTEES, FOREIGN ACTIVITIES

A new grant of \$80,000 to the American Council of Learned Societies is to carry established activities at the level of recent years through aid of The Rockefeller Foundation. From July 1, 1939, to June 30, 1941, this sum is to be used for fellow-

ships and for planning committees of the Council. Two special interests to be supported at the level of \$10,000 for each over the two-year period, are the work of the committees on the Far East and that of the Executive Committee for strengthening international relations in the humanities.

The Council maintains planning committees related to all its constituent societies. Some of these are effective for social sciences as well as for the humanities. The Joint Committee on Materials of Research and the Committee on Latin-American Studies illustrate such cooperation. Those in the foreground because they are developing new practice in American institutions are the Committees on Chinese and Japanese Studies, Indic and Iranian Studies, Musicology, the Humanities in American Colleges and Universities. To each committee is assigned sufficient funds for occasional meetings and for the expense of secretarial work. One result of such constant relationship of committee members appears in the development of courses announced in the calendars of universities and colleges. Another effect is evident in the active interest in summer seminars dealing with the materials in such undeveloped disciplines in American universities as Turkish and Arabic literature and history. The committees also are of service to the Council in

its foreign relations with scholars and societies working in the same fields.

Internationally the Council has new importance by reason of the rapid change in some European countries from objective studies to nationalistic interest. Furthermore, the opening of new possibilities of cooperation in Latin America and in the Far East puts increased responsibility upon the Council. The director is now the president of the International Union of Academies and also of the International Commission of Historical Sciences. In 1938 he visited the major capitals of Europe to deal with the interests of these two organizations. Last year he made a similar journey of some four months through Latin America.

**SPECIAL RESEARCH AID FUND
FOR DEPOSED SCHOLARS**

SPECIAL RESEARCH AID FUND FOR DEPOSED SCHOLARS

SINCE May 1933 the Foundation has aided institutions in the United States and elsewhere to absorb into their staffs scholars displaced from positions in their own countries for political reasons. During 1939 thirty-eight grants were made to thirty different institutions, twenty-six in the United States, two in France, and one each in Belgium and Argentina, toward the salaries of thirty-eight individuals, seven of whom had received previous aid. The countries from which these scholars were displaced were Germany, seventeen; Austria, eight; Czechoslovakia, five; Italy, four; Spain, two; and Poland and Hungary, one each. The special interests of the scholars were divided according to the fields of the Foundation's work as follows: medical sciences, five; natural sciences, eight; social sciences, seventeen; humanities, seven; and one, not classified. The grants ranged in amount from \$810 to \$7,000 (over a period of three years), and totaled \$116,010.

In some cases more than one grant has been made toward the assistance of one individual,

often to give the university a longer time in which to arrange provision for the total salary from its own funds, or to assist the individual in changing to another position offering greater chances for advancement or permanence, or better adapted to his special interests. All actions were taken upon application of the institution where the scholar was to work; the period of aid ranged as a rule from one to three years, with the longer grants usually at a decreasing rate to allow the institution to take over the obligation with a minimum of disturbance to its budget. In most cases the institutions receiving funds have given reasonable assurance that the positions offered would lead to permanent placement of the scholar. Through this policy scholars denied the opportunity for work in their own countries have been enabled to continue their contributions to scholarship; and the academic life of many institutions has been greatly stimulated.

The Foundation has appropriated \$775,000 for this program since May 12, 1933, including appropriations amounting to \$100,000 in 1939. Grants have been made toward the salaries of 199 scholars in new positions, forty-four in the fields of the medical sciences; forty-three in the natural sciences; seventy-four in the social sciences; thirty-seven in the humanities; and one unclassified. These scholars have migrated from

the following countries: Germany, 167; Austria, seventeen; Italy, six; Czechoslovakia, five; Spain, two; and Poland and Hungary, one each; and have found positions in thirteen other countries, principally in the United States.

In view of the widespread interruption of academic careers throughout the world, it was voted, at the end of 1939, to discontinue this special fund and to consider future cases in connection with regular Foundation programs.

CHINA PROGRAM

CHINA PROGRAM STAFF

During 1939

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

JOHN B. GRANT, M.D.¹

MARSHALL C. BALFOUR, M.D.²

¹ To July 1, 1939.

² From July 1, 1939. International Health Division staff member co.
operating in China program.

CHINA PROGRAM

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CHINA PROGRAM

THE present China program of the Foundation was designed to aid practical efforts in administration, education, agriculture, economics, and medicine, for communities predominantly rural in character. This program in rural reconstruction was initiated in 1935 for an experimental period of three years. Before the three-year period had elapsed, however, the military conflict so changed the situation in China that appraisal of the program on its original basis was not possible. As the cooperating institutions had made much progress in the brief interval of normal operation, the Foundation continued its aid in the emergency so that personnel and institutions might be held together. With the assistance of this policy the various units have been preserved and have begun to reestablish work on a regular basis.

The difficulties in moving institutions over long distances through areas where there are no adequate modern transportation facilities, and in resettling them in the comparatively backward southwest provinces called for a considerable period of readjustment. Since this situation has prevented the formulation of plans for the orderly termination of the China program in its present form, grants have been extended from

year to year. For the year 1939-1940 the Foundation provided through the China program a total of \$133,860 for the nine institutions with which the program is cooperating; \$50,000 for fellowships; and \$15,000 for research and developmental aid. For emergency aid to Chinese educational and scientific institutions, \$25,000 was appropriated for the year 1939; and to the Associated Boards for Christian Colleges in China for nine institutions, \$75,000 was appropriated for the year 1938-1939.

Reports from these institutions are rendered according to the school year. As the year 1939-1940 is not yet complete, the following report, for the most part, is based on work conducted during the year 1938-1939.

EDUCATION AND RURAL RECONSTRUCTION

NATIONAL COUNCIL FOR RURAL RECONSTRUCTION

During the year 1938-1939 it became increasingly clear that the county of Tingfan in Kwei-chow Province, where the Council had established its Rural Service Training Institute upon its removal to the southwest, was not a suitable area in which to cultivate the concept of university graduate training in a rural community.

Cooperation with the graduate work of the member institutions of the Council had to be practically abandoned. The initial aim of the Council was to provide facilities for research and training for postgraduate students and for the personnel of its member institutions in the fields of economics, civil administration, education, social medicine, agriculture, sociology, and engineering, as related to rural reconstruction. These services were to be rendered through the Council's Rural Service Training Institute in a community in which organized field work promoted the research and training objectives of the Institute. Such a plan was in operation under the Council for about a year in North China before the emergency caused the Institute's removal to Tingfan.

Tingfan's considerable lag in culture and education, and its bi-racial character made it practically impossible to secure enough local leaders to lay a foundation for the more intensive work required to provide university training at a postgraduate level. These considerations led recently to a decision to remove the Institute to Pishan county in Szechwan, where, as the Institute of Rural Research and Training, it plans to collaborate closely with the Mass Education Movement, and resume cooperation on a university basis with its member institutions.

The Public Health Personnel Training Institute of the National Health Administration and the new National College for Rural Reconstruction have recently been included in the Council's membership. The other members are Nankai University, Yenching University, the Peiping Union Medical College, the University of Nanking, and the Chinese National Association of the Mass Education Movement.

For the year 1939-1940, which is proving to be a year of transition, the Foundation allotted to the National Council for Rural Reconstruction from China program funds, \$185,000 Chinese currency and \$5,000 U. S. currency.

CHINESE NATIONAL ASSOCIATION OF THE MASS EDUCATION MOVEMENT

Although the training of leaders of various grades has been a necessary part of the work of the Mass Education Movement, it is primarily interested in the direct application of the various reconstruction techniques in practical ways, and in the dissemination of their benefits as widely as possible among the masses of the people. During the year 1938-1939 the Mass Education Movement was occupied in withdrawal from direct participation in rural reconstruction procedures in Hunan Province and measures to establish itself in Szechwan, where its work is at present concentrated.

A campaign for mass education and rural reconstruction was instituted along the more easily traversed highways and waterways of Szechwan, and reconstruction was developed in the prefecture of Ta Chu, where the provincial government plans to set up a school of public administration for the training of personnel needed to introduce widespread reforms in the administration of counties and smaller governmental units.

Plans for the National College of Rural Reconstruction, with the county of Pishan as a practice area, are an important part of the present work of the Mass Education Movement. The research and graduate training features of the College are to be developed in the Institute of Rural Research and Training under the direction of the National Council of Rural Reconstruction.

From the China program fund for the year 1939-1940, \$50,000 Chinese currency was allotted toward the general budget of the Chinese Mass Education Movement.

YENCHING UNIVERSITY: COLLEGE OF PUBLIC AFFAIRS

The College of Public Affairs of Yenching University completed its tenth year in 1939. During this time the College has granted the Bachelor of Arts degree to 524 students and the Master's

degree to forty-three advanced students. As a member of the National Council for Rural Reconstruction, Yenching University took an active part in the Rural Institute of the Council during the Institute's brief period of operation in North China, and is attempting at present to maintain closer contact with western and southwestern China, and to resume its share in the Council's work.

For the year 1939-1940, \$60,000 Chinese currency was granted to the College of Public Affairs of Yenching University from China program funds.

NANKAI UNIVERSITY: INSTITUTE OF ECONOMICS

Nankai University has merged its undergraduate teaching in the National Southwestern Union University, Kunming (composed also of Tsinghua and Peita Universities), but the Institute of Economics is housed in a separate building where it maintains graduate instruction.

Research was rapidly adjusted to the new conditions and location, and articles by staff members have appeared in both English and Chinese journals.

For the Institute of Economics during the year 1939-1940, the Foundation allotted from China program funds \$20,000 Chinese currency and \$3,000 U. S. currency.

AGRICULTURAL PROJECTS

UNIVERSITY OF NANKING: DEPARTMENT OF AGRICULTURAL ECONOMICS

The transfer of the University of Nanking to western China was accomplished with a minimum of disorganization, and the institution has become almost completely oriented in its location at Chengtu on the campus of West China Union University. Besides the regular work of the College of Agriculture and Forestry, a number of training and extension courses of various grades are being conducted.

The Department of Agricultural Economics, which has been receiving aid through the China program, has become one of the strongest departments in the College, and is probably the most important department of its kind in China. Among its published studies are the books, *Chinese Farm Economy* and *Land Utilization in China*. The journal, *Economic Facts*, continues to report the research of the Department, and for the general public the *Economic Weekly* is being issued.

From China program funds, \$70,000 Chinese currency was allotted by the Foundation for the year 1939-1940.

NATIONAL CENTRAL UNIVERSITY: DEPARTMENT OF ANIMAL HUSBANDRY

National Central University's research project in animal husbandry at Chengtu is working

in close cooperation with the Szechwan Bureau of Animal Industry. With help from the funds granted by the Foundation the Department of Animal Husbandry of National Central University and the Bureau of Animal Industry in 1939 established jointly a hog farm at Neichiang, about midway between Chungking and Chengtu. Studies of breeding, feeding and management, marketing, and of the packing industry are being conducted.

The Foundation continued aid to this project for the year 1939-1940 by an allotment of \$15,000 Chinese currency from China program funds.

NATIONAL AGRICULTURAL RESEARCH BUREAU

The insect control program of the National Agricultural Research Bureau has been continued actively in the southwestern and western provinces. The Bureau cooperates with the government's general program to increase crops, and especially to encourage cotton growing in southwest China. Research on the various problems and methods of control and the promotion of campaigns for control were the principal activities of the Bureau during the year 1938-1939. Counties or other areas were selected as centers for the demonstration of control measures, and

campaigns were carried out against cotton plant pests, the rice borer, the red scale of orange trees, and the smut of wheat and barley.

For the year 1939-1940 China program funds were allotted to this project in the amount of \$35,000 Chinese currency and \$3,000 U. S. currency.

PUBLIC HEALTH AND MEDICAL EDUCATION

NATIONAL HEALTH ADMINISTRATION: TRAINING INSTITUTE

The National Health Administration's Public Health Personnel Training Institute occupies a Buddhist temple and hastily constructed dormitories in the city of Kweiyang. During the year 1938-1939 the Institute provided instruction in public health at the National Kweiyang and Hsiang-Ya Medical Colleges. The teaching staff numbered fourteen, and the students about 130 early in 1939. The Institute's courses for health officers, nurses, and midwives were short because of the pressing demand for technical personnel. As the agency is cooperating with the National Council for Rural Reconstruction in the administration of social medicine, the Institute maintained health services for

field instruction and experience in the county of Tingfan.

From China program funds the Training Institute was provided with \$139,000 Chinese currency and \$7,720 U. S. currency for the year 1939-1940. As of July 1, 1939, administration of this project was transferred from the China program to the International Health Division, of the Foundation, which will administer and provide the funds for any aid to this project which the Foundation may contemplate in the future.

COMMISSION ON MEDICAL EDUCATION

The Commission on Medical Education, upon its removal with the National Government to Chungking, found it necessary to adjust its undertakings to emergency conditions, while at the same time keeping in view the need to develop and maintain proper standards in medical education. As the result of a survey and plan made by the Commission, most of the country's medical schools are concentrated at four centers, Kunming, Chengtu, Kweiyang, and Chungking, where the available teaching staff, equipment, and other facilities are used cooperatively in so far as is possible. Besides its supervisory and other activities, during the year 1938-1939 the Commission was occupied with a proposal for a

system of pharmacy education, plans for courses in midwifery and nursing for rural health workers, and the editing of medical textbooks.

The Commission on Medical Education received from China program funds \$32,000 Chinese currency for the year 1939-1940.

FELLOWSHIPS

Three fellows from China were studying abroad under the China program during the year 1939; one of these worked in embryology at the Nutrition Laboratory of the Carnegie Institution in Boston; one in plant pathology at Cornell University; and one in anatomy and physiology at the Strangeways Laboratory, Cambridge, England. A fourth fellow returned home early in the year because of illness.

During the year 1938-1939 a total of 206 individuals held local fellowships administered by the several institutions which had received allotments for this purpose, as follows: National Health Administration, 137; Commission on Medical Education, twenty-two; Mass Education Movement, fifteen; Yenching University, eleven; University of Nanking, ten; Nankai Institute of Economics, five; National Council for Rural Reconstruction, four; and Lingnan University, two. Of these, thirty-one fellows studied to be medical officers and thirty-two to

be midwifery teachers. Other subjects studied were public health nursing, seventy-eight; rural education, sixteen; rural economics, twelve; pathology, seven; local government, six; pharmaceuticals and agriculture, five each; physiology, three; parasitology, biochemistry, and psychiatry, two each; bacteriology, anatomy, sociology, Chinese history, and rural social administration, one each.

In 1939 the China program provided \$50,000 U. S. currency for fellowships for the period ending June 30, 1940.

RESEARCH AND DEVELOPMENTAL AID

Ten grants totaling \$16,446.69 and ranging in amount from \$232.54 to \$3,000 were allotted in China from research and developmental aid funds during the year 1939. These grants are given to small projects which can usually be completed in a short time and at small expense. Four of the grants in 1939 were to institutions included in the China program; the others were for a variety of special needs at various other institutions.

For the period ending June 30, 1940, the China program provided in 1939, \$15,000 U. S. currency for research and developmental aid grants.

EMERGENCY FUND FOR CHINESE INSTITUTIONS

In January 1939 the Foundation made available to December 31, 1939, \$25,000 U. S. currency as an emergency fund for grants to Chinese educational and scientific institutions. China program aid to the general budgets of institutions with which it cooperated did not cover emergency needs, such as the loss of important equipment and literature. Emergency assistance to Chinese institutions not included in the China program also can be of strategic importance in preserving the country's educational efforts.

Nine grants were made from this fund to eight institutions, principally for purchases to be made abroad, as follows: to the Hsiang-Ya College of Medicine for aid to its general budget in the financial emergency, \$3,000; to the National Health Administration Training Institute for replacement of essential items in the reference library, \$3,000; to the National Agricultural Research Bureau for scientific equipment and literature, \$3,000; to the National University of Yunnan for scientific equipment and literature for the Departments of Physics and Chemistry, \$3,000, and Biology, \$2,000; to the National Tsing Hua University Institute of Agricultural

Research for equipment and supplies, \$2,500; to Szechwan Provincial Health Administration for equipment and supplies for its Institute of Infectious Diseases, \$3,000; and to the National Council for Rural Reconstruction and Nankai University for exchange to be used in the purchase of equipment, books, and supplies, \$300 each; a total of \$20,100.

EMERGENCY AID FOR FOREIGN COLLEGES IN CHINA

ASSOCIATED BOARDS FOR CHRISTIAN COLLEGES IN CHINA

Continuing aid previously given toward the emergency needs of a group of institutions represented by the Associated Boards for Christian Colleges in China, the China program in 1939 provided \$75,000 allotted by the associated boards for the year 1938-1939 as follows:

Cheeloo University	\$ 5,000
Fukien Christian University	4,000
Ginling College	7,000
Hua Chung College	4,000
Lingnan University	10,000
University of Nanking	15,000
University of Shanghai	4,000
West China Union University	10,000
Yenching University	16,000
	<hr/>
	\$75,000

The government has given encouragement and aid to these institutions in recognition of the important part which they are playing in the life of China, especially in this emergency. Their needs are urgent, since many of the institutions which have moved are conducting refugee and other work on their own campuses. Yenching University has the largest enrollment in its history; the combined institutions operating in the foreign concession of Shanghai have an enrollment of over 2,800; and the institutions which have moved long distances and now operate with much reduced facilities have all the students which they can accommodate. The present needs of the country and the new locations in the interior have led these colleges and universities to increase emphasis on rural reconstruction and sociology.

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, 1939.

A summary of commitments and funds available for commitment follows:

Outstanding commitments, December 31, 1938

Unpaid appropriations.....	\$25,384,000.02
Unappropriated authorizations and pledges.....	1,791,188.00 \$27,175,188.02

Commitments during 1939

Appropriations

Public Health.....	\$2,000,000.00
Medical Sciences.....	1,927,180.00
Natural Sciences.....	2,005,831.54
Social Sciences.....	2,027,700.00
Humanities.....	992,180.00
Program in China.....	300,000.00
Miscellaneous.....	100,000.00
Administration	
Scientific Divisions.....	575,099.50
General.....	276,926.50

\$10,204,917.54

Less appropriations for which funds were previously authorized or pledged...	759,000.00
	<u>89,445,917.54</u>

Plus authorizations for later appropriation by the Executive Committee.	17,504.00	9,463,421.54
Forwarded.....		\$36,638,609.56

Brought forward.....	\$36,638,609.56
LESS	
Payments during the year 1939....	\$12,910,583.69
Sum of unused balances of appropri- ations and authorizations allowed to lapse (net)	832,814.84 13,743,398.53

Outstanding commitments, December 31, 1939	
Unpaid appropriations.....	\$21,929,745.48
Unappropriated authorizations and pledges.....	965,465.55 \$22,895,211.03

FUNDS AVAILABLE FOR COMMITMENT

Balance, December 31, 1938.....	\$1,899,994.46
Add	

Income and refunds received during the year 1939	
Income.....	\$6,627,433.44
Refunds.....	14,190.68
Gift received from Mr. Carlos E. Fernandez.....	9.00
Lapses during 1939 (net).....	832,814.84
Amount transferred from Principal Fund to cover appropriations made at meeting of April 5, 1939.....	1,845,000.00 9,319,447.96

\$11,219,442.42

Deduct

Net commitments during 1939 as shown on previous page.....	9,463,421.54
Balance, December 31, 1939.....	\$1,756,020.88

The balance in Principal Fund, December 31, 1938, amounted to \$148,004,942.09. Appropriations from principal during the year resulted in a decrease of \$1,845,000, or a balance December 31, 1939, of \$146,159,942.09. There was no

change in the Reserve for Contingent Projects Account.

At the close of the year the accounts of the Comptroller, the accounts of the Treasurer, and the securities owned by the Corporation have been examined by Messrs. Haskins & Sells, Certified Public Accountants, who have rendered a report on their examination to the Committee on Audit.

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
Summary of Funds Available for Commit-	
ment and Disbursement.....	Exhibit C
Summary of Appropriations, Authorizations,	
and Pledges.....	Exhibit D
Statement of Building and Equipment Fund.	Exhibit E
Statement of Appropriations Made During	
the Year 1939.....	Exhibit F
Statement of Appropriations (During 1939	
and Unpaid Balances as at December 31,	
1938, of Prior Year Appropriations) and	
Payments Thereon During 1939.....	Exhibit G
Statement of International Health Division —	
Designations During 1939, Unpaid Balances	
as at December 31, 1938, of Prior Year Desi-	
nations, and Payments Thereon During	
1939.....	Exhibit H
Statement of Transactions Relating to In-	
vested Funds.....	Exhibit I
Schedule of Securities on December 31, 1939 ..	Exhibit J

EXHIBIT A

BALANCE SHEET — DECEMBER 31, 1939

ASSETS

INVESTMENTS

Securities (Ledger valuation).....	\$156,387,813.55
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CURRENT ASSETS

Cash on deposit.....	\$14,838,358.54
Cost of sterling purchased to meet specific appropriations of at least the same dollar amount.....	263,848.65
Advances and deferred charges under appropriations and sundry accounts receivable.....	1,048,781.60
	<hr/>
	16,150,988.79

BUILDING AND EQUIPMENT

In New York.....	\$57,162.24
In Paris.....	63,793.40
	<hr/>
	120,955.64
	<hr/>
	\$172,659,757.98
	<hr/>

EXHIBIT A

BALANCE SHEET — DECEMBER 31, 1939

FUNDS AND OBLIGATIONS

PRINCIPAL FUND..... \$146,159,942.09

RESERVE FOR CONTINGENT PROJECTS..... 1,700,000.00

COMMITMENTS

Unpaid appropriations \$21,929,745.48

Unappropriated authorizations and
pledges..... 965,465.55 22,895,211.03

FUNDS AVAILABLE FOR COMMITMENT..... 1,756,020.88

CURRENT LIABILITIES

Accounts Payable..... 27,628.34

BUILDING AND EQUIPMENT FUND..... 120,955.64

\$172,659,757.98

EXHIBIT B

STATEMENT OF PRINCIPAL FUND

Balance, December 31, 1938.....	\$148,004,942.09
Deduct	
Amount transferred to Appropriations Account to cover the following appropriations made at meeting of April 5, 1939	
RF 39035 Leland Stanford Junior University.....	\$200,000.00
RF 39036 Johns Hopkins University.....	350,000.00
RF 39037 National Bureau of Economic Research.....	870,000.00
RF 39038 Brookings Institution, Inc.....	225,000.00
RF 39050 Available for expenditure in support of the China Program.....	200,000.00
	<u>1,845,000.00</u>
Balance, December 31, 1939.....	<u>\$146,159,942.09</u>

STATEMENT OF RESERVE FOR CONTINGENT PROJECTS

Balance, December 31, 1938 (Unchanged).....	\$1,700,000.00*
<i>* Authorized by Trustees at meeting of</i>	
April 15, 1936.....	\$500,000.00
December 1, 1937.....	1,200,000.00
<u>\$1,700,000.00</u>	

EXHIBIT C

SUMMARY OF FUNDS AVAILABLE FOR COMMITMENT AND DISBURSEMENT

AMOUNTS AVAILABLE

Balance, December 31, 1938		
For unpaid appropriations.....	\$25,384,000.02	
For unappropriated authorizations and pledges	1,791,188.00	
Funds available for commitment.....	1,899,994.46	\$29,075,182.48

Income and refunds received during the year 1939

Income.....	\$ 6,627,433.44	
Refunds.....	14,190.68	
	<u>\$6,641,624.12</u>	

Gift received from Mr. Carlos E. Fernandez.....

Amount transferred from Principal Fund to cover appropriations made at meeting of April 5, 1939	1,845,000.00	8,486,633.12
		<u>\$37,561,815.60</u>

DISBURSEMENTS

Public Health	\$2,348,541.66	
Medical Sciences.....	2,899,296.48	
Natural Sciences.....	1,853,404.72	
Social Sciences.....	3,322,631.44	
Humanities.....	1,329,378.37	
Program in China.....	240,418.62	
Miscellaneous.....	130,935.80	
Administration		
Scientific Divisions.....	523,410.95	
General.....	262,565.65	12,910,583.69
Balance, December 31, 1939.....		<u>\$24,651,231.91*</u>

* See details on following page.

EXHIBIT C — *Continued*

This balance is available as follows

For unpaid appropriations	\$21,929,745 48
For unappropriated authorizations and pledges.	965,465 55
		<u>\$22,895,211 03</u>

Probable payments in the following years

1940	\$12,395,756 03
1941	5,069,887 00
1942	3,051,753 00
1943.	1,277,560 00
1944.	879,207 00
1945.	80,048 00
1946	58,500 00
1947	55,000 00
1948	27,500 00
		<u>\$22,895,211 03</u>

Balance available for commitment.....	1,756,020 88
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Balance, December 31, 1939, on preceding page.....	<u>\$24,651,231 91</u>
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EXHIBIT D

SUMMARY OF APPROPRIATIONS, AUTHORIZATIONS, AND PLEDGES

Unpaid appropriations and unappropriated authorizations and pledges, December 31, 1938

Unpaid appropriations.....	\$25,384,000.02
Unappropriated authorizations and pledges.....	1,791,188.00

Appropriations and authorizations during the year ended December 31, 1939

Appropriations.....	\$10,204,917.54
Less appropriations for which funds were previously authorized or pledged.....	759,000.00
	89,445,917.54
Plus authorizations for later appropriation by the Executive Committee.....	17,504.00
	9,463,421.54
	\$36,638,609.56

LESS

Payments during the year 1939.....	\$12,910,583.69
Sum of unused balances of appropriations and authorizations allowed to lapse.....	832,814.84

Balance, December 31, 1939.....

\$22,895,211.03*

*This balance consists of

Unpaid appropriations.....	\$21,929,745.48
Unappropriated authorizations and pledges.....	965,465.55

\$22,895,211.03

EXHIBIT E

STATEMENT OF BUILDING AND EQUIPMENT FUND

	BALANCE Dec. 31, 1938	NET ADDITIONS 1939	BALANCE DEC. 31, 1939
New York Office			
Library	\$16,300.00	\$672.74	\$16,972.74
Equipment	39,032.32	1,157.18*	40,189.50
Paris Office			
Part interest in building occupied by Paris Office	63,793.40	63,793.40
	<hr/>	<hr/>	<hr/>
	\$119,125.72	\$1,829.92*	\$120,955.64
	<hr/>	<hr/>	<hr/>

* After deducting depreciation of \$4,438.83.

EXHIBIT F

APPROPRIATIONS MADE DURING THE YEAR 1939

PUBLIC HEALTH

International Health Division of The Rockefeller Foundation.....	\$2,000,000.00
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MEDICAL SCIENCES**Psychiatry, Neurology, and Allied Subjects**

Catholic University of America, Washington, D. C.....	\$85,000.00
Child Research Council of Denver, Colorado.....	19,200.00
Columbia University, New York City.....	42,000.00
Dikemark Mental Hospital, Asker, Norway.....	17,150.00
Forman Schools, Litchfield, Connecticut.....	50,000.00
Harvard Medical School, Boston, Massachusetts.....	48,000.00
Institute of the Pennsylvania Hospital, Philadelphia.....	60,000.00
Johns Hopkins University, Baltimore, Maryland.....	71,000.00
Massachusetts Department of Mental Diseases, Boston.....	27,400.00
Massachusetts General Hospital, Boston.....	20,000.00
Medical Research Council, London, England.....	50,000.00
National Committee on Maternal Health, New York City.....	12,000.00
Tavistock Clinic, London, England.....	19,500.00
Tulane University, New Orleans, Louisiana.....	30,000.00
University of Brussels, Belgium.....	24,850.00
University of Colorado, Denver.....	30,000.00
University of Illinois, Urbana	35,000.00
University of Lund, Sweden.....	27,000.00
University of Oxford, England.....	12,000.00
University of Toronto, Canada.....	106,080.00

EXHIBIT F — *Continued***MEDICAL SCIENCES — *Continued*****Endocrinology**

University of California, Berkeley.....	\$75,000.00
Yale University, New Haven, Connecticut.....	36,000.00
Teaching of Public Health in Medical Schools	
Johns Hopkins University, Baltimore, Maryland.....	350,000.00
Fellowships	50,000.00
General	
Grants in Aid.....	125,000.00
Harvard University, Cambridge, Massachusetts.....	415,000.00
Johns Hopkins University, Baltimore, Maryland.....	90,000.00
	<hr/>
	\$1,927,180.00

NATURAL SCIENCES**Experimental Biology**

Amherst College, Massachusetts.....	\$32,500.00
Brown University, Providence, Rhode Island.....	9,000.00
California Institute of Technology, Pasadena.....	70,000.00*
Johns Hopkins University, Baltimore, Maryland.....	30,000.00
Leland Stanford Junior University, Palo Alto, California.....	200,000.00
Long Island Biological Association, Cold Spring Harbor, New York.....	10,000.00
Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City.....	11,465.45

* Appropriations for which funds were previously authorized.

Rockefeller Institute for Medical Research, New York City	\$3,534 55
University of California, Berkeley	50,000 00
University of Chicago, Illinois	24,000.00
University of Minnesota, Minneapolis	31,500 00
University of Missouri, Columbia	100,000 00
University of Oxford, England	115,000.00
University of Utrecht, Netherlands	21,375 00
Washington University, St. Louis, Missouri	60,000 00
Fellowships	
Administered by the Foundation	50,000 00
National Research Council, Washington, D. C.	180,000 00
General	
American Mathematical Society, New York City	12,000 00
Brown University, Providence, Rhode Island	49,500 00
Grants in Aid	160,000 00
National Research Council, Washington, D. C.	61,956 54
Former Program	
Johns Hopkins University, Baltimore, Maryland	500,000 00*
Yale University, New Haven, Connecticut	
Laboratories of Primate Biology	
Expenses	189,000.00*
Building	35,000 00
	\$2,005,831 54

* Appropriations for which funds were previously authorized.

EXHIBIT F — *Continued***SOCIAL SCIENCES****Social Security**

Dutch Economic Institute, Rotterdam, Netherlands.....	\$18,000.00
National Bureau of Economic Research, New York City.....	940,000.00
Social Science Research Council, New York City.....	90,000.00
University of Oxford, England.....	4,250.00
University of Pennsylvania, Philadelphia.....	11,000.00
University of Wisconsin, Madison.....	29,100.00

Public Administration

Harvard University, Cambridge, Massachusetts.....	55,000.00
Social Science Research Council, New York City.....	75,000.00
Syracuse University, New York.....	50,000.00
University of California, Berkeley.....	30,000.00
University of Virginia, Charlottesville.....	24,000.00

International Relations

Canadian Institute of International Affairs, Toronto, Ontario.....	30,600.00
Council on Foreign Relations, New York City.....	44,500.00
Foreign Policy Association, New York City.....	10,000.00

General

Brookings Institution, Washington, D. C.....	225,000.00
Grants in Aid.....	125,000.00
London School of Economics and Political Science, England.....	51,250.00
Social Science Research Council, New York City.....	105,000.00

Fellowships	\$50,000.00
Former Program University of Chicago, Illinois	60,000.00
						<u>\$2,027,700 00</u>

HUMANITIES

Drama						
Stevens Institute of Technology, Hoboken, New Jersey.	\$30,000.00
Studio Theatre School, Buffalo, New York	25,000.00
Vassar College, Poughkeepsie, New York	17,500.00
Libraries and Museums						
American Library Association, Chicago, Illinois.	128,600.00
Bibliothèque pour Tous, Berne, Switzerland	25,000.00
Library of Congress, Hispanic Foundation, Washington, D. C.	22,000.00
Museum of Modern Art, New York City	75,000.00
New York Museum of Science and Industry, New York City	25,000.00
New York Public Library, New York City	15,000.00
University of Chile, Santiago	8,000.00
Radio and Film						
American Film Center, Inc., New York City	60,000.00
Harvard University, Cambridge, Massachusetts	24,000.00
National Committee of the United States of America on International Intellectual Cooperation, New York City	7,500.00
National Film Society of Canada, Ottawa	19,380.00
Princeton University, New Jersey	17,500.00

EXHIBIT F — *Continued***HUMANITIES — *Continued*****Latin-American and Far Eastern Interests**

Claremont Colleges, California.....	\$15,000.00
Columbia University, New York City.....	9,000.00
Institute of Pacific Relations, American Council, New York City.....	31,700.00
Leland Stanford Junior University, Palo Alto, California.....	15,000.00

Fellowships

Administered by the Foundation.....	50,000.00
American Council of Learned Societies, Washington, D. C.....	30,000.00
National Theatre Conference, Cleveland, Ohio.....	25,000.00

General

American Council of Learned Societies, Washington, D. C.....	50,000.00
Boston Symphony Orchestra, Massachusetts.....	60,000.00
Grants in Aid.....	120,000.00
Harvard University, Cambridge, Massachusetts.....	50,000.00
Payne Fund, New York City.....	22,000.00
Princeton University, New Jersey.....	15,000.00

\$992,180.00

PROGRAM IN CHINA

Associated Boards for Christian Colleges in China, New York City.....	\$75,000.00
Chinese Mass Education Movement.....	9,500.00

Emergency Fund.....	\$25,000.00
Fellowships.....	50,000.00
Ministry of Education, Nanking.....	6,080.00
Nankai University, Tientsin.....	6,800.00
National Agricultural Research Bureau, Ministry of Industry and Agriculture, Nanking.....	9,650.00
National Central University, Nanking.....	2,850.00
National Council for Rural Reconstruction.....	40,150.00
National Health Administration of China, Nanking.....	34,130.00
Research and developmental aid grants.....	15,000.00
University of Nanking.....	13,300.00
Yenching University, Peiping.....	11,400.00
General.....	1,140.00
	<hr/>
	\$300,000.00
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MISCELLANEOUS

Special Research Aid Fund for European Scholars.....	\$100,000.00
	<hr/>

ADMINISTRATION

New York, European, and China Offices

Scientific Divisions.....	\$575,099.50
General Administration.....	276,926.50
	<hr/>
	\$852,026.00
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	\$10,204,917.54

EXHIBIT G

APPROPRIATIONS (DURING 1939 AND UNPAID BALANCES AS AT DECEMBER 31, 1938, OF PRIOR YEAR APPROPRIATIONS) AND PAYMENTS THEREON DURING 1939

	1939 APPROPRIATIONS	1939 PAYMENTS
PUBLIC HEALTH		
Fellowships in Nursing (RF 33018).....	\$1,000.00	\$.....
International Health Division of The Rockefeller Foundation*		
Prior years (RF 36130, 37113).....	1,522,079.84	1,961,739.95
1939 (RF 38103).....	2,200,000.00	
1940 (RF 39096).....	2,000,000.00
Revolving Fund. To provide working capital (RF 29093).....	200,000.00
League of Nations, Geneva, Switzerland		
Toward support of the work of the Health Organisation (RF 34178).....	39,731.57
Schools and Institutes of Hygiene and Public Health		
Japan, Tokyo		
Construction and equipment (RF 32116).....	65,735.30	65,735.30
Rumania, Bucharest		
Construction and equipment (RF 33078).....	16,970.71
Health Center (RF 33079)	15,000.00
Sweden, Stockholm		
Construction and equipment (RF 38099).....	270,000.00	48,357.43

* A complete financial statement of the work of the International Health Division for 1939 will be found in Exhibit H, pages 436 to 456.

Schools of Nursing

Emergency aid to schools of nursing in Europe to the development of which the Foundation has previously contributed (RF 31099).....	\$23,294.92	\$23,294.92
School of Nursing, Bucharest, Rumania. Building (RF 35099).....	6,161.69
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
University of Toronto, Ontario. School of Nursing. Endowment (RF 38104).....	255,000.00	249,414.06

MEDICAL SCIENCES**Psychiatry, Neurology, and Allied Subjects**

Boston University, Massachusetts

Researches on cerebral cortex (RF 36104).....	1,250.00	1,250.00
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Catholic University of America, Washington, D. C.

Teaching and research in psychiatry and child guidance (RF 39026).....	85,000.00	10,000.00
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Centre Neurologique de Bruxelles, Belgium. Research (RF 38007).....	8,647.43	3,389.83
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Chicago Area Project, Chicago, Illinois. General budget (RF 37035).....	18,668.11	18,668.11
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Child Research Council of Denver, Colorado. Psychological studies (RF 39028).....	19,200.00	1,300.00
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Columbia University, New York City		
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Study of constitutional aspects of disease (RF 36103, 39005).....	49,115.88	14,000.00
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Teaching and research in neurology (RF 38080).....	90,000.00	11,822.62
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Cornell University, Ithaca, New York		
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Study of reflex behavior in relation to neuroses (RF 38018).....	29,000.00	15,500.00
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Dikemark Mental Hospital, Asker, Norway		
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Research on mental disease (RF 39044).....	17,150.00	2,358.49
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EXHIBIT G — *Continued*

	APPROPRIATIONS	1939 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>		
Psychiatry, Neurology, and Allied Subjects — <i>Continued</i>		
Emma Pendleton Bradley Home, Providence, Rhode Island		
Research in electroencephalography (RF 38069).....	\$12,500.00	\$5,000.00
Forman Schools, Litchfield, Connecticut		
Studies on apraxia and related phenomena in children (RF 39065).....	50,000.00	5,120.00
Harvard Medical School and Massachusetts General Hospital, Boston, Massachusetts		
Teaching and research in psychiatry (RF 37017, 39027).....	107,000.00	70,342.11
Harvard University, Cambridge, Massachusetts		
Research in epilepsy at Harvard Medical School and Boston City Hospital (RF 37060)	26,250.00	17,500.00
Research in industrial hazards (RF 37055).....	254,258.39	78,447.21
Research in neurophysiology (RF 36125).....	52,500.00	15,000.00
Institute of the Pennsylvania Hospital, Philadelphia		
Research and teaching in psychiatry (RF 37009, 39043).....	69,229.30	24,000.00
Institute for Psychoanalysis, Chicago, Illinois		
General activities (RF 38021).....	112,500.00	33,750.00
Research and teaching (RF 35041).....	1,440.22	Cr. 1,052.53
Johns Hopkins University, Baltimore, Maryland		
Development of neurology (RF 36022).....	12,429.41	7,805.66
Neurological research (RF 37080).....	6,012.50	1,568.88
Research and teaching in psychiatry (RF 37018, 39020).....	82,422.06	28,425.00
Study and teaching in child psychiatry (RF 35010).....	7,111.93	6,900.00

London County Council, England			
Research in psychiatry at Maudsley Hospital (RF 35108, 38061).....	\$117,400.48	\$11,656.25	
Massachusetts Department of Mental Health, Boston			
Publication of statistical data on mental disease in Massachusetts (RF 35003).....	13,499.34	
Research in psychiatry at Boston State Hospital (RF 38006, 39024).....	34,250.00	13,700.00	
McGill University, Montreal, Canada			
Research in epilepsy and dementia (RF 38068).....	41,727.93	11,833.01	
Medical Research Council, London, England			
Research in endocrinology, psychiatry, neurology, and allied subjects (RF 39002).....	50,000.00	7,031.25	
Research in field of hereditary mental diseases (RF 37056).....	10,642.64	1,407.38	
Studies in human genetics in relation to mental disease, Galton Laboratory, University of London (RF 35057, 36132).....	20,275.25	6,720.13	
National Committee on Maternal Health, New York City			
Toward budget (RF 38084).....	15,000.00	2,825.00	
Special studies (RF 39066).....	12,000.00	1,500.00	
National Committee for Mental Hygiene, New York City			
Support of activities (RF 36025).....	15,000.00	15,000.00	
Support of Division of Mental Hospital Services (RF 36055).....	8,027.66	8,000.00	
National Hospital for Diseases of the Nervous System, Queen Square, London, England			
Endowment of research (RF 35040).....	1,350.00	
Building (RF 35040).....	1,404.96	
Northwestern University Medical School, Chicago, Illinois			
Research in neuroanatomy (RF 37010).....	17,500.00	4,892.60	
Royal Medico-Psychological Association, London, England			
Teaching and training in psychiatry (RF 37098).....	6,120.50	1,405.50	399

EXHIBIT G — *Continued*

		APPROPRIATIONS	1939 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>			
Psychiatry, Neurology, and Allied Subjects — <i>Continued</i>			
Tavistock Clinic, London, England			
Research in field of psychosomatic medicine (RF 39067).....	\$19,500.00	\$1,640.62	
Tulane University, New Orleans, Louisiana			
Subdepartment of psychiatry			
Development (RF 36086).....	4,000.00	4,000.00	
Maintenance (RF 39021).....	30,000.00	5,000.00	
University of Alabama, University, Alabama			
Research in neurophysiology (RF 36105).....	1,284.02	1,245.04	
University of Brussels, Belgium			
Research in neurophysiology and endocrinology (RF 39068).....	24,850.00	
University of California, Berkeley			
Support of child guidance program of the Institute of Child Welfare (RF 36133).....	7,009.29	7,000.00	
University of Cambridge, England			
Department of Experimental Medicine. Research (RF 37137).....	38,887.00	5,604.00	
Department of Experimental Psychology. Research and alterations (RF 37079).....	56,800.00	10,924.59	
University of Chicago, Illinois			
Psychiatric teaching and research (RF 38016).....	125,000.00	50,000.00	
University of Cincinnati, Ohio			
Research in neurology in relation to nutrition (RF 37107).....	30,000.00	7,274.75	

University of Colorado. School of Medicine, Denver Teaching of psychiatry (RF 37019, 39022).....	\$35,120.00	\$9,880.00
University of Edinburgh, Scotland Research in neurology (RF 36054).....	13,418.34	4,686.25
✓ University of Freiburg, Germany Neuropsychiatric research (RF 37138).....	12,969.17	4,883.69
University of Helsinki, Finland Research in neurophysiology (RF 37099).....	7,280.31	3,827.57
University of Illinois, Urbana Development of teaching and research in psychiatry at the Medical School in Chicago (RF 36085, 39023).....	42,500.00	13,740.48
University of Leiden, Netherlands Research in child psychiatry (RF 34145).....	8,857.41	2,403.72
University of Lund, Sweden Enlargement of research facilities in neurology (RF 39063).....	27,000.00
University of Oslo, Norway Research in neuroanatomy and neuropathology (RF 37057).....	4,228.41	2,004.72
University of Oxford, England Research in brain chemistry (RF 39061).....	12,000.00
University of Paris, France Endowment of neurosurgery (RF 37115).....	60,000.00	39,496.88
University of Rochester, New York Virus research (RF 36027).....	2,000.00	2,000.00
University of Toronto, Canada Research in psychiatry (RF 39001).....	106,080.00	24,861.69

EXHIBIT G — *Continued*

	1939 APPROPRIATIONS	PAYMENTS	THE ROCKEFELLER FOUNDATION
MEDICAL SCIENCES — <i>Continued</i>			
Psychiatry, Neurology, and Allied Subjects — <i>Continued</i>			
Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Australia			
Research on virus diseases, with special reference to neurotropic viruses (RF 37011).....	\$2,043.75	\$1,857.50	
Washington University, St. Louis, Missouri			
Research in neurophysiology (RF 38017).....	78,000.00	11,975.75	
Support of Department of Neuropsychiatry (RF 38067).....	125,000.00	49,897.24	
Worcester State Hospital, Massachusetts			
Research on dementia praecox (RF 37034).....	25,231.68	15,555.33	
Yale University, New Haven, Connecticut. School of Medicine			
Development of psychiatry (RF 29002, 37114).....	385,130.04	87,500.02	
Experimental studies in neurophysiology (RF 36013).....	1.53	
Endocrinology			
Brush Foundation, Cleveland, Ohio			
Researches on human ovulation (RF 37032).....	9,000.00	6,000.00	
Columbia University, New York City			
Researches in endocrinology (RF 37074).....	31,500.00	19,856.96	
Harvard University, Cambridge, Massachusetts			
Researches in endocrinology (RF 37078).....	9,500.00	4,500.00	
Massachusetts General Hospital, Boston			
Research on the parathyroid hormone and calcium and phosphorus metabolism (RF 38082)	18,000.00	4,000.00	

National Research Council, Washington, D. C.			
Committee for Research in Problems of Sex (RF 37123).....	\$184,122.23	\$64,318.99	
Ohio State University, Columbus			
Research in endocrinology (RF 37082).....	3,750.00	3,750.00	
Philadelphia Institute for Medical Research, Pennsylvania			
Research in endocrinology (RF 36100).....	4,500.00	4,500.00	
University of California, Berkeley			
Research on hormones and vitamins (RF 36008, 39062).....	82,500.00	14,962.89	
University of Paris, France			
Research in endocrinology and vitamins (RF 35147).....	3,551.32	425.66	
Yale University, New Haven, Connecticut			
Research in endocrinology (RF 39003).....	36,000.00	9,000.00	
Teaching of Public Health in Medical Schools			
Cornell University Medical College, New York City			
Maintenance of Department of Public Health and Preventive Medicine (RF 36057).....	70,000.00	28,000.00	
Dalhousie University, Halifax, Nova Scotia			
Development of teaching in public health and preventive medicine (RF 38081).....	17,914.76	6,723.01	
Johns Hopkins University, Baltimore, Maryland. School of Medicine			
Teaching of hygiene and preventive medicine (RF 39036).....	350,000.00	350,000.00	
Fellowships			
Administered by The Rockefeller Foundation (RF 32110, 34162, 35172, 36144, 37129, 38113, 39112).....	346,795.08	86,042.48	
Medical Research Council, London, England (RF 37033).....	28,551.61	10,850.89	
National Research Council, Washington, D. C. (RF 37061).....	69,950.01	27,186.70	

EXHIBIT G — *Continued*

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	1939 APPROPRIATIONS	PAYMENTS	THE ROCKEFELLER FOUNDATION	
MEDICAL SCIENCES — <i>Continued</i>				
General				
Commission on Graduate Medical Education, New York City				
Study of graduate medical education (RF 38010).....	\$24,000.00	\$12,000.00		
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).....	39,010.69	15,926.96		
Dartmouth College, Hanover, New Hampshire				
Research in physiological optics (RF 38083).....	50,000.00	20,000.00		
Grants in Aid				
(RF 35173, 36148, 37125, 38109, 39116).....	278,832.45	92,089.55		
Harvard University, Cambridge, Massachusetts				
Development of legal medicine (RF 39029).....	15,000.00	2,500.00		
School of Dental Medicine. Endowment (RF 39111).....	400,000.00		
Johns Hopkins University, Baltimore, Maryland				
Institute of History of Medicine (RF 38022).....	142,500.00	15,000.00		
School of Medicine. Fluid Research Fund (RF 39004).....	90,000.00	20,000.00		
Leland Stanford Junior University, Palo Alto, California				
Researches under Professor Thomas Addis (RF 37030).....	12,000.00	6,529.43		
Research Council of the Department of Hospitals, New York City				
Research on chronic diseases (RF 38008).....	44,000.00	19,690.73		

Royal Caroline Institute, Stockholm, Sweden Research in biochemistry (RF 34144).....	\$1,957.52	\$.....
University of Copenhagen, Denmark. Institute of Human Genetics. Building and equipment (RF 36053).....	25,286.07	17,730.46
Endowment (RF 36053).....	4,244.19
University of Oregon, Portland Construction of library for School of Medicine (RF 38011).....	94,649.74	94,649.74
University of Paris, France. Radium Institute Division of Biophysics (RF 32076).....	50,418.54	6,162.35
Former Program		
American University of Beirut, Lebanon Endowment of medical sciences, nursing, and premedical subjects (RF 38057).....	1,000,000.00	1,000,000.00
Improvement of teaching facilities in the medical sciences, nursing, and the premedical subjects (RF 31124).....	4,166.74	4,166.74
Institute of the Educational Sciences, Geneva, Switzerland General budget (RF 32002, 34121, 35152, 36106).....	3,791.71
Johns Hopkins University, Baltimore, Maryland Study of deafness (RF 32024).....	28,575.34	15,000.00
Leland Stanford Junior University, Palo Alto, California Fluid research fund in medicine (RF 38060).....	70,000.00	15,000.00
Medical literature for Russia (RF 36121).....	5.37
National Research Council, Washington, D. C. Work of the Committee on Drug Addiction (RF 36011).....	65,225.23	32,093.54
Peiping Union Medical College, China Allowance for a widow of staff member (RF 29034).....	5,346.02	1,783.32

EXHIBIT G — *Continued*

		1939 APPROPRIATIONS	1939 PAYMENTS
MEDICAL SCIENCES — <i>Continued</i>			
Former Program — <i>Continued</i>			
University of Copenhagen, Denmark			
Research on inheritance in relation to blood groupings (RF 34112).....	\$1,924.33	\$693.33	
University of Paris, France			
Department of Parasitology, Support (RF 36056).....	7,764.67	
Vanderbilt University, Nashville, Tennessee			
School of Medicine, Fluid research fund (RF 31136).....	5,000.00	5,000.00	
Washington University, St. Louis, Missouri			
Maintenance of Departments in the School of Medicine (RF 38059).....	380,000.00	38,836.41	
NATURAL SCIENCES			
Experimental Biology			
Amherst College, Massachusetts			
Research in genetics, experimental embryology, and growth problems (RF 34130, 39104) ..	34,100.00	1,600.00	
Brown University, Providence, Rhode Island			
Researches in genetics (RF 39032).....	9,000.00	2,400.00	
California Institute of Technology, Pasadena			
Developments of chemistry in its relationship to biological problems (RF 38086, 39073) ...	110,000.00	59,226.45	
Carlsberg Foundation, Copenhagen, Denmark			
Special researches under direction of Professor Linderstrøm-Lang (RF 37024).....	12,493.51	3,733.61	

Collège de France. Laboratory of Atomic Synthesis, Paris			
Research on biological problems (RF 37093).....	\$12,000.00	\$3,000.00	
Columbia University, New York City			
Researches in nutrition (RF 37084).....	8,250.00	5,500.00	
Researches in Departments of Biochemistry and Urology and in the Presbyterian Hospital (RF 38020).....	5,200.00	5,200.00	
Researches on problems of metabolism, with the aid of chemical isotopes (RF 38026).....	65,400.00	14,100.00	
Cornell University, Ithaca, New York			
Research in nutrition (RF 36029).....	22,522.48	7,500.00	
Researches on biochemistry of proteins, peptides, amino acids, hormones, and related com- pounds (RF 38094).....	25,450.00	10,479.28	
Eidgenössische Technische Hochschule, Zurich. Laboratory of Organic Chemistry			
Researches on constitution and synthesis of physiologically active compounds (RF 38042)	53,935.99	9,529.39	
Fondation Rothschild, Paris, France. Institute of Physicochemical Biology			
Researches in cellular physiology, chemical embryology, and genetics (RF 36067).....	38,154.12	3,704.94	
Harvard University, Cambridge, Massachusetts			
Chemical research to determine the heats of organic reactions (RF 38019).....	19,000.00	7,497.95	
Researches in Department of Physical Chemistry (RF 38038).....	90,000.00	14,799.38	
Research on physical and chemical properties of synovial fluid (RF 36082).....	2,100.12	2,100.00	
Johns Hopkins University, Baltimore, Maryland			
Researches in biochemistry (RF 39017).....	30,000.00	3,500.00	
Researches on the role of certain mineral elements in metabolism (RF 36099).....	16,252.75	6,499.58	
Leland Stanford Junior University, Palo Alto, California			
Biological research (RF 39035).....	200,000.00	200,000.00	
Research in chemophysical biology (RF 35174).....	5,000.00	5,000.00	

EXHIBIT G — *Continued*

	1939 APPROPRIATIONS	PAYMENTS	THE ROCKEFELLER FOUNDATION	
NATURAL SCIENCES — <i>Continued</i>				
Experimental Biology — <i>Continued</i>				
Long Island Biological Association, Cold Spring Harbor, New York				
Support of symposia in summers of 1939 and 1940 (RF 37076, 39015).....	\$20,000.00	\$10,000.00		
Marine Biological Association of the United Kingdom, Plymouth, England				
Building and equipment (RF 38071).....	10,266.00	9,378.75		
McGill University, Montreal, Canada				
Research in the Department of Genetics (RF 36097).....	1,660.37	1,244.14		
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)	11,465.45	1,465.45		
National Research Council, Washington, D. C.				
Committee on Effects of Radiation on Living Organisms (RF 35095, 38072).....	24,086.34	22,256.42		
Oregon State College, Corvallis				
Researches in biophysics (RF 37020).....	63,793.49	24,366.55		
New York University, New York City				
Researches in cellular physiology (RF 38085).....	25,000.00	5,000.00		
Princeton University, New Jersey				
Researches in organic chemistry (RF 37052).....	8,000.00	5,500.00		
Rockefeller Institute for Medical Research, New York City				
Research on spectroscopic and chemical aspects of certain deficiency diseases (RF 39006)	3,534.55	2,220.38		

Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine			
Research in mammalian genetics (RF 35159).....	\$5,000.00	\$5,000.00	
State University of Iowa, Iowa City			
Investigations on the physiology of the normal cell (RF 35050).....	7,750.00	5,500.00	
Strangeways Research Laboratory, Cambridge, England			
Building and equipment of additional wing (RF 37109).....	6,720.62	5,552.86	
University of Berne, Switzerland			
Researches in physiology (RF 37054).....	17,607.73	3,424.66	
University of California, Berkeley			
Completing essential equipment of Radiation Laboratory (RF 38005).....	7,500.00	7,500.00	
Cyclotron research (RF 39042).....	50,000.00	8,333.00	
University of Cambridge, England. Molteno Institute of Biology and Parasitology			
Research in cellular physiology (RF 35146).....	15,718.76	5,620.11	
University of Chicago, Illinois			
Biological research (RF 35053, 38037).....	150,053.69	59,861.20	
Endowment of biological research (RF 38036).....	1,500,000.00	
Research in application of spectroscopic methods to biological problems (RF 36081).....	16,077.45	10,700.00	
Researches in molecular spectra (RF 39030).....	24,000.00	4,550.00	
Research in surface chemistry (RF 36080).....	78.68	
University of Copenhagen, Denmark			
Special research in application of methods of physics, chemistry, and mathematics to biological problems (RF 35043).....	14,957.38	4,842.63	
University of Illinois, Urbana			
Research in spectroscopic analysis of water (RF 36016).....	44.09	Cr. 61.64	400
Research in biochemistry of amino acids (RF 38039).....	67,500.00	15,000.00	

EXHIBIT G — *Continued*

	1939 APPROPRIATIONS	1939 PAYMENTS	THE ROCKEFELLER FOUNDATION
NATURAL SCIENCES — <i>Continued</i>			
Experimental Biology — <i>Continued</i>			
University of Leeds, England			
Research in the x-ray analysis of biological tissues (RF 35145, 38041).....	\$52,128.64	\$10,305.53	
University of London, England			
Researches on vitamins, sterols, and related compounds (RF 38070).....	54,388.50	5,970.19	
University of Manchester, England			
Researches on vitamins, sterols, and related compounds (RF 37031).....	14,718.93	
University of Michigan, Ann Arbor			
Research in the physiology of respiration (RF 35049).....	7,575.96	5,000.00	
University of Minnesota, Minneapolis			
Cost of high-pressure generator and for researches in biology and medicine (RF 37053)....	15,000.00	4,945.86	
Researches in lipid metabolism (RF 39031).....	15,000.00	1,500.00	
Researches on mechanism of osmosis (RF 39056).....	16,500.00	2,750.00	
University of Missouri, Columbia			
Construction and equipment of laboratory for genetics research (RF 39040).....	80,000.00	80,000.00	
Research in cytology and genetics (RF 36098, 39041).....	22,750.00	5,249.50	
University of Oxford, England			
Construction and equipment of research laboratory for organic chemistry (RF 39039)....	115,000.00	
Research in application of mathematical analyses to biological problems (RF 35144)....	2,906.25	
Research on the synthesis of proteins (RF 36083).....	20,839.97	3,515.63	

University of Pennsylvania, Philadelphia			
Research on influence of minerals and other elements in diet upon resistance to infection (RF 37075).....	\$4,000.00	\$3,000.00	
University of Rochester, New York			
Researches on biological and medical problems (RF 38025).....	29,500.00	11,500.00	
University of Stockholm, Sweden			
Research in biophysics, chemical biology, and cell physiology (RF 35142).....	729.48	
Researches under direction of Professor Runnström (RF 37022, 38024).....	36,436.43	8,464.31	
Scientific equipment and materials for researches under direction of Professor von Euler (RF 37023).....	11,700.00	6,053.27	
Wenner-Grens Institute of Experimental Biology			
Construction and equipment (RF 37021, 38023).....	51,273.39	41,144.09	
University of Uppsala, Sweden. Institute of Physical Chemistry			
Research on the physicochemical properties of proteins and other heavy molecules (RF 35044).....	28,617.79	8,347.49	
University of Utrecht, Netherlands			
Researches in biochemistry of growth substances (RF 39007).....	21,375.00	2,021.56	
Research in spectroscopic biology and addition to laboratory (RF 37094).....	34,872.50	8,040.10	
University of Virginia, Charlottesville			
Development of ultracentrifuges (RF 37008).....	405.53	
University of Wisconsin, Madison			
Research in immunogenetics (RF 38073).....	23,025.00	4,754.13	
Washington University, St. Louis, Missouri			
Construction of cyclotron in the Institute of Radiology (RF 39069).....	60,000.00	15,000.00	
Research in biochemistry (RF 38074).....	15,000.00	3,483.23	
Research in general physiology and experimental embryology (RF 38040).....	45,000.00	9,362.79	

EXHIBIT G — *Continued*

		1939	
		APPROPRIATIONS	PAYMENTS
NATURAL SCIENCES — <i>Continued</i>			
Experimental Biology — <i>Continued</i>			
Yale University, New Haven, Connecticut			
Experimental embryology (RF 36015).....	\$2,500.00	Cr. \$608.03	
Fellowships			
Administered by The Rockefeller Foundation (RF 32111, 35178, 36145, 37130, 38114, 39113)	352,255.26	101,731.05	
National Research Council, Washington, D. C. (RF 36070, 39070, 39103).....	276,162.20	60,174.18	
General			
American Mathematical Society, New York City			
Establishing an International Review Journal of Mathematics (RF 39071).....	12,000.00	5,000.00	
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)	49,500.00	14,700.00	
China Medical Board, Inc., New York City			
Peiping Union Medical College, China			
Human paleontological research in Asia (RF 32100, 36137).....	60,298.54	18,540.58	
Grants in Aid (RF 36079, 36149, 37126, 38110, 39117).....	444,421.58	140,928.72	
Massachusetts Institute of Technology, Cambridge			
Construction of differential analyzer (RF 36071).....	22,540.08	18,262.36	

National Research Council, Washington, D. C.			
Support of central purposes (RF 36136, 39010, 39102).....	886,956.54	836,956.54	
Former Program			
American Institute of Physics, New York City			
Scientific publications (RF 35122).....	2,621.87	1,126.64	
California Institute of Technology, Pasadena			
Development of natural sciences, including buildings and equipment (RF 30080).....	500,000.00	500,000.00	
Harvard University, Cambridge, Massachusetts			
Geophysical research (RF 35194).....	17,500.00	10,000.00	
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	
Research (RF 30005).....	42,500.00	28,750.00	
University of Leiden, Netherlands			
Purchase and endowment of a photographic telescope for the Union Observatory, Johannesburg, Union of South Africa (RF 30021, 34100).....	12,738.45	6,162.84	
University of Szeged, Hungary			
Department of Science. Scientific equipment (RF 31025).....	1,237.65	509.17	
University of Virginia, Charlottesville			
Graduate research in the natural sciences (RF 34153).....	7,500.00	5,000.00	

EXHIBIT G — *Continued*

		1939	
		APPROPRIATIONS	PAYMENTS
NATURAL SCIENCES — <i>Continued</i>			
Former Program — <i>Continued</i>			
Yale University, New Haven, Connecticut			
Laboratories of Primate Biology, Orange Park, Florida			
Expenses (RF 29090, 39008)	\$235,445 16	\$44,887.90	
Physiological laboratory building (RF 39009)	35,000 00	35,000.00	
SOCIAL SCIENCES			
Social Security			
Austrian Institute for Trade Cycle Research, Vienna			
General budget (RF 37104)	15,731 57	...	
Dutch Economic Institute, Rotterdam, Netherlands			
General budget (RF 36076, 39085)	25,959 61	4,324 33	
Geneva Research Center, Switzerland			
Collaborative study of commercial policy (RF 38095)	45,000 00	20,498.19	
League of Nations, Geneva, Switzerland			
Analytical research work of the Financial Section and Economic Intelligence Service (RF 33023, 37116)	106,258 01	7,355 62	
London and Cambridge Economic Service, England			
Research on business cycle (RF 37067)	8,828.43	4,527 55	

National Bureau of Economic Research, New York City			
Committee on Financial Research. Staff and studies (RF 39106).....	\$70,000.00	\$.....	
Planning and research in field of finance (RF 37139).....	53,715.94	35,399.46	
Research and cooperative programs (RF 39037).....	870,000.00	870,000.00	
National Institute of Economic and Social Research of Great Britain, London			
Toward general budget (RF 37049).....	126,966.25	23,242.50	
Ontario Medical Association, Welland, Ontario			
Development of medical relief records (RF 37016).....	4,145.48	2,488.64	
Social Science Research Council, New York City			
Committee on Social Security			
Organizing exploratory studies, conferences, or small projects in the field of social security (RF 38064, 39082).....	26,000.00	4,000.00	
Study of interrelations between social security program and national income in the United States (RF 39083).....	15,000.00	
Study of mobility of labor and unemployment (RF 37105).....	5,000.00	5,000.00	
Study of state unemployment compensation administration (RF 38101).....	20,000.00	15,000.00	
Study of unemployment relief policies in New Jersey (RF 36114).....	374.82	374.82	
Work in the field of social security (RF 37070, 39081).....	105,000.00	28,827.22	
State Charities Aid Association, New York City			
Establishing local citizens public welfare committees in New York State (RF 37111)....	57,844.96	30,209.70	
University of Louvain, Belgium. Institute of Economics			
Business cycle research (RF 36115).....	1,142.84	Cr. 75.75	
General budget (RF 38102).....	14,000.00	2,713.24	

EXHIBIT G — *Continued*

		1939 APPROPRIATIONS	1939 PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
Social Security — <i>Continued</i>			
University of Oxford, England			
Business cycle research (RF 37015, 39060).....		\$8,628.55	\$3,974.13
University of Pennsylvania, Philadelphia			
Industrial Research Department			
Study of an old Philadelphia company and study of unemployment in Philadelphia (RF 39080).....		11,000.00
University of Sofia, Bulgaria. Statistical Institute of Economic Research			
General budget (RF 37110).....		20,833.19	7,058.34
University of Wisconsin, Madison			
Study of amount and distribution of income in Wisconsin (RF 39079).....		29,100.00	3,750.00
Public Administration			
American Association of Schools of Social Work			
Development of standards for training public welfare officials (RF 38014).....		24,750.00	15,000.00
American University, Washington, D. C.			
Training program for government employees of Latin-American countries (RF 38063)...		14,400.00	7,200.00
Dalhousie University, Halifax, Nova Scotia			
Program of training and research in public administration (RF 36093).....		31,223.42	14,943.15

Harvard University, Cambridge, Massachusetts			
Graduate School of Public Administration. Development of organization and program (RF 37002).....	\$38,042.07	\$2,789.41	
General budget (RF 39109).....	55,000.00	
Program of consultants (RF 38062).....	20,000.00	4,617.75	
Training in public service (RF 35078).....	29,693.52	12,680.67	
National Institute of Public Affairs, Washington, D. C.			
Training of administrative personnel for the Indian Service (RF 37106).....	36,000.00	13,469.82	
Training of personnel attached to federal services (RF 38047).....	96,250.00	35,000.00	
Pacific Northwest Council of Education, Planning, and Public Administration			
Administration, research, and publication (RF 38048).....	63,500.00	24,417.73	
Social Science Research Council, New York City			
Public Administration Committee			
General expenses, exploratory studies, conferences, and small projects (RF 35114, 36140, 38035, 39057, 39084).....	137,515.20	42,091.69	
Study of administrative methods of Department of Agriculture (RF 37140).....	21,075.35	11,408.99	
Study of the administrative organization of the Tennessee Valley Authority (RF 36040)	4,652.04	300.00	
Survey and appraisal of council-manager form of local government (RF 37056).....	4,666.70	4,666.70	
Survey of programs of training in public administration (RF 37065).....	8,750.00	
Spelman Fund of New York, New York City			
Support of work in public administration (RF 35199, 38049).....	2,100,000.00	450,000.00	
Syracuse University, New York, School of Citizenship and Public Affairs			
Research and training (RF 32037, 35139, 39058).....	57,500.00	14,000.00	

EXHIBIT G — *Continued*

		1939 APPROPRIATIONS	1939 PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
Public Administration — <i>Continued</i>			
University of California, Berkeley. Bureau of Public Administration			
Establishing measurement standards for local government activities in the San Francisco-Oakland metropolitan region (RF 39059).....	\$30,000.00	\$5,000.00	
University of Chicago, Illinois			
Training and research in public administration (RF 38091).....	62,500.00	25,000.00	
University of Minnesota, Minneapolis			
Program of training for the public service (RF 36065).....	35,000.00	17,350.81	
University of Southern California, Los Angeles. School of Government			
Development of program (RF 38033).....	30,000.00	12,000.00	
University of Virginia, Charlottesville. Bureau of Public Administration			
Program of service and research (RF 36066, 39108).....	39,554.53	10,149.27	
International Relations			
American Geographical Society, New York City			
Preparation and publication of Millionth Map of Hispanic America (RF 35028).....	5,000.00	
Canadian Institute of International Affairs, Toronto, Ontario			
General budget (RF 36075, 39033).....	32,198.05	8,209.54	
Canton of Geneva, Switzerland. Department of Public Instruction			
Graduate Institute of International Studies. Maintenance (RF 29136, 38045).....	593,416.88	72,564.92	
Centre d'Études de Politique Étrangère, Paris, France			
General budget (RF 38046).....	102,000.00	19,333.42	

Council on Foreign Relations, New York City			
Research in problems involved in peace settlement following present war (RF 39110)....	\$44,500.00	\$11,125.00	
Research program (RF 35189, 38015).....	65,000.00	17,564.21	
Work of American Coordinating Committee of the International Studies Conference (RF 38034).....	12,000.00	12,000.00	
Foreign Policy Association, New York City			
Department of Popular Education (RF 37119).....	50,000.00	25,000.00	
Latin American Information Service (RF 39074).....	10,000.00	2,500.00	
Research Department (RF 38106).....	75,000.00	25,000.00	
Geneva Research Center, Switzerland			
General research budget (RF 37068).....	25,514.58	8,760.60	
Harvard University and Radcliffe College, Cambridge, Massachusetts			
Research in the field of international relations (LS 993).....	126,742.43	16,273.32	
Institute of Economics and History, Copenhagen, Denmark			
Budget of International Relations Section (RF 36111, 38065).....	18,039.14	5,227.47	
Institute of Pacific Relations			
American Council, New York City. General expenses (RF 38108).....	30,000.00	15,000.00	
International Secretariat. Studies of issues involved in present situation in the Far East (RF 38013).....	77,208.73	34,115.50	
Pacific Council, Honolulu, Hawaii. General expenses and research program (RF 38107) ..	80,000.00	40,000.00	
International Information Committee, Stockholm, Sweden			
Research and popular education in international problems in Sweden (RF 38001).....	17,217.90	7,243.31	
International Institute of Intellectual Cooperation, Paris, France			
Danubian Economic Study (RF 37118).....	13,000.00	9,000.00	
Maintenance and conferences (RF 37117).....	50,000.00	37,560.87	

EXHIBIT G — *Continued*

	1939	APPROPRIATIONS	PAYMENTS
SOCIAL SCIENCES — <i>Continued</i>			
International Relations — <i>Continued</i>			
International Studies Conference			
Special grants in aid (RF 36017).....	\$2,925.52	\$.....	
League of Nations, Geneva, Switzerland. Fiscal Committee			
Study of international double taxation problems (RF 33004).....	24,057.90	
Library of International Relations, Chicago, Illinois			
General budget (RF 36095).....	20,000.00	8,750.00	
Norwegian Committee for International Studies, Oslo			
Development of program of research and popular education in international problems in Norway (RF 37102).....	17,473.48	6,987.61	
Royal Institute of International Affairs, London, England			
Research program (RF 37004).....	140,700.00	28,102.50	
Study of workings of Geneva Convention in Upper Silesia (RF 37103).....	338.75	
Yale University, New Haven, Connecticut			
Research in international relations (RF 35079).....	20,000.00	15,000.00	
General			
Brookings Institution, Washington, D. C.			
General research program (RF 36062, 39038).....	262,500.00	262,500.00	
Grants in aid in the fields of social security, international relations, and public administration (RF 35192, 36150, 37127, 38096, 38111, 39118).....	281,971.66	82,091.19	

Institute of Economic and Social Research, Paris, France			
Establishment and support (RF 33072)	\$137,190.10	\$26,104.67	
London School of Economics and Political Science, England			
Emergency fund (RF 39095)	51,250.00	
National Bureau of Economic Research, New York City			
General research program and expense of office of Executive Director (RF 36064)	66,250.00	66,250.00	
Social Science Research Council, New York City			
Administrative expenses (LS 875, RF 39107)	136,250.02	31,250.02	
Conferences and planning (RF 31127, 38043)	178,316.31	47,020.96	
General research projects (RF 31126)	96,578.03	9,228.31	
Grants in aid of research (RF 37050, 38044)	77,205.00	25,447.02	
Fellowships			
Administered by The Rockefeller Foundation			
Former program (RF 34044, 34173, 35195)	16,510.57	1,517.72	
In fields of social security, international relations, and public administration (RF 35191, 36146, 37131, 38115, 39114)	271,957.22	92,174.09	
Social Science Research Council, New York City (RF 37051)	193,500.00	50,600.00	
Former Program			
American Statistical Association, Washington, D. C.			
General budget (RF 35197)	4,500.00	3,000.00	
American University of Beirut, Lebanon			
Work in the social sciences (RF 35070)	6,000.00	4,500.00	
Columbia University, New York City			
Research in the social sciences (RF 30036-37)	85,807.94	50,783.29	

EXHIBIT G — *Continued*

	1939 APPROPRIATIONS	1939 PAYMENTS	4-22
SOCIAL SCIENCES — <i>Continued</i>			
Former Program — <i>Continued</i>			
Grants in Aid			
Europe (RF 35196)	\$365.30	Cr. 396.79	
Harvard University, Cambridge, Massachusetts			
Research in anthropology (RF 36035)	2,500.00	2,500.00	
Research in the social sciences (RF 32032, 35086)	135,527.43	54,000.00	
Institute of Economics and History, Copenhagen, Denmark			
General budget (RF 36110)	4,872.60	2,100.84	
International Institute of African Languages and Cultures, London, England			
General budget (RF 35085)	5,000.00	5,000.00	
Leland Stanford Junior University, Palo Alto, California			
Research in the social sciences (RF 37069)	12,500.00	10,000.00	
London School of Economics and Political Science, University of London, England			
Library development (RF 31030)	22,926.20	8,175.84	
Purchase of land for expansion of school plant (RF 31028)	34,140.38	
Research fund (RF 35067)	3,000.00	
McGill University, Montreal, Canada			
Research in the social sciences (RF 36078)	12,858.67	10,208.88	
National Bureau of Economic Research, New York City			
International study of the history of prices (RF 29138, 33113)	11,786.18	8,300.15	
New York School of Social Work, New York City			
General budget (RF 32043)	10,000.00	7,500.00	

THE ROCKEFELLER FOUNDATION

Polish Academy of Sciences, Cracow. Economic Institute Research program (RF 35076).....	\$2,000.00	\$2,000.00
Tulane University, New Orleans, Louisiana. School of Social Work General budget (RF 32044).....	4,000.00	4,000.00
University of California, Berkeley. Institute of Social Sciences Research (RF 35068).....	10,000.00	7,500.00
University of Chicago, Illinois Aid to social science facilities (RF 31133, 35087).....	150,000.00	25,000.00
Local community research (RF 31131).....	31,522.50
School of Social Service Administration General endowment (RF 34057).....	500,000.00
Current expenses (RF 34059, 39045).....	85,000.00	25,000.00
University of Manchester, England Work of Economic Research Department (RF 35075).....	1,500.00	1,500.00
University of North Carolina, Chapel Hill. Institute for Research in the Social Sciences Support (RF 35069).....	10,000.00	7,500.00
University of Oslo, Norway. Institute of Economics Research program (RF 36112).....	18,000.00	7,500.00
University of Oxford, England Development of program in the social sciences (RF 34154).....	49,426.54	22,600.23
University of Paris, France Research in the social sciences (RF 35072).....	53,431.18	12,302.77
University of Pennsylvania, Philadelphia. Wharton School of Finance and Commerce, Industrial Research Department Support (RF 35074).....	10,000.00	7,500.00

EXHIBIT G — *Continued*

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THE ROCKEFELLER FOUNDATION

SOCIAL SCIENCES — *Continued***Former Program — *Continued***

University of Stockholm, Sweden

Research in the social sciences (RF 36092).....

1939 APPROPRIATIONS

PAYMENTS

\$4,000.00 \$4,000.00

University of Texas, Austin

Research in the social sciences (RF 37003).....

10,000.00 7,500.00

University of Virginia, Charlottesville

Institute for Research in the Social Sciences

Support (RF 34175).....

5,000.00 3,750.00

Welfare Council of New York City

Research Bureau, Budget (RF 36139).....

45,000.00 30,000.00

Western Reserve University, Cleveland, Ohio. School of Applied Social Sciences

Support (RF 32042).....

5,000.00 3,750.00

Yale University, New Haven, Connecticut. Institute of Human Relations

Research in psychology, child development, and social sciences (RF 29008).....

75,000.00 75,000.00

HUMANITIES**Drama**

Carolina Art Association

General expenses of Dock Street Theatre, Charleston, South Carolina (RF 38051).....

12,500.00 5,000.00

Cornell University, Ithaca, New York

Work in drama (RF 36002).....

2,500.00 2,500.00

Leland Stanford Junior University, Palo Alto, California			
Development of program of School of Drama (RF 37006).....	\$10,000.00	\$10,000.00	
National Theatre Conference, Cleveland, Ohio			
General expenses and royalty fee for noncommercial productions (RF 38054).....	11,500.00	2,978.71	
Northwestern University, Evanston, Illinois			
Development of school and community drama (RF 36073).....	2,625.39	2,625.39	
Stevens Institute of Technology, Hoboken, New Jersey			
Research in control of sound and light for dramatic purposes (RF 39075).....	30,000.00	5,850.00	
Studio Theatre School, Buffalo, New York			
Development of school and community program in drama (RF 39011).....	25,000.00	25,000.00	
University of North Carolina, Chapel Hill			
Current expenses of work in drama (RF 37028, 38050).....	30,750.00	14,250.00	
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).....	17,500.00	8,750.00	
Yale University, New Haven, Connecticut			
Aid in acquiring and operating a motion picture camera for the use of the Department of Drama (RF 36096).....	3,500.00	3,500.00	
Development of library in Department of Drama (RF 35092).....	2,195.40	2,195.40	
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. European activities (RF 39048).....	60,000.00	17,000.00	
Preparation of new edition of Union List of Serials in the United States and Canada (RF 39051).....	38,600.00	10,000.00	
Studies of library cooperation with Latin America (RF 39047).....	30,000.00	7,500.00	

EXHIBIT G — *Continued*

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	APPROPRIATIONS	PAYMENTS	THE ROCKEFELLER FOUNDATION
	1939		
HUMANITIES — <i>Continued</i>			
Libraries and Museums — <i>Continued</i>			
Bibliothèque pour Tous, Berne, Switzerland			
Book purchases and development of regional services (RF 39049).....	\$25,000.00	\$4,000.00	
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).....	85,962.79	1,682.61	
Buffalo Museum of Science, New York			
Training museum personnel (RF 37071).....	18,750.00	18,750.00	
Harvard University, Cambridge, Massachusetts			
Microfilm copies of foreign newspaper files (RF 38090).....	4,000.00	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	
Museum of Modern Art, New York City			
Expenses of circulating exhibitions, publication purposes, and current expenses (RF 39025)	75,000.00	45,000.00	
National Central Library, London, England			
Establishment of Bureau of American Bibliography (RF 37059).....	8,189.05	2,156.26	
National Library of Peiping, China			
Support of <i>Quarterly Bulletin of Chinese Bibliography</i> (RF 35150)	1,125.00	Cr. 138.26	
Development of library services (RF 36072).....	17,500.00	3,750.00	

New York Museum of Science and Industry, New York City			
General budget (RF 39100).....	\$25,000.00	\$15,000.00	
New York Public Library, New York City			
Development of services in microfilm (RF 39098).....	15,000.00	
Princeton University, New Jersey			
Index of Christian Art (RF 38100).....	50,000.00	4,000.00	
Society of the Friends of the Bibliothèque Nationale, Paris, France			
Expenses of printing the General Catalogue (RF 29089).....	2,000.00	1,000.00	
Tulane University, New Orleans, Louisiana			
Cataloguing collections of museum of the Middle American Research Institute (RF 38098)	5,000.00	
University of Chile, Santiago			
Development of its central library (RF 39094).....	8,000.00	
University of New Mexico, Albuquerque			
Development of library resources (RF 38089).....	4,784.00	4,784.00	
University of Oxford, England			
Bodleian and other libraries. Development (RF 31121).....	1,214,677.79	486,807.54	
Radio and Film			
American Film Center, Inc., New York City			
General expenses (RF 39012).....	60,000.00	30,925.00	
Harvard University, Cambridge, Massachusetts			
Lecturer in broadcasting (RF 39086).....	24,000.00	
Museum of Modern Art, New York City			
General support of Film Library (RF 38055).....	35,000.00	35,000.00	
National Committee of the United States of America on International Intellectual Co-operation, New York City			
International exchange of motion pictures of educational and cultural value (RF 39055)	7,500.00	5,187.50	

EXHIBIT G — *Continued*

	1939 APPROPRIATIONS	1939 PAYMENTS	THE ROCKEFELLER FOUNDATION
HUMANITIES — <i>Continued</i>			
Radio and Film — <i>Continued</i>			
National Film Society of Canada, Ottawa			
General expenses (RF 39045).....	\$19,380.00	\$4,254.53	
Princeton University, New Jersey. School of Public and International Affairs			
Study of value of radio to listeners (RF 37072, 39076).....	30,250.00	27,250.00	
University Broadcasting Council, Chicago, Illinois			
Developing radio programs of educational and cultural value (RF 37073).....	25,000.00	17,500.00	
World Wide Broadcasting Foundation, Boston, Massachusetts			
Development of radio programs of educational and cultural value (RF 38056).....	77,000.00	40,240.84	
Studies of American Culture			
Authors' League of America, New York City			
Preparation of a series of American plays (RF 36124).....	1,325.72	982.13	
Latin-American and Far Eastern Interests			
American Council of Learned Societies, Washington, D. C.			
Cataloguing American collections of Chinese and Japanese books (RF 37120).....	55,429.40	9,800.00	
Chinese and Japanese studies (RF 37096).....	4,343.81	4,343.81	
<i>Handbook of Latin American Studies</i> (RF 38012).....	15,000.00	5,202.51	
Summer seminars in Far Eastern studies (RF 38088).....	7,500.00	
Claremont Colleges, California			
Development of Far Eastern studies (RF 39077).....	15,000.00	5,000.00	

Columbia University, New York City			
Japanese studies (RF 37112).....	\$5,000.00	\$2,500.00	
Books and teaching materials in Far Eastern languages (RF 38030).....	20,000.00	5,000.00	
Visiting lecturer on Japanese cultural history (RF 39093).....	9,000.00	
Cornell University, Ithaca, New York			
Development of Far Eastern studies (RF 38087).....	13,250.00	4,875.00	
Harvard University, Cambridge, Massachusetts			
Translating, abstracting, and indexing works on oriental art (RF 35120).....	1,608.61	900.00	
Institute of Pacific Relations, American Council, New York City			
English translations of source materials on Chinese history (RF 39052).....	31,700.00	5,950.00	
Experiments in intensive teaching of Chinese language (RF 35182).....	195.00	
International Bureau of Education, Geneva, Switzerland, Children's Literature Section			
Studies in Latin-American countries (RF 38003).....	8,000.00	4,000.00	
Leland Stanford Junior University, Palo Alto, California			
Development of Far Eastern studies (RF 39053).....	15,000.00	1,687.50	
Orthological Institute, London, England			
General expenses and developing texts in Basic English (RF 35181).....	784.37	
Orthological Institute, Peiping, China			
General expenses (RF 37012).....	8,633.60	3,648.22	
Pomona College, Claremont, California			
Development of Far Eastern studies (RF 36033).....	750.00	750.00	
Princeton University, New Jersey			
Development of Far Eastern studies (RF 38029).....	13,650.00	2,565.10	
Royal Ontario Museum of Archaeology, Toronto, Canada			
Teaching and research in Far Eastern subjects (RF 37121).....	20,000.00	4,921.89	

EXHIBIT G — *Continued*

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THE ROCKEFELLER FOUNDATION

	APPROPRIATIONS	1939 PAYMENTS
HUMANITIES — <i>Continued</i>		
Latin-American and Far Eastern Interests — <i>Continued</i>		
University of Chicago, Illinois		
Books and teaching materials in Far Eastern languages (RF 38031).....	\$20,000.00	\$5,000.00
Development of new materials for teaching Chinese languages and literature (RF 36122)...	13,000.00	3,112.15
University of Colorado, Boulder		
Development of Far Eastern studies (RF 36117).....	1,000.00	1,000.00
University of Pennsylvania, Philadelphia		
Development of Far Eastern studies (RF 38028).....	12,500.00	5,000.00
Yale University, New Haven, Connecticut		
Development of Chinese studies (RF 37026).....	16,600.00	7,800.00
Fellowships		
Administered by The Rockefeller Foundation (RF 35065, 35184, 36147, 37132, 38116, 39115)	185,450.34	66,327.56
American Council of Learned Societies, Washington, D. C.		
(RF 36141, 39046).....	37,500.00	32,500.00
Authors' League of America, Inc., New York City		
(RF 38053).....	23,500.00	9,500.00
National Theatre Conference, Cleveland, Ohio		
(RF 39019).....	25,000.00	1,000.00
General		
American Council of Learned Societies, Washington, D. C.		
Expenses of planning committees and foreign activities (RF 36141, 39046).....	57,500.00	7,500.00
General activities (RF 34157, 35168, 38105).....	114,773.67	33,100.20

Boston Symphony Orchestra, Massachusetts			
Berkshire Music Center (RF 39101).....	\$60,000.00	\$.....	
Grants in Aid			
(RF 36151, 37128, 38112, 39088, 39119).....	241,116.26	85,822.39	
Harvard University, Cambridge, Massachusetts			
Research in field of criticism and in uses of language (RF 39018).....	50,000.00	5,000.00	
International Committee of Historical Sciences, Paris, France			
Toward general budget, increasing distribution of publications, and expenses of next Congress (RF 37141).....	9,800.00	
National Committee of the United States of America on International Intellectual Cooperation, New York City			
Committee on Copyright (RF 38066).....	8,500.00	8,500.00	
Payne Fund, New York City			
Preparation of English texts and programs of teacher training in English studies for classes of foreign-born adults (RF 39013)	22,000.00	22,000.00	
Princeton University, New Jersey. School of Public and International Affairs			
Studies of public opinion (RF 39099).....	15,000.00	8,000.00	
Former Program			
American School of Classical Studies, Athens, Greece			
Fellowships in archaeology in connection with the excavation of the Athenian Agora (RF 38097).....	25,000.00	25,000.00	
Museum to house objects excavated at the Agora (RF 37089).....	150,000.00	25,000.00	
American Schools of Oriental Research, Baghdad, Iraq, and Jerusalem, Palestine			
Current expenses (RF 36061).....	5,000.00	5,000.00	
Endowment (RF 36061).....	84,508.46	34,169.56	

EXHIBIT G — *Continued*

		1939 APPROPRIATIONS	1939 PAYMENTS
HUMANITIES — <i>Continued</i>			
Former Program — <i>Continued</i>			
University of Chicago, Illinois			
Research in the humanities (RF 35029).....	\$7,500.00	\$7,500.00	
University of London, England. School of Oriental Studies			
Research in African linguistics (RF 36003).....	3,631.24	3,120.83	
PROGRAM IN CHINA			
Associated Boards for Christian Colleges in China, New York City			
Emergency grants to private universities and colleges in China (RF 39064).....	75,000.00	75,000.00	
Chinese Mass Education Movement			
General budget (RF 37041, 38075, 39050).....	23,717.32	6,314.09	
Chinese Ministry of Education, Nanking			
Expenses of a Commission on Medical Education (RF 38075, 39050).....	14,304.30	3,950.55	
Emergency Fund (RF 37124, 39016).....	42,500.00	15,945.00	
Fellowships. Foreign and local (RF 36050, 37047, 38076, 39050).....	155,398.79	23,368.71	
Ministry of Industry and Agriculture, Nanking. National Agricultural Research Bureau			
Insect control work (RF 38075, 39050).....	17,356.99	8,501.89	
Nankai University, Tientsin. Institute of Economics			
General budget (RF 38075, 39050).....	11,943.91	6,366.17	
National Central University, Nanking. College of Agriculture			
Development of work in animal husbandry and veterinary preventive medicine (RF 38075, 39050).....	5,413.39	2,033.34	

National Council for Rural Reconstruction			
General budget (RF 39050).....	\$40,150.00	\$12,606.38	
National Health Administration of China, Nanking			
Training of health personnel (RF 37045, 38075, 39050).....	78,052.32	34,518.25	
National Rural Administration Training Institute			
Expenses (RF 38075).....	50,767.02	22,743.15	
North China Council for Rural Reconstruction			
Toward expenses (RF 37038).....	31,543.93	Cr. 1,935.30	
Research and Developmental Aid (RF 37048, 37142, 38076, 39050).....	34,856.16	14,773.12	
Unallocated balance of 1939-40 appropriation (RF 39050).....	1,140.00	
University of Nanking, Departments of Agricultural Economics and Science			
General budget (RF 38075, 39050).....	26,800.00	11,494.49	
Yenching University, Peiping, College of Public Affairs			
General budget (RF 38075, 39050).....	20,842.46	4,738.78	
MISCELLANEOUS			
Commission on Interracial Cooperation, Atlanta, Georgia			
General budget (LS 999).....	15,433.41	10,264.15	
Exchange Fund (RF 35100).....	39,715.44	
History of The Rockefeller Foundation (RF 37037).....	12,632.02	2,773.31	
Playground and Recreation Association of America, New York City			
General budget (LS 1000).....	30,000.00	20,000.00	
Special Research Aid Fund for European Scholars (RF 34028, 35020, 35135, 35153, 36090, 37090, 38092, 39034, 39078, 39092).....	227,687.42	74,765.07	
University of Minnesota, Minneapolis			
Child study and parent education (LS 933-34).....	33,968.48	10,182.36	

EXHIBIT G — *Continued*

		1939 APPROPRIATIONS	1939 PAYMENTS
MISCELLANEOUS — <i>Continued</i>			
University of Toronto, Canada			
Development of child research and parent education (RF 30054).....	\$14,962.22	\$9,984.12	
Visits by individuals and commissions (RF 30101).....	12,235.33	2,966.79	
ADMINISTRATION			
Scientific Divisions			
1938.....	61,772.68	24,863.98	
1939.....	562,889.50	498,546.97	
1940.....	556,535.00	
General			
1938.....	40,934.54	16,111.59	
1939.....	290,527.50	246,454.06	
1940.....	273,991.00	
	<hr/>	<hr/>	<hr/>
		\$35,588,917.56	
LESS			
Unused Balances of Appropriations Allowed to Lapse	748,588.39		
TOTAL Net APPROPRIATIONS AND EXPENDITURES.....	<hr/>	<hr/>	<hr/>
		\$34,840,329.17	\$12,910,583.69

REFUNDS ON PRIOR YEAR CLOSED APPROPRIATIONS

Eastern Mediterranean. Anopheline Surveys . . .	(IH 36009)	\$84 00
<i>Encyclopaedia of the Social Sciences</i> . . .	(RF 32114)	1,545 13
Fiji Islands, South Pacific. Public Health Administration . . .	(IH 34075)	12 50
Jamaica. Yaws Study . . .	(IH 31164)	1,315 97
Johns Hopkins University . . .	(RF 37081)	177 51
Massachusetts General Hospital . . .	(RF 35024)	33 64
National Agricultural Research Bureau . . .	(RF 37044)	1,376 47
National Central University . . .	(RF 37043)	.37
National Health Administration . . .	(RF 36044)	27 19
New York University . . .	(RF 35176)	12
Research Aid Grant, Natural Sciences, Europe . . .	(RF 34039)	749 14
Social Science Research Council . . .	(RF 37086)	2,938.52
University of Alaska . . .	(RF 36074)	1,642.95
University of Chicago . . .	(RF 32035)	3,442 86
University of Liverpool . . .	(RF 32014)	147 53
University of Utrecht . . .	(RF 35143)	12 01
Yenching University . . .	(RF 36043)	684 77
		<u>\$14,190 68</u>

EXHIBIT H

INTERNATIONAL HEALTH DIVISION

DESIGNATIONS DURING 1939, UNPAID BALANCES AS AT DECEMBER 31, 1938
OF PRIOR YEAR DESIGNATIONS, AND PAYMENTS THEREON DURING 1939

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES			
Anemia			
Puerto Rico			
1938 (IH 37038).....	\$1,229.04	\$.....	\$1,209.41
1939 (IH 36047, 38043).....	300.00	3,500.00	3,010.50
Intestinal Parasites, including Hookworm			
Africa			
Egypt			
1937-38 (IH 36080, 37036, 37039).....	4,936.26	687.98
1939 (IH 38044-45).....	3,135.00	1,430.82
United States			
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland			
1938-39 (IH 37040).....	1,173.12	1,170.38
Malaria			
Caribbean Area			
Costa Rica			
1937-38 (IH 37027, 38007).....	180.63	123.12
1938-39 (IH 38008).....	625.22	615.10
1939-40 (IH 38089, 39011).....	3,300.00	1,040.51

Cuba				
1938-40 (IH 37087).....	\$13,524.71	\$.....	\$8,116.38	
Panama				
1938 (IH 37041).....	1,985.15	1,682.86	
1939 (IH 38049).....	2,000.00	566.72	
Puerto Rico				
1936-38 (IH 35127).....	20.33	15.93	
Salvador				
1938-39 (IH 36047, 38083).....	800.00	772.95	
1939-40 (IH 39020).....	1,500.00	
Europe, Africa, and Near East				
Albania				
1937 (IH 36083).....	10.98	
1938-40 (IH 33077, 37089).....	5,729.01	5,729.01	
1939 (IH 38092).....	2,500.00	701.31	
Balkans, Italy, and Northern Europe				
1938 (IH 37044).....	1,798.00	1,798.00	
1939 (IH 38050).....	9,000.00	8,933.23	
Bulgaria				
1937-38 (IH 36088).....	3,793.34	209.09	
Cyprus				
1938 (IH 37045).....	2,375.55	844.83	
1939-40 (IH 38093).....	20,140.00	3,175.40	
Egypt				
1938 (IH 37094, 38039).....	572.38	471.84	
1939 (IH 38051).....	2,400.00	2,043.28	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Malaria — <i>Continued</i>			
Europe, Africa, and Near East — <i>Continued</i>			
England			
University of Cambridge. Molteno Institute of Parasitology			
1936-39 (IH 36051)	8860 07	\$... ...	\$796 45
1939-41 (IH 39014)		1,500.00	
Greece			
1937 (IH 36090)	2,480 28	
1938 (IH 37046)	7,101 02	5,669 41
1939-40 (IH 38094)		11,000 00	3,267 08
Italy			
Institute of Public Health, Rome. Laboratory			
1937 (IH 36091)	2,125 73
1938-39 (IH 37092)	23,807 38	13,144 79
Mediterranean Region			
1939-40 (IH 39021)		22,500 00	.
Portugal			
1938 (IH 37047)	2,394 68	1,387 91
1939-40 (IH 38095)		20,000.00	6,772 90
Spain			
1936 (IH 35133)	2,454 06	

Far East				
India				
1937-38 (IH 37014, 37048).....	\$4,680.08	\$.....	\$3,550.24	
1939 (IH 38052).....		27,360.00		13,005.15
Mexico				
1938-39 (IH 38021).....	16,017.68	4,330.50	
South America				
Brazil				
1929-30 (IH 28183, 29217).....	13,877.19	423.33	
<i>Anopheles gambiae</i> Control				
1938 (IH 38028).....	1,500.00	1,198.71	
1939-40 (IH 38091, 39025).....		180,000.00		74,875.67
British Guiana				
1939-41 (IH 39018).....		10,000.00	
United States				
Florida				
1938-39 (IH 36047, 37042, 38015, 38046).....	8,890.54	14,800.00	13,194.82	
Johns Hopkins University. School of Hygiene and Public Health, Baltimore,				
Maryland				
1938-39 (IH 38016).....	2,750.00	2,749.40	
1939-40 (IH 38047).....		3,000.00		949.34
University of Chicago, Illinois				
1938 (IH 37043).....	1,148.44	1,148.42	
1939 (IH 38048).....		2,000.00		1,054.34
Miscellaneous				
Special investigations				
1938 (IH 37031).....	259.03	214.10	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Mental Hygiene			
Johns Hopkins University. School of Hygiene and Public Health, Baltimore, Maryland			
1938-39 (IH 37049).....	\$10,700.00	\$.....	\$7,993.37
1939-40 (IH 38053).....	13,200.00
Tennessee. State Department of Health			
1938-39 (IH 37050).....	12,064.34	11,904.51
1939-40 (IH 38054).....	16,000.00	3,395.09
Nutrition			
Vanderbilt University School of Medicine, Nashville, Tennessee			
1939-41 (IH 39003).....	40,000.00	5,106.06
Rabies			
Alabama			
1938-39 (IH 37081, 38013, 38081, 39007).....	15,734.13	9,820.00	14,649.84
Respiratory Diseases			
Influenza Studies			
Europe			
Hungary			
1938 (IH 37052).....	3,049.04	3,049.04
1939 (IH 38057).....	6,000.00	413.00

United States				
California				
1938-40 (IH 38014, 39016).....	\$23,430.00	\$3,000.00	\$10,249.78	
Minnesota				
1937-39 (IH 37021, 38056).....	10,717.61	258.06	10,846.77	
1939-40 (IH 38056).....	11,041.94	
New York				
1937-39 (IH 36049, 37084).....	5,080.06	4,676.19	
1939-40 (IH 38084).....	10,500.00	1,449.02	
New York University				
1938-41 (IH 38023).....	17,500.00	6,585.81	
Respiratory Virus Research				
Argentina				
1940-42 (IH 39024).....	20,000.00	
Study of the Common Cold				
Columbia University, New York				
1938-39 (IH 37051).....	7,540.82	5,965.45	
1939-40 (IH 38055).....	11,000.00	3,041.79	
Scarlet Fever				
Rumania				
1937-38 (IH 36043, 38030).....	2,561.73	2,320.52	
1939 (IH 38058).....	21,500.00	6,118.47	
Smallpox				
Spain				
Study of vaccine virus				
1936 (IH 35144).....	1,950.08	1,235.19	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>			
Syphilis			
California			
1939-42 (IH 39008).....	\$.....	\$20,160.00	\$.....
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland			
1937-39 (IH 37017, 37083, 38005, 38082, 39009).....	7,514.61	10,115.00	12,355.86
1940-41 (IH 39017, 39068).....	24,530.00
North Carolina			
1940-42 (IH 39022).....	14,000.00
Tuberculosis			
Caribbean Area			
Costa Rica			
1939-42 (IH 39013).....	20,000.00	1,282.93
Jamaica			
1938 (IH 37054).....	5,160.88	2,273.51
1939-41 (IH 38087).....	47,250.00	13,613.91
Puerto Rico			
1938-39 (IH 38026).....	2,360.00	1,839.17
Europe			
Austria			
1938-39 (IH 37090).....	15,760.00	7,732.77

United States						
Committee on Neighborhood Health Development of New York City						
1938-41 (IH 38031).....	\$12,800 00	\$.....	\$.....	\$.....	\$.....	86,374.54
Consultant						
1938-41 (IH 38003)	3,252.34
Cornell University Medical College, New York City						
1937-38 (IH 36047, 37019).....	642 34	433.20
1938-39 (IH 38004)	10,732 91	10,318 02
1939-40 (IH 38059)	13,500.00	3,054 72
Tennessee						
1938-39 (IH 37053)	9,115 17	8,369 29
1939-41 (IH 38085)	24,200 00	2,839 91
Yellow Fever						
Africa						
1937 (IH 36109)	5,050 06
1938 (IH 37057)	5,647 74	5,647 74
1939 (IH 38063)	15,000.00	4,804 56
Caribbean Area						
Central America and West Indies						
1939-40 (IH 38088)	3,000 00	264.87
Europe						
France. Pasteur Institute, Paris						
1937 (IH 36095)	609.87
1938 (IH 37056)	1,192.43	437.95
1939 (IH 38062)	1,500.00	465.62

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS	44
CONTROL AND INVESTIGATION OF SPECIFIC DISEASES AND DEFICIENCIES — <i>Continued</i>				
Yellow Fever — <i>Continued</i>				
South America				
Brazil				
1938 (IH 37055, 38022).....	\$56,027.85	\$.....	\$43,914.74	
1939 (IH 38060).....	125,000.00	122,963.28	
British Guiana				
1939-40 (IH 39019).....	2,000.00	
Colombia				
1938 (IH 37055).....	10,731.20	8,096.48	
1939 (IH 38060).....	50,000.00	35,183.47	
Laboratory building				
1938-39 (IH 37030, 38029).....	5,013.91	3,770.62	
Peru				
1939 (IH 38061).....	8,000.00	2,500.00	
Other countries of South America, including international administration				
1938 (IH 37055).....	6,154.55	2,013.44	
1939 (IH 38060).....	16,300.00	8,493.86	
Other Studies				
Collection and Testing of Wild Animals for Use in the Study of Diseases of Public Health Interest				
1938-40 (IH 38042, 38080, 39063).....	24,781.25	1,142.51	10,373.08	
Statistical Analyses of the Records of Certain Specific Diseases				
1936-38 (IH 36033).....	143.69	
1939 (IH 38064).....	500.00	212.74	

THE ROCKEFELLER FOUNDATION

LABORATORIES OF THE INTERNATIONAL HEALTH DIVISION AT THE ROCKEFELLER
INSTITUTE FOR MEDICAL RESEARCH, NEW YORK CITY

1938 (IH 37058, 38018).....	\$13,210.21	\$.....	\$13,168.97
1939 (IH 38065, 39002).....	122,000.00	119,912.63
Equipment			
1939-40 (IH 39065).....	5,000.00
STATE AND LOCAL HEALTH SERVICES			
Public Health Administration			
Africa			
Egypt			
1939 (IH 38071).....	2,175.00	836.33
Canada			
Nova Scotia			
1937-41 (IH 36022).....	27,504.95	10,907.64
Caribbean Area			
Costa Rica			
Office in San José			
1938 (IH 37062).....	650.96	582.63
1939 (IH 38069).....	2,700.00	1,906.85
Panama			
1938 (IH 37063).....	1,131.37	578.14
1939 (IH 38070).....	2,000.00	1,214.22
Puerto Rico			
1937-38 (IH 36056).....	146.00	94.24
West Indies and Central America			
1938 (IH 37061).....	1,982.00	560.09
1939 (IH 38068).....	1,500.00	983.35

TREASURER'S REPORT

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EXHIBIT H — *Continued*STATE AND LOCAL HEALTH SERVICES — *Continued*Public Health Administration — *Continued*

Far East

Fiji Islands

1938 (IH 37067).....	8550.60	\$.....	\$411.51
1939 (IH 38075).....	1,125.00	866.10

India

1938 (IH 37064-65).....	1,632.32	600.69
1939 (IH 38072-73).....	4,940.00	1,931.99

Netherlands India

1938 (IH 37066).....	1,292.94	954.79
1939 (IH 38074).....	4,390.00	2,225.74

Mexico

Central Administration and Training Station

1938 (IH 37059-60).....	1,413.13	595.53
1939 (IH 38066-67).....	4,275.00	2,755.41

United States

Alabama

1938-40 (IH 37080).....	12,856.27	6,358.75
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State Health Surveys

1938-40 (IH 35065).....	3,920.48	364.36
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Divisions of Vital Statistics				
Canada				
Manitoba				
1938-40 (IH 37085).....	\$13,666.50	\$.....	\$6,304.05	
1939-44 (IH 39005).....	3,060.00	395.10	
Nova Scotia				
1938-42 (IH 37026)	8,160.00	2,485.49	
Divisions of Epidemiology				
Canada				
Alberta				
1938-40 (IH 38006).....	7,829.81	56.98	
British Columbia				
1938-40 (IH 38006).....	8,154.93	1,688.13	
Public Health Laboratories				
Canada				
Prince Edward Island				
1939-43 (IH 38035).....	15,300.00	
Caribbean Area				
Central America				
Costa Rica				
1938-39 (IH 38027, 38037).....	819.93	744.49	
1939-40 (IH 39023).....	500.00	
Public Health Nursing				
United States				
Committee on Neighborhood Health Development of New York City				
1938-40 (IH 37079).....	26,536.23	10,346.76	

EXHIBIT H — *Continued*

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THE ROCKEFELLER FOUNDATION

STATE AND LOCAL HEALTH SERVICES — *Continued*

Sanitary Engineering

Africa

Egypt

1936-38 (IH 35104).....

PRIOR
DESIGNATIONS1939
DESIGNATIONS1939
PAYMENTS

\$343.50 \$..... \$.....

Canada

Nova Scotia

1936-39 (IH 34064).....

2,670.08 2,308.00

Far East

India

1939-40 (IH 38076, 39015, 39026).....

..... 10,290.00 703.44

Other State Health Services

Canada

Quebec, Division of Tuberculosis

1939-42 (IH 39006).....

..... 7,580.00 1,843.93

Europe

Hungary

Survey of Public Health Machinery

1938 (IH 37068).....

1,575.00 1,277.37

Local (County) Health Departments

Canada

British Columbia

1935-39 (IH 35083).....

1,260.42 989.69

1936-41 (IH 36021, 38020, 38024).....

53,041.43 17,387.46

Ontario				
1935-39 (IH 34065).....	\$6,263.86	\$.....	\$2,480.08	
Quebec				
1938-43 (IH 38025).....	15,300.00	4,967.96	
Caribbean Area				
Costa Rica				
1938-39 (IH 38009, 38090).....	1,399.54	995.49	
1939-40 (IH 39012).....	2,000.00	118.33	
Cuba				
1938-41 (IH 37088).....	19,538.32	7,450.05	
Nicaragua				
1937-38 (IH 37032).....	364.37	92.85	
Panama				
1937-39 (IH 36066, 36107).....	2,580.87	1,308.70	
Salvador				
1937-38 (IH 37033).....	689.20	
Europe				
Albania				
1936-40 (IH 36028, 37089).....	13,723.00	6,299.27	
Tirana Health Center, Construction and equipment (IH 36052, 37028) ..	7,599.24	4,095.49	
Austria				
1936-39 (IH 35154).....	3,355.63	1,649.36	
Greece				
1936-40 (IH 36029).....	5,482.38	0.67	449
	10,000.00	

EXHIBIT H — *Continued*

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THE ROCKEFELLER FOUNDATION

STATE AND LOCAL HEALTH SERVICES — *Continued*Local (County) Health Departments — *Continued*Europe — *Continued*

Hungary

1938 (IH 37069-73)..... \$4,490.00 \$..... \$3,643.33

Italy

1938-42 (IH 37035)..... 18,000.00

Portugal

1939 (IH 38096)..... 18,000.00 4,570.69

Rumania

Institute of Hygiene, Bucharest. Development of health center

1935-40 (IH 35058)..... 4,638.34 4,026.14

Spain

1936 (IH 36008)..... 3,000.00

Turkey

Health Center, Istanbul

1936-39 (IH 36016)..... 3,142.96 1,964.54

Health Center, Ankara

1938-42 (IH 37093)..... 56,700.00

Far East

India

Bengal

1938-43 (IH 38011)..... 24,000.00 1,692.09

Bombay					\$.	\$22,800 00	\$
1939-43 (IH 38097)						
Delhi								
1937-42 (IH 36110)	20,689 97	.		4,311 19
Madras								
1937-40 (IH 36044)	11,577 58		3,775 01
Mysore								
1936-40 (IH 35156)	11,728 02	..		2,494.19
Sanitation Research								
1938-39 (IH 38012, 38041)	1,407.03	..		956 63
United Provinces								
1932-38 (IH 31163)	4,222 73	Cr. 240 53	
Java								
1937-40 (IH 34143)			9,868 18	..		1,939 52
1938-40 (IH 36045)			6,235 07		3,232 97
Mexico								
1936-41 (IH 35084, 36065, 37086, 38036)			23,581.18	.		7,898 41
United States								
New York								
1935-39 (IH 34047, 34132)	12,560 13	..		6,135 99
PUBLIC HEALTH EDUCATION								
Schools of Hygiene and Public Health								
Canada								
University of Toronto. Developmental aid								
1940-44 (IH 39004, 39067)		41,400.00	

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS	452
PUBLIC HEALTH EDUCATION — <i>Continued</i>				
Schools of Hygiene and Public Health — <i>Continued</i>				
Europe				
Bulgaria. Institute and School of Hygiene, Sofia				
Rural Health Demonstration				
1938-41 (IH 38010, 39075)	\$17,800 00	\$12,000 00	\$263 41	
Greece. National Institute of Hygiene, Athens				
1936-37 (IH 36015)	1,481.41	
1938 (IH 37074)	3,999.60	3,420 01	
Hungary. State Hygienic Institute, Budapest				
1938-40 (IH 37091)	2,663.53	1,502.10	
Turkey. School of Hygiene, Ankara				
1936-37 (IH 36030)	3,173.09	
1938-39 (IH 37075, 38040)	6,740 00	1,284 46	
Far East				
Japan. Institute of Public Health, Tokyo				
Field Training Area				
1935-40 (IH 32188, 37037)	10,831.28	1,781 99	
United States				
Johns Hopkins University. School of Hygiene and Public Health, Baltimore, Maryland				
Health Center. Land				
1938 (IH 38032-33)	35,000 00	25,000.00	
Department of Biostatistics				
1939-40 (IH 39010)	2,900.00		2,900 00	

THE ROCKEFELLER FOUNDATION

Developmental Aid						
1940-44 (IH 39066)	\$.....	\$52,500 00	\$.....			
Schools of Nursing						
Canada						
University of British Columbia, Victoria						
1936-40 (IH 36035)	5,154.95				2,052 14	
University of Toronto						
1937-39 (IH 37006)	5,459 37				4,955.22	
1939-41 (IH 38086)		2,040 00			1,344 37	
Caribbean Area						
Panama. Santo Tomás Hospital. School of Nursing						
1937-42 (IH 37015)	27,320 78				6,414.25	
Europe						
Denmark						
1938-41 (IH 37029)	20,430.00				8,068.81	
Rumania. School of Nursing, Bucharest						
Developmental aid						
1936-41 (IH 35085)	5,114.59				5 36	
South America						
Brazil. School of Nursing, Rio de Janeiro						
Salary and travel of acting directress						
1937-40 (IH 36036)	3,165.62					
United States						
Skidmore College, Saratoga Springs, New York						
1937-39 (IH 37004)	5,000.27				5,000.00	
1939-43 (IH 38019)	30,000.00				4,500 00	

EXHIBIT H — *Continued*

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THE ROCKEFELLER FOUNDATION

PUBLIC HEALTH EDUCATION — *Continued***Schools of Nursing — *Continued*****United States — *Continued*****University of California, Berkeley**

1937-40 (IH 37005)..... \$3,600.00 \$..... \$2,400.00

University of Washington, Seattle

1935-39 (IH 35005)..... 2,795.00 2,477.50

Vanderbilt University, Nashville, Tennessee

1936-40 (IH 36012)..... 4,500.00 3,000.00

Western Reserve University, Cleveland, Ohio

1937-39 (IH 37007)..... 2,500.00 2,500.00

Other Schools**First National Midwifery School, Peiping, China**

1938 (IH 37095)..... 1,106.15 Cr. 1,800.10

Training Stations**Caribbean Area****Panama**

1937-38 (IH 36074)..... 976.90 691.35

Puerto Rico

1937-38 (IH 36073)..... 371.35 174.00

United States**Harvard University, School of Public Health, Boston, Massachusetts****Field training and study area**

1935-40 (IH 34068)..... 10,150.62 5,028.48

Johns Hopkins University. School of Hygiene and Public Health, Baltimore, Maryland			
Field training and study area			
1937-42 (IH 37018).....	\$67,598.22	\$.....	\$23,890.28
Fellowships, Travel of Government Health Officials and Teachers of Public Health, and Training of Health Workers			
1936 (IH 35113).....	24,332.98	400.98
1937 (IH 36072, 37022-23).....	16,131.00	2,351.35
1938 (IH 37076-77, 38078).....	136,183.18	500.00	108,916.49
1939 (IH 38077, 39073).....	210,410.00	75,810.35
Other Training			
Committee on Neighborhood Health Development, New York City			
Consultant			
1939-40 (IH 38083).....	5,000.00	2,083.30
North Carolina. Public Health Education and School Health Service			
1939-43 (IH 38034).....	25,000.00
Exhibits at New York World's Fair			
1939-40 (IH 38017).....	10,000.00	10,000.00
Study of schools of public health and institutes of hygiene			
1939 (IH 39001).....	2,762.49	2,762.49
FIELD SERVICE			
Salaries and Expenses of Staff			
1938-39 (IH 37078, 38079)			
Salaries.....	13,879.79	491,000.00	488,343.22
Commutation.....	4,670.16	49,000.00	44,622.95
Travel.....	24,106.68	146,500.00	152,009.76

EXHIBIT H — *Continued*

	PRIOR DESIGNATIONS	1939 DESIGNATIONS	1939 PAYMENTS
FIELD SERVICE — <i>Continued</i>			
Salaries and Expenses of Staff — <i>Continued</i>			
Medical examinations	\$271 78	\$1,500 00	\$1,125.45
Field equipment and supplies	3,547.70	5,000 00	2,473.86
Pamphlets and charts	903 22	7,000 00	5,281.71
Express, freight, and exchange	656 75	1,000 00	126.83
Insurance and retirement allowances	23,601 48	57,000 00	54,314.14
Bonding	1,706 25	3,000 00	740.09
Automobiles	1,000 00
Field office expenses	2,260 53	5,000 00	2,612.69
Director's Fund for Budget Revision (IH 34006, 36047)	5,169 00
Exchange Fund (IH 33052, 33077)	21,521 44
	\$1,522,079.84	\$2,200,000.00	\$1,961,739.95

EXHIBIT I

STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS

STOCK DIVIDENDS RECEIVED

	SHARES	LEDGER VALUE	TREASURER'S REPORT 457
	<u>\$.</u>	<u>\$.</u>	
Standard Oil Co. (New Jersey).....	27,218-166/200	<u>\$.</u>	
ADDITIONS TO LEDGER VALUE			
		AMOUNT	
Payments to Protective Committees added to cost of securities:			
\$274,000 Kansas City, Ft. Scott & Memphis Ry. Co. Refunding 4s/36. Advance of \$4 per \$1,000 bond.		\$1,096.00	
75,000 New Orleans, Texas & Mexico Ry. Co. Non-Cumulative Income Series "A" 5s/35 (C/D). Advance of \$4 per \$1,000 bond.....		300.00	
2,500,000 St. Louis-San Francisco Ry. Consolidated Mtg. Series "A" 4½s/78. Advance of \$2 per \$1,000 bond.....		5,000.00	
1,500,000 St. Louis, San Francisco Ry. Prior Lien Series "A" 4s/50. Advance of \$2.50 per \$1,000 bond..		3,750.00	
Payments for legal services added to cost of securities:			
\$400,000 New York, Lake Erie & Western Docks & Improvement Co. 1st Extended 5s/43.....		516.75	
1,918,500 St. Louis, Southwestern Ry. Gen. & Ref. Mtg. Series "A" 5s/90.....		120.00	
		<u>\$10,782.75</u>	
		<u>=====</u>	

EXHIBIT I — *Continued*STATEMENT OF TRANSACTIONS RELATING TO INVESTED FUNDS — *Continued*
SECURITIES SOLD, REDEEMED, GIVEN IN PAYMENT OF APPROPRIATIONS, AND EXCHANGED

		LEDGER VALUE	AMOUNT RECEIVED
BONDS			
815,000	Bethlehem Steel Corp. Cons. S. F. Series "E" 3½s/66, redeemed.....	\$13,860.31	\$15,150.00
13,750	Calgary Protestant Public School District No. 19, Province of Alberta 5s/39, redeemed.....	11,687.50	13,750.00
665,000	Chicago, Milwaukee & St. Paul Ry. Receivers' Equip. 5s/35-39 (Payment of 20%)..	130,672.50	133,000.00
9,000	Consolidation Coal Co. Notes 5s/50, sold.....	9,000.00	9,000.00
80,000	Illinois Central R. R. Equip. Series "M" 4½s/39, redeemed.....	78,800.00	80,000.00
200,000	The Laclede Gas Light Co. Ref. & Ext. Mtg. 5s/39, extended to April 1, 1942....
30,000	Pennsylvania R. R. Co. Gen. Equip. Trust Cert. Series "D" 4½s/39, redeemed....	29,550.00	30,000.00
13,200	Phelps Dodge Corp. 3½s/52, redeemed.....	14,334.37	13,860.00
100,000	Southern Pacific Co. Equip. Series "I" 4½s/39, redeemed.....	98,500.00	100,000.00
50,000	St. Louis-San Francisco Ry. Equip. Series "CC" 4s/39, redeemed	45,882.06	50,000.00
		<hr/> <u>\$432,286.74</u>	<hr/> <u>\$444,760.00</u>
STOCKS			
Shares			
10,000	Manhattan Ry. Co. Modified Guaranteed 5% Stock (Stamped) deposited with Chemical Bank & Trust Co. and Certificate of Deposit received in exchange.....	\$.....	\$.....
8,000	South West Pennsylvania Pipe Lines (Par \$50) exchanged for (Par \$10) stock....
10,900	Standard Oil Co. (New Jersey) given to American University of Beirut in part payment of appropriation.....	368,556.75	499,601.50
		<hr/> <u>\$368,556.75</u>	<hr/> <u>\$499,601.50</u>

DEDUCTION FROM LEDGER VALUE

\$1,750,000	Refund from Protective Committee used to adjust ledger value of: Interborough Rapid Transit Co. 1st & Ref. 5s/66 (This issue has again been deposited and Certificate of Deposit received in exchange).....	\$17,500.00	\$17,500.00
Balance.....		\$818,343.49 143,518.01*	\$961,861.50
		<hr/> <hr/>	<hr/> <hr/>

RECONCILIATION

Ledger value of securities, December 31, 1938.....	\$157,339,992.30
Advances to Protective Committees and payments for legal services added to the ledger value of securities.....	10,782.75
	<hr/>
Deduct	
Ledger value of securities sold, redeemed, or given in payment of appropriation, etc.....	\$818,343.49
Balance used to write down ledger value, as above.....	144,618.01 962,961.50
	<hr/>
Ledger value of securities, December 31, 1939.....	\$156,387,813.55

* This balance of \$143,518.01, plus liquidating dividends of \$5 per share on 220 shares Chehalis & Pacific Land Co., or \$1,100, resulting in a total of \$144,618.01, was used to write down the ledger valuation of \$446,300 par value Chicago, Milwaukee, St. Paul & Pacific 5s/75 "A".

EXHIBIT J

SCHEDULE OF SECURITIES ON DECEMBER 31, 1939

BONDS

NAME	INTEREST RATE PER CENT	DATE OF MATURITY	AMOUNT	FOUNDATION'S LEDGER VALUE PER CENT	FOUNDATION'S TOTAL LEDGER VALUE
Atchison, Topeka & Santa Fe Ry. One Hundred-year Adjustment Mortgage Gold (Stamped).....	4	July 1995	\$420,000.00	75.	\$315,000.00
Baltimore & Ohio R.R. Refunding & General Mortgage Gold Series "A".....	5	Dec. 1995	1,750,000.00	80.	1,400,000.00
Baltimore & Ohio R.R. Refunding & General Mortgage Series "F".....	5	Mar. 1996	495,500.00	101.8848	504,839.38
Bethlehem Steel Corporation Consolidated Sinking Fund Series "E".....	3 $\frac{1}{4}$	Oct. 1966	816,000.00	92.4020758	754,000.94
Burlington, Cedar Rapids & Northern Ry. Consolidated First Mortgage Gold	5	Apr. 1934 Serially	64,000.00	101.5625	65,000.00
Calgary Protestant Public School District No. 19, Province of Alberta.....	5	June 2, 1940-48	71,000.00	85.	60,350.00
Chicago & Alton R.R. Refunding Mortgage Gold.....	3	Oct. 1949	551,000.00	65.	358,150.00

Chicago City & Connecting Rys. Collateral Trust (Certificates of Deposit).....	5	Jan. 1927	\$1,305,000.00	52.	\$678,600.00
Chicago & Erie R.R. First Mortgage Gold.....	5	May 1982	156,000.00	93.	145,080.00
Chicago, Junction Rys. & Union Stockyards Co. Forty-year Mortgage and Collateral Re-funding.....	5	Apr. 1940	500,000.00 133 bonds @ \$200 each or 26,600.00	93.	465,000.00
Chicago, Milwaukee & St. Paul Ry. Receivers' Equipment Gold Series "D" (80% paid).....	5	Aug. 1936	133 bonds @ \$400 each or 53,200.00	91.25	24,272.50
Chicago, Milwaukee & St. Paul Ry. Receivers' Equipment Gold Series "D" (60% paid).....	5	Aug. 1937	133 bonds @ \$600 each or 79,800.00	95.625	50,872.50
Chicago, Milwaukee & St. Paul Ry. Receivers' Equipment Gold Series "D" (40% paid).....	5	Aug. 1938	133 bonds @ \$800 each or 106,400.00	97.0833	77,472.50
Chicago, Milwaukee & St. Paul Ry. Receivers' Equipment Gold Series "D" (20% paid).....	5	Aug. 1939	133,000.00	97.8125	104,072.50
Chicago, Milwaukee & St. Paul Ry. Receivers' Equipment Gold Series "D".....	5	Aug. 1940	133,000.00	98.25	130,672.50
Chicago, Milwaukee & St. Paul Ry. General Mortgage Gold Series "C".....	4½	May 1989	500,000.00	103.	515,000.00
Chicago, Milwaukee, St. Paul & Pacific R.R. Fifty-year Mortgage Series "A".....	5	Feb. 1975	446,300.00	62.5962334	279,366.99

EXHIBIT J—Continued

NAME	INTEREST RATE PER CENT	DATE OF MATURITY	AMOUNT	FOUNDATION'S LEDGER VALUE PER CENT	FOUNDATION'S TOTAL LEDGER VALUE
Chicago, Milwaukee, St. Paul & Pacific R.R. Convertible Adjustment Mortgage Series "A".....	5	Jan. 2000	\$1,785,200.00	40.80324109	\$728,419.46
Chicago & North Western Ry. General Mort- gage.....	5	Nov. 1987	201,000.00 500 bonds @ \$750 each or 375,000.00	98.097	197,175.00
Chicago Rys. Co. First Mortgage Gold (25% paid) (Certificates of Deposit).....	5	Feb. 1927	375,000.00	96.	360,000.00
The Chicago, Rock Island & Pacific Ry. Co. First and Refunding Mortgage Gold.....	4	Apr. 1934	3,345,000.00	81.458204	2,724,776.93
The Chicago, Rock Island & Pacific Ry. Co. Ten-year Certificates of Indebtedness of the Trustees.....	3½	July 1947	609,300.00	100.9051386	614,815.01
Chicago, St. Louis & New Orleans R.R. Con- solidated Mortgage Gold.....	3½	June 15, 1951	200,000.00	66.	132,000.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. General Mortgage.....	4	June 1993	700,000.00	83.89285	587,250.00
Cleveland Short Line Ry. First Mortgage Gold.	4½	Apr. 1961	500,000.00	95.	475,000.00

Consolidation Coal Co. Secured Notes.....	5	July 1950	\$485,000.00	100.	\$485,000.00
Denver & Rio Grande R.R. First Consolidated Mortgage Gold.....	4	Jan. 1936	810,000.00	96.4238456	781,033.15
Denver & Rio Grande Western R.R. General Mortgage (Assented subject to plan).....	5	Aug. 1955	574,000.00	59.	338,660.00
Edmonton School District No. 7 Debenture dated Feb. 1, 1937.....	5	Apr. 15, 1953			
Erie R.R. General Mortgage Convertible Gold Series "B".....	4½	Feb. 1, 1967	350,000.00	81.	283,500.00
Illinois Central R.R. Equipment Series "M".....	4½	Apr. 1953 \$80,000 due May 1 each year 1940-41	1,065,000.00	74.717586	795,742.30
Illinois Central R.R. Refunding Mortgage Gold.....	4	Nov. 1955	160,000.00 1,233,000.00	98.5 82.45985	157,600.00 1,016,730.00
Illinois Central R.R. & Chicago, St. Louis, New Orleans R.R. Joint First Refunding Gold Series "A".....	5	Dec. 1963	1,000,000.00	90.	900,000.00
Imperial Chinese Government Hu Kuang Rys. Sinking Fund Loan of 1911.....	5	June 15, 1975	£189,000	34.	321,300.00
Interborough Rapid Transit Co. First & Refunding Mortgage Gold (Stamped) (Certificate of Deposit).....	5	Jan. 1966	£1,750,000.00	96.8571428	1,695,000.00
Kansas City, Fort Scott & Memphis Ry. Refunding Mortgage Gold.....	4	Oct. 1936	274,000.00	96.155708	263,466.64

EXHIBIT J—Continued

NAME	INTEREST RATE PER CENT	DATE OF MATURITY	AMOUNT	FOUNDATION'S LEDGER VALUE PER CENT	FOUNDATION'S TOTAL LEDGER VALUE
Kansas City Southern Ry. Refunding & Improvement Mortgage Gold.....	5	Apr. 1950	\$550,000.00	84.	\$462,000.00
Kansas City Terminal Ry. First Mortgage Gold	4	Jan. 1960	500,000.00	75.	375,000.00
The Laclede Gas Light Co. Refunding & Extension Mortgage Gold.....	5	Apr. 1942	200,000.00	102.3797	204,759.41
Lake Erie & Western R.R. Second Mortgage Gold.....	5	July 1941	100,000.00	100.	100,000.00
Lake Shore & Michigan Southern Ry. First Mortgage Gold.....	3½	June 1997	926,000.00	87.	805,620.00
Louisville & Nashville-Southern Ry. Monon Collateral Joint Fifty-year Gold.....	4	July 1952	775,000.00	72.	558,000.00
Mexico, Republic of, Consolidated External Loan, Series "C" (Assenting bonds).....	5	June 1945	343,380.00	35.0515463	120,360.00
Class "A" Certificates for Interest in arrears			150,228.75	6.	9,013.73
Missouri-Kansas-Texas R.R. Prior Lien Gold Series "A".....	5	Jan. 1962	331,250.00	78.5	260,031.25
Missouri-Kansas-Texas R.R. Prior Lien Gold Series "B".....	4	Jan. 1962	331,250.00	64.5	213,656.25

Morris & Essex R.R. First Refunding Mortgage Gold.....	$3\frac{1}{2}$	Dec. 2000	\$175,000.00	82.75	\$144,812.50
Mutual Fuel Gas Co. First Mortgage Gold....	5	Nov. 1947	250,000.00	100.	250,000.00
National Rys. of Mexico Prior Lien Fifty-year Sinking Fund (Assenting bonds)	$4\frac{1}{2}$	July 1957	350,000.00	13.	45,500.00
Secured 6% Notes for coupon due January 1, 1914.....		Jan. 1933	1,125.00	.59.	663.75
National Rys. of Mexico Certificates Series "A" Interest in arrears.....			47,857.50	5.50	2,632.16
National Rys. of Mexico Certificates Series "B" Interest in arrears.....			94,500.00	.50	472.50
New Orleans, Texas & Mexico Ry. Non-Cumulative Income Gold Series "A" (Certificates of Deposit).....	5	Oct. 1935	75,000.00	99.45	74,587.52
New York Central R.R. 10 year Secured Sinking Fund.....	$3\frac{1}{2}$	Apr. 1946	979,000.00	97.948125	958,912.15
New York Connecting R.R. First Mortgage Gold Series "A".....	$4\frac{1}{2}$	Aug. 1953	500,000.00	95.69073	478,453.65
New York, Lake Erie & Western Docks & Improvement Co. First Extended Gold.....	5	July 1943	400,000.00	90.1291875	360,516.75
Northern Pacific Ry. Refunding & Improvement Mortgage Gold Series "A".....	$4\frac{1}{2}$	July 2047	1,390,000.00	85.04676	1,182,150.00
Northwestern Elevated R.R. First Mortgage Gold.....	5	Sept. 1941	500,000.00	70.	350,000.00

EXHIBIT J — *Continued*

NAME	INTEREST RATE PER CENT	DATE OF MATURITY	AMOUNT	FOUNDATION'S LEDGER VALUE PER CENT	FOUNDATION'S TOTAL LEDGER VALUE
Pennsylvania R.R. General Equipment Trust Certificates Series "D".....	4½	\$30,000 due May 15 each year 1940-41	\$60,000.00	98.5	\$59,100.00
Pennsylvania R.R. General Mortgage Gold Series "A".....	4½	June 1965	1,500,000.00	98.25	1,473,750.00
Phelps Dodge Corporation Convertible Debenture.....	3½	June 15, 1952	134,200.00	108.59375	145,732.82
Philadelphia & Reading Coal & Iron Co. Refunding Mortgage Sinking Fund Gold.....	5	Jan. 1973	167,000.00	94.252347	157,401.42
Pittsburgh, Cincinnati, Chicago & St. Louis Ry. Consolidated Mortgage Gold Series "I"....	4½	Aug. 1963	500,000.00	103.	515,000.00
Public Service Corporation of New Jersey Perpetual Interest Bearing Certificates.....	6		550,000.00	84.	462,000.00
Raleigh & Gaston R.R. First Mortgage Gold Fifty-year (Certificates of Deposit).....	5	Jan. 1947	250,000.00	95.	237,500.00
Reading Co. General & Refunding Mortgage Gold Series "A".....	4½	Jan. 1997 \$50,000 due May 15 each year 1940-43	333,000.00	94.25	313,852.50
St. Louis-San Francisco Ry. Equipment Gold Series "CC".....	4		200,000.00	90.41364	180,827.28

St. Louis-San Francisco Ry. Prior Lien Gold Series "A".....	4	July 1950	\$1,500,000.00	73.	\$1,095,000.00
St. Louis-San Francisco Ry. Consolidated Mortgage Gold Series "A".....	4½	Mar. 1978	2,500,000.00	14.2	355,000.00
St. Louis Southwestern Ry. General & Refunding Mortgage Gold Series "A".....	5	July 1990 \$100,000 due June 1 each year 1940-41	1,918,500.00	66.798999	1,281,538.80
Southern Pacific Co. Equipment Gold Series "I".....	4½		200,000.00	98.5	197,000.00
Southern Pacific Co.—Central Pacific Stock Collateral Gold.....	4	Aug. 1949	100,000.00	76.	76,000.00
Southern Pacific R.R. First Refunding Mortgage Gold.....	4	Jan. 1955	100,000.00	86.	86,000.00
Standard Oil Co. (New Jersey) Twenty-five year Debentures.....	3	June 1961	15,000,000.00	98.	14,700,000.00
Tennessee Coal, Iron & R.R. Co. General Mortgage.....	5	July 1951	400,000.00	92.	368,000.00
United Electric Co. of New Jersey First Mortgage Gold.....	4	June 1949	500,000.00	72.	360,000.00
United States of America Treasury Notes, Series "A" dated June 15, 1937.....	1½	Mar. 15, 1942	5,000,000.00	100.206562	5,010,328.13
Wabash R.R. Second Mortgage Gold.....	5	Feb. 1939	120,000.00	97.8	117,360.00
Washington Ry. & Electric Co. Consolidated Mortgage Gold.....	4	Dec. 1951	450,000.00	83.5	375,750.00
Western Pacific R.R. First Mortgage Gold Series "A" (Assenting).....	5	Mar. 1946	200,800.00	83.	166,664.00
TOTAL BONDS.....					\$53,476,164.87

EXHIBIT J — *Continued*

MISCELLANEOUS STOCKS

NAME	NUMBER OF SHARES	FOUNDATION'S LEDGER VALUE PER SHARE	FOUNDATION'S TOTAL LEDGER VALUE
American Telephone & Telegraph Co. Capital.....	5,400	\$182.9171296	\$987,752.50
Atchison, Topeka & Santa Fe Ry. 5% Non-Cumulative Preferred	5,000	98.25	491,250.00
Atlanta Birmingham & Coast R.R. 5% Guaranteed Cumulative Preferred..	4,062	94.	381,828.00
Bethlehem Steel Corp. (Delaware) 7% Cumulative Preferred.....	400	129.07367	51,629.47
The Buckeye Pipe Line Co. Capital (Par \$50).....	49,693	62.7675873	3,119,109.72
Central National Bank of Cleveland Common (Par \$20).....	8,482	32.114764	272,397.43
Chehalis & Pacific Land Co. Capital.....	220		1.00
Chicago City & Connecting Rys. Participation Certificates Preferred (Certificates of Deposit) (No par).....	17,530		1.00
Chicago City & Connecting Rys. Participation Certificates, Common (No par).....	10,518		1.00
Chicago & Eastern Illinois Ry. 6% Cumulative Preferred.....	3,000	5.	15,000.00
Cleveland Arcade Co. Capital.....	2,500	98.62222	246,555.56
Cleveland Trust Co. Capital.....	638	192.22824	122,641.62
Colorado & Southern Ry. 4% First Non-Cumulative Preferred.....	4,800	54.	259,200.00
Consolidated Edison Co. of New York, Inc. \$5 Cumulative Preferred (No par).....	13,333	91.75	1,223,302.76

Consolidated Edison Co. of New York, Inc. Common	22,200	\$45 260923	\$1,004,792 50
Consolidation Coal Co. Rights to purchase Common Stock	5,875		
Continental Oil Co. (Delaware) Capital (Par \$5)	60,627	11 15222	676,125.70
Denver & Rio Grande Western R.R. 6% Cumulative Preferred	3,280	5	16,400.00
Eureka Pipe Line Co. Capital (Par \$50)	12,357	45.	556,065 00
Illinois Central R.R. 6% Non-Cumulative Preferred "A"	2,857	15 50	44,283 50
Illinois Central R.R. Common	4,070	9 625	39,173 75
Indiana Pipe Line Co. Capital (Par \$10)	74,535	11 7	872,059 50
International Harvester Co. 7% Cumulative Preferred	45,721	115	5,257,915 00
International Nickel Co. of Canada, Ltd. Common	30,600	65.139	1,993,253 40
Interstate Natural Gas Co. Inc. Capital (No par)	33,763	14 958453	505,042.25
Kanawha & Hocking Coal & Coke Co. 7% Cumulative Preferred	202	20.	4,040 00
Kanawha & Hocking Coal & Coke Co. Common	668	4.	2,672 00
Kennecott Copper Corporation Capital (No par)	33,100	59 780393	1,978,731 03
Manhattan Ry. Capital (Modified Guarantee) (Certificate of Deposit)	10,000	60	600,000.00
Middle West Corporation Capital (Par \$5)	68,351 92	9 75	666,431.22
Missouri-Kansas-Texas R.R. 7% Cumulative Preferred "A"	10,499	41 982284	440,772 00
National Fuel Gas Co. Capital (No par)	847,060	7.75	6,564,715 00
National Transit Co. Capital (Par \$12.50)	126,481	12 7	1,606,308 70
New York Transit Co. Capital (Par \$5)	24,784	6 5	161,096 00
Northern Pipe Line Co. Capital (Par \$10)	27,000	8 3333	225,000.00
The Ohio Oil Co. Non-Voting Cumulative 6% Preferred	10,500	103 5	1,086,750 00
The Ohio Oil Co. Common (No par value)	94,684	35.375	3,349,446 50
Pere Marquette Ry. Cumulative 5% Preferred	5,740	49.6600627	285,048 76
Phelps Dodge Corporation Capital (Par \$25)	37,600	52 7167925	1,982,151 40

EXHIBIT J — *Continued*

NAME	NUMBER OF SHARES	FOUNDATION'S LEDGER VALUE PER SHARE	FOUNDATION'S TOTAL LEDGER VALUE
Provident Loan Society of New York 6% Certificates (Principal Amount)	\$266,000	100%	\$266,000.00
Southern Pipe Line Co. Capital (Par \$10)	24,845	6.25	155,281.25
South West Pennsylvania Pipe Lines, Capital (Par \$10)	8,000	37.5	300,000.00
Standard Oil Co. (California) Capital (No par)	60,967	17.25	1,051,680.75
Standard Oil Co. of Indiana, Capital (Par \$25)	691,140	28.90	19,973,946.00
Standard Oil Co. (N.J.) Capital (Par \$25)	1,109,478.83	32.9830228	36,593,965.65
The Standard Oil Co. (Ohio) Cumulative 5% Preferred	15,000	101	1,515,000.00
The Standard Oil Co. (Ohio) Common (Par \$25)	135,648	25.50	3,459,024.00
Tilden Iron Mining Co. Capital	667½	27.350258	18,256.29
Union Tank Car Co. Capital (No par value)	240,000	6.692033	1,606,087.97
United States Steel Corporation 7% Cumulative Preferred	6,600	133.85795	883,462.50
Wilson Realty Co. Capital	591		1.00
TOTAL MISCELLANEOUS STOCKS.	\$102,911,648.68

SUMMARY

Bonds	\$ 53,476,164.87
Miscellaneous Stocks	102,911,648.68
TOTAL.	\$156,387,813.55

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, 1939, and the related summaries and schedules of funds, appropriations, and investment securities for the year 1939, 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, 1939, 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, 1939.

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, 1939, 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 25, 1940.

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