

THE ROCKEFELLER  
FOUNDATION

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# Rockefeller Foundation

## Annual Report

1924

The Rockefeller Foundation  
61 Broadway, New York

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СВОБОДЫ ПЛАСТИКИ  
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## *Director of the Division of Studies*

EDWIN R. EMBREE

<sup>1</sup> Died November 24, 1925.



**THE ROCKEFELLER FOUNDATION**  
**President's Review**



To the Members 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, 1924, to December 31, 1924, together with the detailed reports of the Secretary and the Treasurer of the Foundation, the General Director of the International Health Board, the General Director of the China Medical Board, the Director of the Division of Medical Education, and the Director of the Division of Studies.

Respectfully yours,  
**GEORGE E. VINCENT,**  
President.

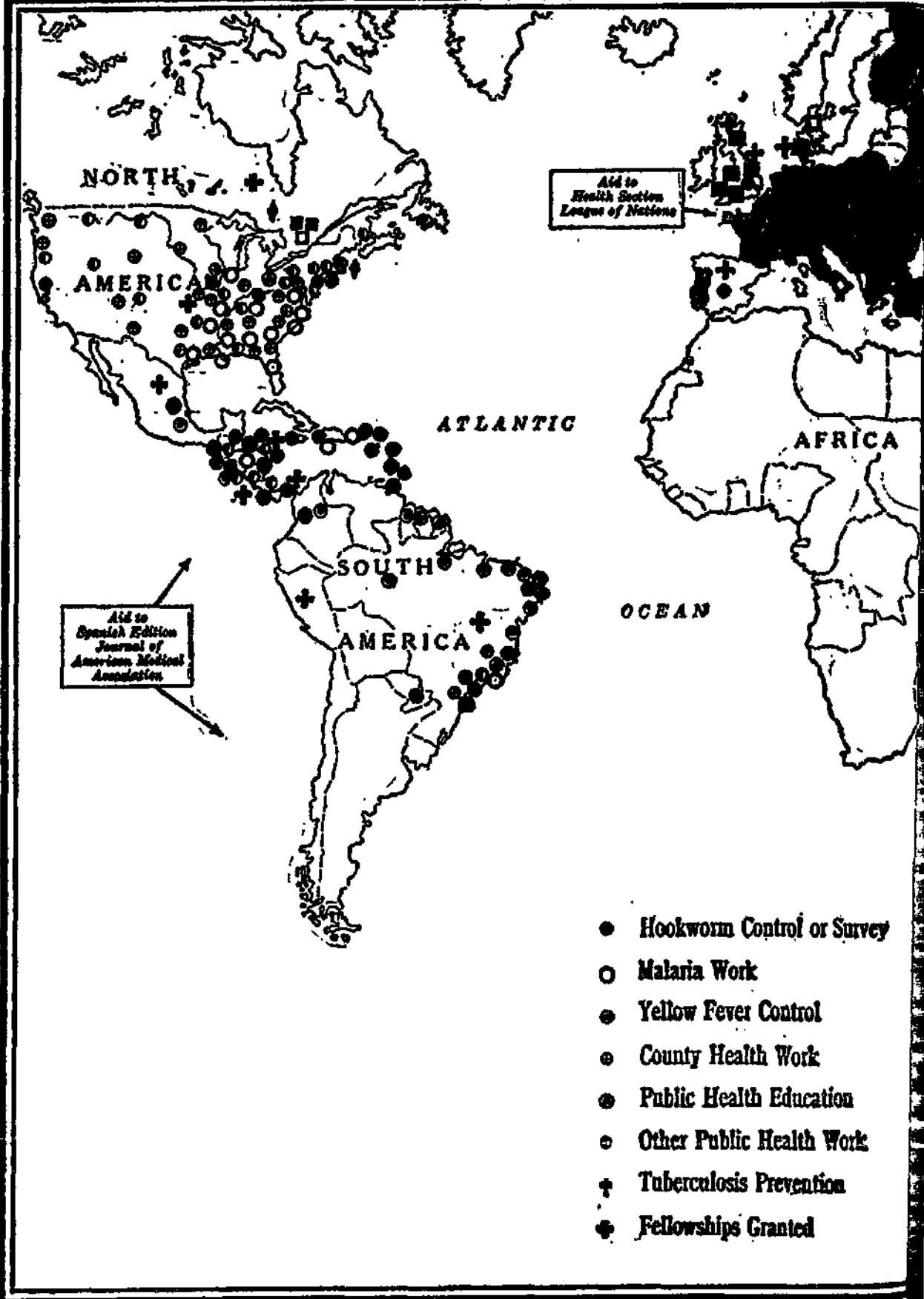


Fig. 1.—Map of World-wide Activities



Medical School Supported in Full  
Medical Schools Aided  
Premedical schools Aided  
Hospitals Aided  
Visiting Commissions Entertained  
Aid to Biological Sciences

Shaded area indicates countries in which  
emergency aid to medical schools was furnished



## PRESIDENT'S REVIEW

### The Year in Brief

During the year 1924 the International Health Board, the China Medical Board, the Division of Medical Education, and the Division of Studies of the Rockefeller Foundation (1) underwrote to the amount of \$350,000 a plan for publishing an international abstract journal of the biological sciences; (2) began issuing bulletins which report progress in medical education in many countries; (3) helped to spread internationally knowledge about medical equipment and teaching methods through surveys by staff members, commissions of scientists, visiting professors, and traveling fellows; (4) hastened developments in the medical schools of the universities of Oxford, Cambridge, Edinburgh, Wales, Montreal, McGill, São Paulo, Hongkong, and Siam, and of the American University at Beirut; (5) maintained a modern medical school and teaching hospital in Peking; (6) aided three other medical schools and seventeen hospitals in China; (7) helped to improve the teaching of physics, chemistry, and biology in two Chinese and nine foreign institutions in China and in the Government University in Siam; (8) had a part

in the development of professional training for sanitarians and hygienists at Harvard University and in schools and institutes in London, Prague, Warsaw, and São Paulo; (9) gave funds for nursing education at Yale University and in schools and hospitals in Brazil, France, Yugoslavia, Poland, and the Philippines; (10) kept a mobile staff on guard against yellow fever in Mexico and Central America; (11) at the request of Brazil joined in an attack upon this disease from eleven centers along the northern coast; (12) helped to show the possibilities of malaria control in thirteen American states and made malaria surveys or studies in Haiti, Porto Rico, Nicaragua, Brazil, Italy, Palestine, Queensland, and the Philippines; (13) either continued or began antihookworm work in conjunction with thirty-two states and countries in the West Indies, Central America and Mexico, South America, Europe, and the Far East; (14) contributed to the budgets of rural health services in 207 counties in twenty-four American states and in New Brunswick, Brazil, France, and Czechoslovakia; (15) continued to aid the epidemiological intelligence service of the Health Section of the League of Nations; (16) contributed to the League of Nations' international study tours or interchanges for ninety-nine health officers from twenty countries; (17) provided directly or in-

directly fellowships for 864 individuals of thirty-three different nations; (18) lent staff members and made minor gifts to many governments and institutions for various kinds of counsel and aid; (19) assisted mental hygiene projects both in the United States and in Canada, demonstrations in dispensary development in New York City, the growth of antituberculosis work in France, and other undertakings in public health, medical education, and allied fields.

### **Guiding Principles and Policies**

The trustees of the Rockefeller Foundation administer a fund which represents a per capita of \$1.50 for the people of the United States. The income if raised by popular subscription would call for a fraction over seven cents annually per head. Looked at in another way, the funds of the Foundation, measured by government expenditures, hospital support, or annual gifts for charity, are dwarfed into relative unimportance. Distribution to a large number of good causes might easily do little more than replace for a short time gifts from other sources. Concentration for considerable periods upon vital activities in limited fields seems to be the only way of doing anything worth while and lasting. For the present, effort is centered on public health and medical education, but

the trustees keep steadily in mind the possibility that in time other things may also offer opportunities. Concentration in any field is not interpreted as permanent or rigid.

The Foundation seeks direct relations with responsible agencies which are charged with carrying on a given work for the future. This means of course that nothing is undertaken until a careful first-hand study has been made by representatives of the Foundation. Thus when field demonstrations of disease control are made the International Health Board deals only with government agencies. So, too, plans for medical school development are carried out in conjunction with permanently established universities. Moreover, the Foundation expects governments and universities from the outset of a common undertaking to make a contribution in money or its equivalent in facilities or services. That is, aid is conditioned upon a substantial contribution from other sources. Again, help is given only for demonstrations of innovation and improvement. The Foundation takes no interest in the merely quantitative expansion of routine activities. There must be promise of qualitative advance in a given piece of scientific, administrative, or educational work.

There is another guiding principle of the Foundation. It withdraws entirely from a

project as soon as this has become self-directing and self-supporting. The International Health Board ordinarily expects to bring its part in a demonstration of hookworm or malaria control or of county health work to an end within a short and limited period. The Board's share of the cost steadily grows less as the government takes over more and more of the burden. The project is regarded as a success when the public funds bear the whole cost. In the case of a medical school or institute of hygiene project, as soon as the university or government has complied with the conditions the Foundation pays its share and has no further responsibility. It scrupulously refrains from all intervention in the administration of the institution.

The foregoing strictly applies only to major undertakings. The Foundation is ready, on request, to lend expert service (see page 50) or give minor kinds of emergency (see page 48) or other aid unconditionally to health departments, medical schools, institutes of hygiene, and a few nurse-training centers when this is feasible. Even in such instances, increases of public funds and of private gifts are likely to be hastened.

#### Broadcasting the Progress of Research

Although as this review is written a marine expedition is sending from the Sargasso Sea

wireless reports of its discoveries, it is hard to imagine the many centers of scientific research broadcasting their results even to a waiting world of savants. Science does not take kindly to methods so precipitate and breathless. But some system of frequent and regular communication between investigators is essential if useless duplication of effort is to be avoided and the stimulus and suggestions from new knowledge are to be made effective with reasonable promptness throughout the world.

The output of scientific books and articles is enormous. It has been estimated that there are today in the field of medicine alone 1,500 journals which print about 100,000 papers annually. The *Index Medicus* with its 1,000 pages reports about 40,000 articles each year. The Surgeon General's library in Washington has catalogued since 1880, 1,400,000 articles and 330,000 book titles. The task of sifting, listing, indexing, and in many cases making brief abstracts of scientific articles has become almost overwhelming. It is reported that 129 bibliographical reviews and 153 serial publications print abstracts or summaries. *Chemical Abstracts* alone condenses each year into 5,000 pages the substance of 100,000 pages of original articles.

A plan for creating, possibly in Geneva, a world center of bibliography and summarizing

from which international catalogues, indexes, and abstract journals would be distributed to the scientific workers of all countries makes a certain appeal to the imagination. But language difficulties, the location of great libraries in different capitals, the vested interests of existing journals, and national rivalries and ambitions make such a scheme for the present at least seem almost Utopian.

Eighteen societies of biologists in the United States have combined to found and maintain on an international scale an abstract journal of the biological sciences. This is a field in which such service is sorely needed. It is said that 40,000 articles in various divisions of biology are published annually. Representatives who have visited European countries believe that the chances of bringing about consolidations or at any rate exchanges of material with certain biological abstract journals are excellent. The Rockefeller Foundation through its Division of Studies has pledged the sum of \$350,000 toward a ten-year period of test and demonstration. It is expected that the Concilium Bibliographicum (an indexing and abstracting agency) of Zürich, to which the Foundation has been making a small annual gift, will be incorporated in the new project. The emergency distribution of medical literature in Europe (see page 49) is an

effort to restore scientific communications which were interrupted by the war.

#### Distribution of Facts About Medical Education

For three years the Foundation has been trying to complete an accurate list of the medical schools of all countries. A revised list, still defective, based upon government reports, correspondence, special surveys, and staff visits, was issued during 1924. The total number of schools in sixty-nine different nations is 456. One reason for gathering these facts was to have a mailing list to which from time to time information about medical education in different countries could be addressed. While a good deal is published on this subject the articles appear in a great variety of scattered periodicals and reports. There is no international journal which specializes in the problems of buildings, equipment, organization, courses of study, methods of instruction, and other features of modern training in the science and art of medicine.

The Division of Medical Education has no idea of setting up a formal periodical in this field but it has planned a series of bulletins to be issued from time to time as accumulated material seems to warrant. The officers in their visits to medical schools, from conversations with medical teachers and from articles in the medical and

general press learn of new things which seem likely to be of interest and value to persons responsible for medical education. The administrators and teachers who are immediately in charge of these new projects are asked to prepare descriptive articles. These are illustrated with floor plans and photographs of buildings or other appropriate diagrams and pictures.

The first bulletin entitled "Methods and Problems of Medical Education" was issued in September, 1924, and sent to deans of medical schools and to many others. It contained twelve papers, eight in English, three in German, and one in French, written by professors who describe the housing, equipment, organization, and methods of research and teaching in their respective departments. Of these departments two are at Yale University, two at Peking Union Medical College, and one each at the University of Wisconsin, University College (London), the Free University of Brussels, the University of Würzburg, the University of Basel, the University of Gratz, the Thorndike Memorial Laboratory (Boston), and the Boston Lying-in Hospital. In the publication of these bulletins the Division disclaims all desire or intention to advocate any particular systems or standardized methods of organization and teaching. The aim is not

propaganda but merely the dissemination of important information secured at first hand from authoritative sources.

The Foundation is in no formal way a bureau of information. Its own representatives, however, visited medical schools in twenty-eight countries and incidentally carried ideas from one center to another. Ten professors of medicine from foreign countries were given an opportunity for study or observation in the United States; others were sent to Europe and to the East (see page 19). The fellowships (see page 47) of the Division of Medical Education played an appreciable part in the international commerce of ideas.

### **Hastening the Development of Medical Schools**

Many excellent medical schools in influential centers have plans for improvement but lack the necessary funds to carry them out. Governments do not ordinarily lavish money on science and professional education. Private donors are sometimes hard to convince. An institution thus gets on a dead center. An outside force is needed to set things going. To give such an impetus is precisely what the Foundation can frequently do. A representative is invited to visit a significant school and with dean, faculty, and trustee representatives, to go over its needs

and plans. He has no preconceived scheme to urge but often out of his wide experience in many countries he can make useful suggestions. A program is finally agreed upon tentatively. The Foundation promises to give a certain sum toward buildings or endowment or both, provided the institution will secure from other sources a specified amount, or provided a government will agree to increase the annual budget of maintenance to a designated new level. An offer of this kind is welcomed as a means of realizing more quickly a plan otherwise likely to be delayed, sometimes indefinitely.

During 1924 several contingent arrangements with medical schools were in process of fulfilment. Payments were made to the University of Edinburgh toward the endowment of a chair of surgery, to the University of Wales for the development of the department of medicine at Cardiff, to Oxford University for the proper housing and support of biochemistry, to McGill University, Montreal, for the endowment of a university chair of medicine, to the University of Hongkong for endowment of a chair of obstetrics, and to the University of Montreal for the continued support of premedical teaching. A request from the University of Copenhagen to assist in bringing together in a new laboratory five departments of physiology which are now

scattered widely in the city of Copenhagen, led to the promise of a substantial sum for this purpose.

Plans for the reorganization and staffing of the Siamese Government medical school in Bangkok made steady progress. The King Edward VII Medical School in Singapore reported favorable action by Government on the Foundation's contingent offer to endow lectureships in laboratory sciences. Special emergency assistance was offered to the American University at Beirut to strengthen its medical school for a five-year period during which permanent endowment for the whole institution will be sought.

During the year representatives of the Division of Medical Education made special studies of medical schools in Denmark, Italy, France, Egypt, Syria, Turkey, the Philippines, Java, Australia, New Zealand, and South Africa. In connection with emergency aid (see page 49) visits were made to medical centers in all but three of the countries of Central and Eastern Europe. Visiting professors were sent to Copenhagen and to São Paulo in Brazil.

#### Medical Progress in Peking

Peking Union Medical College is a modern medical center in the capital of China, an

outpost of teaching and research in the Far East. It includes a medical school for both undergraduate and graduate students, a teaching hospital, a school of nursing, and a premedical department. Because co-operation with an existing institution, governmental or private, did not seem feasible, the Foundation through its China Medical Board took over a school that had been started under missionary auspices. It created a new board of trustees, built, manned, and is now supporting the expanded and reorganized College.

The members of the medical faculty and their assistants number 79 of whom 41 are foreigners and 38 Chinese. The teachers are graduates of 40 medical schools and represent 9 different countries. There are besides 25 teachers in the premedical and nursing schools. While among the foreigners citizens of the United States predominate, the institution is administered in no narrowly nationalistic spirit. Of the six visiting professors who were in Peking for varying periods during the past year one was an eminent ophthalmologist of Vienna, and another a distinguished anatomist from the Netherlands, and a third a Chinese physiologist. It is the fixed policy of the College to recruit its staff so far as possible from Chinese sources. A large percentage of the lower positions are

filled by Chinese appointees, from whom it is hoped to select men and women for higher posts. Already three Chinese doctors have been advanced to the rank of associate professor. One is in charge of a department.

The Peking Union Medical College has no desire to be an independent center of foreign influence in China. It seeks to serve the best interests of the Chinese people, in harmony with national purposes and ideals. Before the College was reorganized and expanded the authorities of the central government were consulted about the proposals of the Rockefeller Foundation for medical work in China. They gave hearty approval. At the formal opening in 1921 the President was officially represented and cabinet ministers cordially welcomed the institution as a prized agency of education. It is regularly registered with the Ministry of Education in Peking as an officially approved medical school of university grade. The trustees hope that the time will come when the College and Hospital may be put under Chinese control and made an organic part of the Chinese system of education.

In October, 1924, the students numbered 208 and were distributed as follows: medical school 62, school of nursing 20, premedical school 60, graduate and special students 66. The graduate registration was incomplete. During the year



Photograph Excised Here

Fig. 2.—Out-patient department and public health clinic of Dalhousie University. This building, which was erected and equipped with funds provided by the Rockefeller Foundation, serves as the out-patient department of several hospitals, thus providing the students in the medical school of the University with unusual facilities for clinical study of common illnesses



Photograph Excised Here

Fig. 3.—A corner in the chemistry laboratory of Nankai University, China (see Fig. 53)

1923-1924, 113 doctors and nurses, Chinese and foreign, did graduate work either in regular courses extending over several months or in short intensive courses especially designed for missionary doctors and others who cannot leave their posts for long periods.

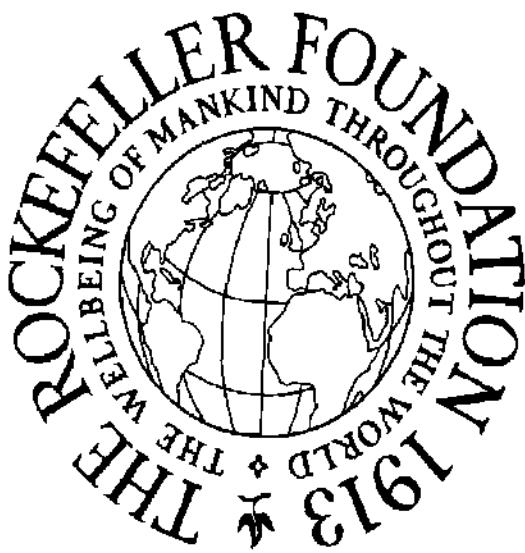
In one respect the Peking Union Medical College is unique. Its staff members devote all their time to the service of the institution. They do not engage in private practice. In consequence the faculty has developed a spirit of team-work which at once strikes the visitor from abroad. A considerable amount of excellent investigative work is done each year. Cautious experiments in changing the order of studies and methods of teaching are being carried out. Careful tests of student capacity and accomplishment are being applied. In this environment undergraduates and young doctors find exceptional opportunities for technical training and for developing a spirit of comradeship in science.

Obviously the College must seek close relations with Chinese education and the life of the people. The China Medical Board is aiding premedical education in eleven institutions, both Chinese and foreign, by grants toward buildings, equipment, and current maintenance, by providing the services of experts in science teaching



Photograph Excised Here

Fig. 4.—Nurses on duty in the Philippine Islands. This is not a pleasure trip, but a regular tour of inspection by public health nurses



Photograph Excised Here

Fig. 5.—Japanese medical scientists at Peking Union Medical College. Eight Japanese scientists accepted the invitation of the College to make use of its laboratories, following the earthquake at Tokyo

and by supporting a summer institute which in 1924 was attended by 130 teachers of physics, chemistry, and biology, who represented eighty-six Chinese and foreign schools and colleges.

To interpret the aims of the College and Hospital to the people of Peking and the Chinese public an advisory committee of prominent Chinese citizens has been appointed. This group has made useful suggestions and has shown an interest in the institution. In furtherance of its main purpose the Board has continued contributions to the National Medical College, Peking, and the medical schools of Shantung Christian University and of the Hunan-Yale institution at Changsha, and in 1924 aided seventeen hospitals in various parts of the country. Minor items of aid and service are reported on pages 52 and 53.

#### **The Doctor of the Future a Health Counsellor**

The medical schools of many countries, especially, perhaps, those of North America, Great Britain, and to a less degree of Western Continental Europe, are facing several problems of curriculum, of teaching methods, of purpose and of aim. An American committee has been formed to examine the course of study in the United States and to recommend changes.

This committee will be expected to find answers to such questions as these: What kind or kinds of doctors ought the medical school to turn out in response to the needs and demands of the public? What should graduates know and be able to do? How best can they be helped to master this knowledge and skill? How can they be given the right attitude toward their work?

Probably three quarters of all doctors today are general practitioners, that is, physicians whose aim it is to recognize diseases, to deal with all the more common maladies by advice and treatment, and to know when to refer patients to specialists. This general practitioner is at present facing many difficulties. The specialist tends to monopolize prestige and to receive relatively much larger fees. Laboratory and hospital facilities which the modern doctor ought to have are expensive and often inaccessible. Sanitation and preventive medicine are restricting and even eliminating diseases like typhoid and malaria which once afforded a good deal of practice. Free and pay clinics, school and industrial medical services, health insurance (under government auspices in Germany and England), hospital associations and all efforts to spread costs of sickness over large population groups, and other forms of social

medicine tend to encroach upon what was once the exclusive field of the general practitioner. There are people who assert that this type of physician is doomed; that he will disappear because he cannot compete with the specialist on the one hand and with preventive and social medicine on the other.

Such an outcome is to be viewed with concern. The well-trained, properly equipped, experienced general practitioner of ability, character, and personality is a fundamentally valuable person. He is a good diagnostician. He sees his patient as a whole. He knows his peculiarities and circumstances. He can decide when to refer him to a specialist and when to protect him against the very real danger which is threatened by a narrowly specialist point of view. He cheers and encourages, warns and commands. He is not only a physician but a friend and counsellor. The disappearance of the general practitioner would be a serious loss. The stimulating philosophy of individualism with its insistence upon independence, initiative, and ambition seems to be embodied in the general practitioner.

He will survive only if he can win confidence and make a living. But he will have to meet the new conditions. He will have to submit to a measure of team-work in the use of laboratories

and other resources; he will be compelled to recognize the public demand for sharing costs of sickness and, most important of all, he must become a practitioner of preventive medicine, a counsellor of health, a man who can recognize and correct the minor but remediable physical and mental defects which are so common. This will mean an increasing preoccupation with the normal and a knowledge of the effects upon health of diet, exercise, mental attitudes, recreation, and family and social life. To train men and women for this reinterpreted and redirected function the medical schools will be compelled radically to modify their aims and methods and to "permeate the curriculum with the preventive idea."

### **Preparation for Protecting the Public Health**

"Hygeia," says a well-known teacher of preventive medicine, "has long been the Cinderella of the medical family." In spite of the progress of public health work the medical schools have too generally neglected or slighted the preventive side of medicine. This has had an unfortunate result. The average physician fails to see as clearly as he should that he is a vital part of the public health organization, that he is expected to discover and to report communicable diseases, to instruct his patients, to

support the local authorities, to help create sound public opinion.

The Harvard Medical School, among others, is trying to impress upon its students the fact that the doctor has a duty not only to the individual but to the community. Every undergraduate is required to make a sanitary survey of a village, town, or small city. This study includes a general description of the place, followed by detailed reports on water, sewage, disposal of refuse, vital statistics, milk, sanitary nuisances, industrial hygiene, housing, infectious diseases, schools, and miscellaneous items. The educative effect of such a piece of work upon the future physician needs no elaboration. A facsimile reproduction of one of these surveys has been issued (see page 329) by the Division of Medical Education. Harvard has also created a special committee which will assist every teacher in the medical school to include in his courses the preventive aspects of his subject. If this can be done, hygiene will not be a thing apart but a body of knowledge and a point of view diffused throughout the curriculum. Toward the cost of this experiment the Foundation has made an appropriation.

The successful teaching of hygiene to medical students will increase the number of well-trained persons who choose this field as a career, but no

undergraduate course can fit men and women for specialized service in preventive medicine. This has become a recognized profession which demands appropriate training in the nature and causes of communicable diseases, methods of controlling them, sanitation, various aspects of hygiene, mental as well as physiological, vital statistics, sanitary laws, organization, and administration. Work in laboratories, library, and lecture rooms must be supplemented and applied by practical experience in the field.

To provide this varied and intensive training special graduate schools and institutes of hygiene have of late been newly created or expanded in the United States, Canada, England, in Europe and South America. In 1924 the Rockefeller Foundation, on the initiative of the International Health Board, made an additional gift of \$400,000 to Harvard University for its School of Public Health, granted an interim appropriation for expenses of the London School of Hygiene and Tropical Medicine while its new building is being constructed, continued payments toward the building of institutes of hygiene in Prague and Warsaw, contributed to the maintenance of an institute of hygiene in São Paulo, Brazil, and pledged \$650,000 to the University of Toronto for the expansion of its School of Hygiene and Public Health.

Other forms of aid to special preparation for public health work included: maintenance of field training posts specializing in malaria, hookworm disease, and county health work in Alabama and Georgia for members of the staff of the International Health Board and others, a contribution toward an experiment in correspondence teaching for health personnel in Ohio, and 159 fellowships to enable advanced students from twenty-three countries to gain additional preparation for specialized or administrative positions in official health services (see page 46).

#### **The Nurse in Hospital and Community**

To both medical education and public health work the modern trained nurse is indispensable. She is found in the wards and dispensary of the hospital; she follows discharged patients to their homes; she responds to the calls of the sick poor; she reports cases of communicable diseases; she is an attendant in the health center and in the industrial clinic; she serves in the school and in the families of the pupils; she goes her rounds in city, town, and village and of late has made her way to isolated farmsteads in the open country. She is at the same time nurse, teacher, public official, and friend.

For the successful discharge of her duties the

nurse needs more than sympathy and devotion, essential as these qualities are. Apprenticeship experience alone will not suffice. There must be both education and training in hospital, dispensary, and in the field. Widening opportunities are making larger demands. Changes in the organization and methods of nurse education are taking place, experiments are being tried, new schools are being created. Countries in which this type of training has not been developed are adopting modern ideas of teaching and practical apprenticeship.

Because of an interest in medical education and public health the Rockefeller Foundation has aided demonstrations in nursing education in several countries. During 1924, it continued to support a training school experiment at Yale University, contributed to a school of nursing in Rio de Janeiro, assisted a bureau of public health visiting in France, helped to establish schools of both public health and bedside nursing at the University of Cracow, Poland, and at Zagreb, Yugoslavia, aided the public health nursing service in the Philippine Islands, granted thirty-nine fellowships for training, made surveys of nursing education in several European countries, invited leaders in nursing education to visit foreign countries, and sent a commission from the School of Nursing in Lyons to

observe hospital schools and methods in Great Britain.

### Smoldering Fires of Yellow Fever

An outbreak of yellow fever in Salvador (seventy-five cases with twenty-two deaths) in the summer of 1924 was an unanticipated episode in a campaign which began in 1918 under the leadership of General Gorgas as head of a commission of the International Health Board. Control work had been carried on in Mexico and Central America, Ecuador, Peru, Colombia, Venezuela, and Brazil, with a reconnaissance on the Gold and Ivory Coasts of West Africa. No case of the fever had been reported from Central America since 1921. It was hoped and believed that with the possible exception of a small focus of infection in Colombia the disease had been eliminated from the entire area which lies between the Rio Grande and the northern boundary of Brazil. This epidemic, however, taught its lessons. It showed the value of keeping a mobile staff of experts on call. Doctors on duty at other points were instructed by cable to go at once to Salvador to help the Government bring the outbreak under control. The promptness with which this was done proved that international organization against disease can be speedy and effective.

The unexpected flare-up in Salvador had another result. It forced a careful review of the theory and practice of anti-yellow-fever work. How was this outbreak to be explained? Had the infection been brought in from outside or had the previous campaign failed to extinguish the fire completely and left embers smoldering? No absolute answer can be given, but there is reason to think that there may be more than was originally supposed of those endemic areas, i. e., cities, towns, or even clusters of villages between which people are constantly passing to and fro and in which the fever is always present. Guayaquil, in Ecuador, which was freed from the disease in 1919 had long been a conspicuous endemic center from which the fever was distributed by land routes and by ships. Now that the major sources of danger no longer exist north of Brazil, any minor foci which may remain will be sure to reveal themselves, as the flare-up in Salvador has shown.

It is also true that the part which babies and young children play in keeping yellow fever alive may have been underestimated. Unless the mosquitoes by which alone the disease is carried from person to person can find susceptible victims the malady quickly burns itself out. There are no "carriers" of yellow fever as in the case of malaria or even typhoid. The people

who are attacked either die or get well. A survivor is free from the germs and immune against a second infection. So it comes about that even if control of mosquito breeding is neglected in a given community yellow fever will disappear provided non-immune persons do not come in from the outside to keep the infection going. But in settled human groups babies are arriving constantly and growing into boys and girls who are susceptible. Children usually have the disease in a mild form; very often it is not even recognized for what it is. Yet from these sick children mosquitoes may become as dangerously infective as from the severest cases. So it may happen that in a large city or a series of small towns the fever is kept alive without anyone realizing it until adult, non-immune strangers begin coming in. Then smoldering embers leap into flame. A vigilant watch is being kept against such possibilities. The surveys made in Mexico, Guatemala, British Honduras, Nicaragua, Honduras, Colombia, and the Guianas failed to reveal any cases of yellow fever.

#### Brazil's Successful Control of Yellow Fever

Oswaldo Cruz, soon after the method of combating yellow fever had been worked out in Cuba in 1901, freed Rio de Janeiro and southern Brazil of the disease, but measures for protecting

the northern section were never carried through to complete success. In 1923 an invitation from the Government to the International Health Board to take part in a new and, it was hoped, final campaign in northern Brazil was accepted.

Dr. Noguchi of the Rockefeller Institute for Medical Research, the discoverer of the yellow fever germ, made a journey to Bahia where he demonstrated to a group of Brazilian doctors his delicate methods of detecting the elusive organism. He was able also to make further tests which confirmed the specific character of the germ. He was soon followed by a corps of men experienced in yellow fever work. In conjunction with federal and state health services eleven posts were set up in towns and cities along the coast from Victoria in the south to Manaos in the north. Large local staffs of inspectors and assistants were organized. From these centers, also, work in outlying areas was administered.

When work began in these eleven places yellow fever mosquitoes were found to be breeding in or near 80 per cent of the houses in a city at one extreme of the list and in 22 per cent of the habitations in the community at the other. Within a few months this had been reduced to 15 per cent in the first city and to 5 to 1 per cent in the others. It has been shown that when

mosquitoes are breeding in only about 5 per cent of the houses there is little or no danger that the disease will spread. The exact percentage for safety varies with the locality, the number of non-immunes, the climate, and the season. To be on the safe side the index, as this percentage is called, is reduced to the lowest point possible, often 1 or 2 per cent, and kept there in the key points for a year before the area is regarded as free.

The antibreeding measures consist for the most part in either covering or screening all water containers to prevent the mosquitoes from depositing eggs or, when this is not feasible, in keeping fish in the open receptacles. These fish eat the larvae or "wrigglers" before the adult mosquitoes are set free. To insure success the control work is systematically organized and carried out under vigilant supervision. No cases have been reported since October 21, 1924. With the Brazilian campaign well in hand and a corps on guard in case of a recurrence of such outbreaks as that in Salvador, the Board will turn its attention to the West Coast of Africa. A staff is being prepared for a reconnaissance in the early future.

#### **Studies and Demonstrations in Malaria Control**

Malaria is a more difficult disease to control than yellow fever. The malaria parasites con-

tinue to live in people's blood unless destroyed by the persistent use of quinine in sufficient quantities over a period of several years. Then, too, the malaria mosquitoes are of several closely related species and, unlike the highly domesticated yellow fever insect, breed in natural collections of water, ponds, reservoirs, and ditches, often at a distance from human habitation. Thus malaria control is by no means technically easy, except in the most favorable circumstances, and may not be economically feasible. In extreme cases malaria may and does make whole regions practically uninhabitable. In many parts of the world, for example, in large areas of the tropics, along the Italian coasts, in Macedonia and Greece, malaria is a dangerous, even deadly, foe. Several British colonies, the Panama Canal Administration, the Italian Government, and the United States Public Health Service, among others, have demonstrated the possibility of effecting varying degrees of control by large and small scale drainage, the oiling or paris-greening of pools, the use of fish, the administration of quinine, the screening of houses, and so forth.

Since 1916 the International Health Board has contributed to demonstrations in malaria control, especially in towns and in counties which

include urban and rural districts. During 1924 the Board aided thirteen states, twenty-three counties, and one town in the United States and maintained demonstration units in four Brazilian villages near Rio de Janeiro. In the three of these latter places in which work had been carried on for some time the decline in the number of cases was marked.

In response to the need of more knowledge about the varieties, life histories, habits, preference for human or animal blood, and the diseases of malaria mosquitoes, about the maladies of the fish that are set to eat the larvae, about malaria in birds, about the possibilities of reinforcing quinine with other substances, studies and experiments were made by specialists in the United States, Austria, Italy, Palestine, Brazil, Nicaragua, the Philippine Islands, and Porto Rico. Two training stations for malaria workers were maintained, one in Leesburg, Georgia, the other near Rio de Janeiro.

#### **The Hookworm as Advance Agent of Health**

In contrast with yellow fever and malaria, hookworm disease is a simple malady. The process by which tiny worms hatched in a warm and moist soil make their way through the skin of a human host and finally come to rest in the small intestine is well understood and can be

clearly explained even to the most ignorant. The vermifuges which expel the parasites are simple and cheap. The building and use of sanitary latrines put a stop to the pollution of the soil and protect the population against reinfection. To weaken the hold and bring under control a disease which robs of vitality, stunts, cripples, handicaps, and even kills millions throughout the hot and moist regions of the world is vitally important in itself. The International Health Board is an outgrowth of the original Rockefeller Sanitary Commission which was organized in 1909 to combat the disease in the Southern States. Since then the campaign has been extended to fifty-two countries in six continents and twenty-nine islands of the seas.

But the control of hookworm disease does more than give relief from one malady. It is an object lesson in public health. It shows a community what organized, concerted effort under trained leadership can accomplish. It is in a real sense an advance agent of preventive medicine, an educator of the public. The Board has purposely co-operated in the control of hookworm disease as a way of helping local and central governments to establish or extend their general health organizations. Thus in the United States, Brazil, Australia, and else-

where hookworm units as such have been merged in regular health services.

Elsewhere hookworm measures are continued. In 1924 the Board assisted twenty-four states and countries from the West Indies to Siam, Java, and Ceylon to control the disease, and in eight countries made surveys to find out the extent of the hookworm problem. As usual, government appropriations were increased while the Board's share diminished. Simple as hookworm disease seems, much is still to be learned about soil pollution, drugs, various effects of the disease according to age, sex, race, etc. So research went on in the Southern States of the United States and in other countries, notably China.

### Better Health for the Countryside

The idea that rural life is inherently wholesome and healthful has all the vitality of a popular legend. The crystal waters of the old family well, the gymnasium apparatus of plow and hoe and saw, the fresh food from field, garden, and dairy, the constant outdoor life, the mental serenity which comes from contact with nature have been so lyrically extolled by orators, chiefly urban, that it is hard to convince the man in the street that the farmer and his family are not healthier than city folk.

Yet there are many facts which point in quite the opposite direction. An examination of a half million school children proved that physical defects occur more frequently in rural pupils than in urban. Since 1910 the New York rural death-rate has been higher than that of cities. On the other hand, for the country as a whole the rural rate is lower than the urban. Certain reports on army recruits seem to be more favorable to young men from rural regions. The use of different standards of "rural" and "urban," however, often makes comparisons misleading. New light has recently been thrown on this question by the examination of 3,478 male students in one of the large state universities of the Middle West. The results are distinctly favorable to the large cities of over 50,000 population as compared with small cities, countryside, and villages. The students from the large cities show the lowest number of physical defects. "It is a well-known fact," says a United States health official, "that the natural advantages which the rural districts possess are more than offset by the better health protection afforded the city dweller."

To hasten the extension of these safeguards to the small town, village, and countryside is one of the aims of the International Health Board. Success in the control of hookworm

disease has led in the Southern States to the creation of official county health organizations, and in other states and a few foreign countries similar services have been assisted. These county units vary in size, scope, and cost. The usual staff includes a full-time health officer, a sanitary inspector or officer, a public health nurse, and a clerk. The annual cost for such an organization is \$10,000. This is paid chiefly by the county but in part by the state. In many instances the International Health Board makes a contribution while the plan is being tested. The Board's share varies with the conditions. Sometimes 10 per cent of the total cost will be enough to get a project under way. In other cases aid up to 25 per cent may be required. In rare instances it may seem wise to give even more. The duration of the Board's participation likewise follows no rigid rule. At times three years will suffice. Ordinarily by the end of five years the Board has withdrawn. In special cases aid for a longer period may seem justified. In 1924 the Board contributed directly to eighty-three county budgets in twenty-two states of the United States, four counties in the State of São Paulo, and five demonstrations in the State of Minas Geraes, in Brazil, to rural health work in the Province of New Brunswick, Canada, and to a health service of the county

unit type in Czechoslovakia and the Department of Hérault in southern France.

### **International Team-Work in Health Service**

Municipal and rural or county health organizations are the units of state or provincial machinery which in turn forms part of a national service. The leading countries have organized their systems of public hygiene with varying degrees of efficiency. The colonial administrations, notably of Great Britain, France, the Netherlands, Belgium, and Japan, have created agencies of health in their possessions or mandated territories. The Government of the United States, directly in the Panama Canal Zone and indirectly in Porto Rico and the Philippine Islands, has improved sanitary and hygienic conditions.

The gradual movement toward a closer worldwide team-work of these national systems is significant. The chief steps in this progress have been (1) the international sanitary conferences in Paris in 1851 and 1859 to concert quarantine measures chiefly against cholera, typhus, and yellow fever, (2) the setting up in 1907 of the Office International d'Hygiène Publique in Paris to aid in carrying out continuously the provisions of an international convention concerning quarantine, in seeking uniformity in vital statistics, etc., (3) the crea-

tion of the Pan American Sanitary Bureau, (4) the organization of the Health Section of the League of Nations, and (5) the reaching of working agreements between the League, the Office, and the Pan American Bureau.

The Health Section of the League gathers and distributes vital statistics, organizes international interchanges of health officers, seeks to improve methods of reporting births, deaths, and the presence of communicable diseases, aids in standardizing sera and vaccines, and renders many other forms of health service, e. g., special commissions on typhus and malaria. Since 1922 the Foundation, through the International Health Board, has been contributing toward the support of the epidemiological intelligence service and the health officer interchange of the League's Health Section. During 1924 the Board also agreed to aid for a five-year period an experiment in maintaining at Singapore a regional headquarters for the more prompt and accurate reporting of epidemic and other disease conditions in the Far East and administering a proposed maritime sanitary convention. The outlines of a co-ordinated world health service begin clearly to emerge.

#### Study Tours for Health Officials

The League's plan for interchanges of health personnel deserves brief description. If inter-

national team-work in preventive medicine is to be genuinely successful the men and women in charge in each country must have a vivid sense of the task as a whole, must have confidence in their colleagues across national borders, must be ready to learn from the experience of other countries, and must be magnanimous in putting their own knowledge at the disposal of all who may wish to profit by it. The printed page does a great deal but at best gives a blurred picture. Short international conferences and casual journeys abroad have value but may easily result in superficial, often misleading, impressions.

The interchanges of the League are something more than junkets of hygienists. They are genuine study tours or institutes. A group of health administrators and specialists from several countries assemble in the chief city of a given nation, listen to preliminary expositions, then in small sections spend considerable periods in the field inspecting institutions and work in progress. Finally the visitors reassemble for conference and discussion. Often more than one country will be studied in this way by the same interchange group. To point out in any detail the value of this plan in the diffusion of knowledge, increase of efficiency, and the fostering of a professional comradeship, would be to "elaborate the obvious."

During 1924 in addition to the general exchanges two special exchanges were organized, one for persons interested in tuberculosis, another for school medical officers. The general interchanges, attended by ninety-nine officers from twenty countries, were held in Great Britain (February 2 to April 10), in the Netherlands and Denmark (April 24 to July 12), and in Switzerland (August 10 to September 17). Twenty-eight officers from thirteen countries attended the gatherings of specialists. The tuberculosis group spent 100 days in eight countries; the school medical officers divided forty-two days of study between three nations. In addition to these official League interchanges the International Health Board on its own account brought to the United States as its guests health officials and scientists from Mexico, Norway, Sweden, Denmark, France, Australia, and the Straits Settlements.

#### **Eight Hundred and Fifty Fellows from Thirty-Three Countries**

In the preceding paragraphs there has been frequent mention of fellowships. These Foundation fellowships are an organic part of the institution's policy; they are a means of carrying out plans in health and education, not an end in themselves. There is no hard and fast system of

fellowships, no fixed apportionment to different countries, no commitment for the future except to fulfil promises made to individuals. The Foundation does not publicly solicit applications, but selects, with the advice of governments and university departments, younger officials and graduate students of promise for whom positions of significance in their own countries are assured on the completion of professional studies abroad or at home. It cannot be too emphatically stated that it is no part of the Foundation's purpose to induce or make it easy for persons to settle permanently in countries other than their own. The aim is to prepare them for better service in their home lands.

During 1924, 864 individuals from thirty-three different countries received from the Rockefeller Foundation some form of fellowship stipend, either directly through a board or division or indirectly through an independent administrative agency. The detailed list follows: International Health Board 157, China Medical Board 150 (includes 92 Chinese resident fellows in Peking), Division of Medical Education 399 (includes 262 German resident fellows who received small stipends), Division of Studies 23, National Research Council 121, British Medical Research Council 10, National Committee for Mental Hygiene 2, League of Nations 2. The geographi-

cal distribution by large areas was: the Americas 207, Europe 472, the East 185; by countries: Germany 270 (262 small emergency grants), United States 164, China (including small grants to Chinese and missionary doctors in China) 152, Poland 45, Yugoslavia 36, Hungary 33, Brazil 21, Czechoslovakia 21, Canada 16, Austria 13, Rumania 13, Siam 9, Japan 8, France 8, Bulgaria 7, England 7, Belgium 6, the Philippines 6, India 5, Scotland 4, the Netherlands 4, Spain 3, Costa Rica 2, Hongkong 2, and Mexico, Nicaragua, Panama, Peru, Denmark, Italy (through the League of Nations), Australia, Java, Syria, one each. It will be noted that this distribution reflects the relations between the Foundation and projects which are being aided in different parts of the world. Of the 864 fellows 281 crossed national borders to work in foreign countries. The total amount spent upon fellowships for the year was \$585,148. The total number of fellowships directly or indirectly supported from 1916 to January, 1925, was 1,472.

#### Tiding Over a Crisis in the Medical Sciences

The "resident fellowships" which have just been reported need a few words of explanation. Those established in Europe (this does not hold true in China) were created originally as an emergency measure. There seemed to be dan-

ger, especially in Germany, of a break in the continuity of scientific work which was of value to the whole world. So it was decided to set up a committee of German medical scientists who should select for assistance within limits younger persons likely to turn to good account allowances which would enable them to continue their scientific careers. Fortunately during 1924 conditions in Germany improved so much that the need of continuing this emergency aid seems likely from now on to grow rapidly less. Resident fellowships, however, will be used hereafter to assist individuals to do advanced work in their own countries. These resident fellowships will also be helpful in determining the ability of persons to profit by "traveling" fellowships abroad which will permit them to study wherever the best appropriate training is to be had.

These small stipends to promising persons were part of a plan of emergency aid which included also grants for laboratory apparatus and supplies and for scientific periodicals and a small number of books. At the close of the war many continental medical schools, especially in Central and Eastern Europe, were in serious straits. They needed to be tided over a crisis. The Foundation extended its policy to include emergency aid for this purpose. With improving conditions this form of help will soon come to

an end. During 1924 emergency contributions were made to eighty-eight institutions in sixteen European countries, not including Germany.

### Consultation and Field Service

Advice from a well-trained and experienced specialist can sometimes do more good than a gift of money. The loan of an expert to a health department or to a medical school may insure the more efficient use of funds which are already available, or small temporary appropriations may help to establish new forms of service which will make convincing appeals for government or institutional support.

During 1924 the International Health Board, by the loan of experts and by small grants, helped to improve public health laboratory service in eleven states of the United States and in seven foreign countries. In the same way aid with respect to disease reporting, sanitary engineering, or vital statistics was rendered to seven American states and to four health departments abroad. The General Director and other officers made tours of survey and inspection in the United States, Europe, and the Far East. The visits of representatives of the Division of Medical Education to medical schools in many countries have already been mentioned.

The Division of Studies sent a well-known anthropologist to Australasia to make a pre-

liminary inquiry and to report upon the feasibility of an intensive study of primitive peoples in Australia. The same division continued surveys of nursing education in Europe. The China Medical Board (1) lent consultants in

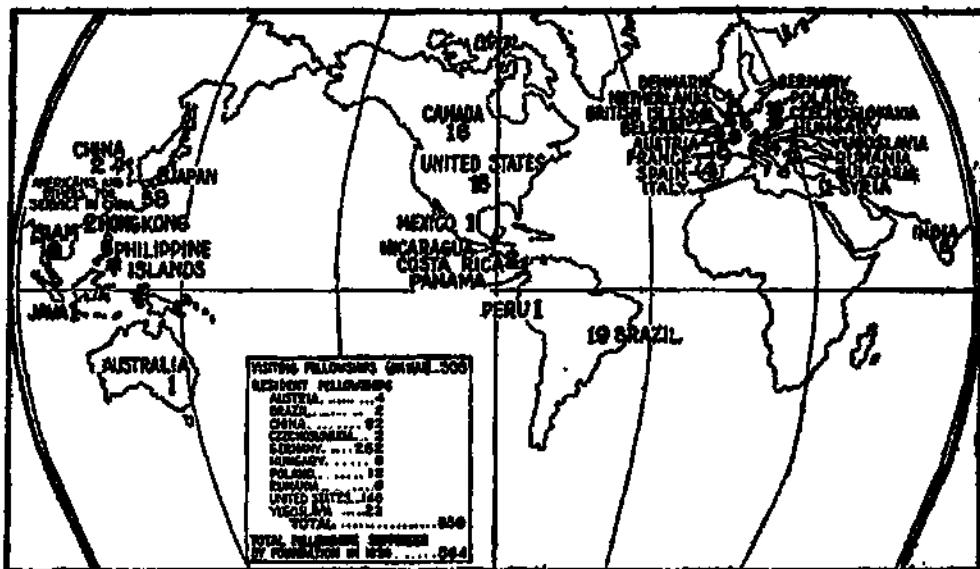


Fig. 6.—Fellowships for thirty-three countries

premedical education, (2) maintained an architectural bureau which gave advice about laboratory and hospital construction, (3) helped hospitals to select and instal X-ray equipment, (4) contributed toward the translation of modern medical books into Chinese, and (5) helped to establish a biological supply bureau which should gather material for use in biological courses and distribute it to schools and colleges.

### Working Through Other Agencies

It is a policy of the Rockefeller Foundation not to set up unnecessary machinery but to work

with and through certain agencies which are equipped to do work in public health, medical education, and related fields. There follows a list of the organizations to which the Rockefeller Foundation made payments in 1924:

*Medical Research Council (Great Britain).* Fellowships for young British doctors to work in the United States.

*The National Research Council.* Fellowships in mathematics, physics, chemistry, biology, and medicine.

*New York Committee on Dispensary Development.* Improvements and demonstrations in out-patient services.

*American Conference on Hospital Service.* Contribution to hospital library and information bureau.

*Union of American Biological Societies.* Expenses to Europe of representatives; limited underwriting of abstract journal.

*National Committee for Mental Hygiene.* Surveys of mental deficiency, uniform statistics, fellowships.

*Canadian Committee for Mental Hygiene.* Applications of mental hygiene to school children.

*New York Academy of Medicine.* Contributions toward educational work, pending payment of promised endowment.

*American Medical Association.* One half the deficit of Spanish Edition of Journal of American Medical Association.

*National Health Council.* Final payment toward experiment in team-work among voluntary health agencies.

*Council on Health Education (China).* General budget; promotion of interest in modern medicine.

*China Medical Missionary Association.* Current expenses; maintenance of standards of medical education.

*National Medical Association of China.* Expenses of Committee on Uniform Medical Terminology in Chinese.

*National Educational Reform Association of China.* Salary of special supervisor and investigator for government schools.

*North China Union Language School.* Appropriation toward new building.

*New York Association for Improving the Condition of the Poor, and Committee of Reference and Counsel.* Final payments on ten-year pledges made in 1914.

#### Applications for Aid

In 1924, formal applications for aid to the number of 622 were declined. Besides these many tentative requests were made both to the

central office and to staff members in the field. The 622 applications fell into the following groups: public health 29, medical education 148, general education 52, local institutions 120, personal aid 194, miscellaneous 79.

The requests were not granted because they did not fall within the scope of policies which at present govern the work of the Foundation. The trustees decline to make gifts or loans to individuals, to contribute to the building or maintenance of churches, hospitals (except as certain hospital features may be included in plans for medical education), and other local institutions, or to support campaigns to influence public opinion on social or political questions. A record of all applications formally declined is kept and they are regularly reported to the trustees. From considerations of courtesy and fairness the names of applicants and the details of their requests are not made public.

#### Servant of a Common Cause

This summary story of a year's activity records co-operation with thirty-two commonwealths of the United States of America and with seventy-seven other states and countries. Now and then someone has asked whether such aid from without does not imply a kind of condescension; whether the Foundation does not seem

to covet the rôle of a corporate Maecenas of medicine. The answer is that the very nature of the work precludes a feeling of Chauvinism and of patronage. To visit many countries, to note the things in which each excels, to meet men and women who are contributing to the world's store of scientific knowledge and skill, to learn of their plans and needs, to make easier the migrations and interchanges of scientists, to facilitate that commerce of ideas which enriches all lands—to have a share in all these things is to realize that scientific progress, the development of education, the fostering of the fine arts, are not the work of one country or race but of continuous international intercourse. The Rockefeller Foundation within its chosen field seeks to share in this common task as a means of realizing the purpose of its charter, "the well-being of mankind throughout the world."

### Finances for 1924

The accompanying table presents a summary of receipts and expenditures for 1924. The income accruing from investments was a little more than eight millions. Of this \$7,288,823 was needed to meet the obligations which came due during the year. Of the \$6,704,504 carried over from 1923, \$6,530,043 was subject to call in fulfilment of outstanding pledges. The remain-

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der available for transfer to the 1925 budget and subject to appropriations for that year was \$1,077,144. Details of expenditure for 1924 will be found on pages 66 to 68. A still fuller financial statement appears in the Treasurer's Report, pages 353-419.

TABLE I: RECEIPTS AND DISBURSEMENTS  
IN 1924

<i>Receipts</i>		<i>Disbursements</i>	
BALANCE FROM 1923..	\$6,704,504	International Health Board.....	\$2,536,334
Contribution for study of hookworm disease.....	25	China Medical Board.	1,146,297
Refunds on appropriations.....	472	Division of Medical Education.....	2,045,298
Income during 1924..	8,191,009	Division of Studies...	910,731
		Harvard School of Hygiene and Public Health.....	425,000
		Miscellaneous.....	62,449
		Administration .....	162,714
		<hr/>	<hr/>
		BALANCE:	\$7,288,823
		Payable on 1924 and prior appropriations..	\$6,530,043
		Available for 1925 appropriations..	1,077,144
		<hr/>	<hr/>
			7,607,187
		<hr/>	<hr/>
			\$14,896,010





**THE ROCKEFELLER FOUNDATION**

**Report of the Secretary**



To the President of the Rockefeller Foundation:  
Sir:

I have the honor to submit herewith my report for the period January 1, 1924, to December 31, 1924.

Respectfully yours,  
NORMA S. THOMPSON,  
Secretary.



## SECRETARY'S REPORT

The following were members and trustees of the Rockefeller Foundation during 1924:

### MEMBERS

John G. Agar	Wickliffe Rose <sup>1</sup>
Wallace Buttrick <sup>1</sup>	Julius Rosenwald
John W. Davis	Martin A. Ryerson
Simon Flexner	Frederick Strauss
Raymond B. Fosdick <sup>1</sup>	George E. Vincent <sup>1</sup>
Vernon Kellogg <sup>1</sup>	William Allen White
John D. Rockefeller, Jr. <sup>1</sup>	Ray Lyman Wilbur

Officers of the Rockefeller Foundation during 1924 were:

John D. Rockefeller, Jr.	<i>Chairman, Board of Trustees</i>
George E. Vincent	<i>President</i>
Edwin R. Embree	<i>Secretary</i>
Norma S. Thompson	<i>Assistant Secretary</i>
L. G. Myers	<i>Treasurer</i>
L. M. Dashiell	<i>Assistant Treasurer</i>
Robert H. Kirk <sup>2</sup>	<i>Comptroller</i>
Chase Andrews <sup>2</sup>	<i>Assistant Comptroller</i>
George J. Beal	<i>Assistant Comptroller</i>
C. C. Williamson	<i>Chief of Information Service</i>
Clifford W. Wells	<i>Fellowship Adviser</i>

### Meetings

Regular meetings of the Foundation were held on February 27, May 21, and November 7, 1924. Seventeen meetings of the Executive

<sup>1</sup>Executive Committee.

<sup>2</sup>Died November 24, 1925.

<sup>3</sup>Died December 27, 1925.

Committee were held during the intervals, to execute programs within general policies approved by the trustees.

#### Departmental Organization

The programs of the Foundation are carried out by two Boards and two Divisions created by resolution of the Board of Trustees, the International Health Board in 1913, the China Medical Board in 1914, the Division of Medical Education in 1919, and the Division of Studies in 1923. Each of these agencies is devoted to special functions and depends upon the Foundation for funds.

Meetings of the International Health Board were held on May 20 and November 6, and meetings of the China Medical Board on April 10 and November 5, 1924. The Executive Committee of the Foundation, which serves also as Executive Committee of both Boards, met in the intervals to execute approved programs.

The officers and members of these departmental agencies in 1924 were as follows:

#### INTERNATIONAL HEALTH BOARD

George E. Vincent, *Chairman*

Wallace Buttrick	Vernon Kellogg
David L. Edsall	T. Mitchell Prudden
John G. Fitzgerald	John D. Rockefeller, Jr.
Simon Flexner	Wickliffe Rose
Raymond B. Fosdick	Victor C. Vaughan
Edwin O. Jordan	William H. Welch
Norma S. Thompson, <i>Secretary</i>	

F. F. Russell, M.D.                   *General Director*  
John A. Ferrell, M.D.               *Director for the United States*  
Victor G. Heiser, M.D.               *Director for the East*  
H. H. Howard, M.D.                   *Director for the West Indies*  
Florence M. Read, *Executive Secretary*

#### CHINA MEDICAL BOARD

George E. Vincent, *Chairman*  
Wallace Buttrick                      Vernon Kellogg  
Simon Flexner                        Paul Monroe  
Raymond B. Fosdick                  John R. Mott  
Frederick L. Gates                  Francis W. Peabody  
Frank J. Goodnow                    John D. Rockefeller, Jr.  
Roger S. Greene                     Wickliffe Rose  
  William H. Welch  
Norma S. Thompson, *Secretary*  
Roger S. Greene                     *Director*  
Henry S. Houghton                  *Acting Resident Director in China*  
Margery K. Eggleston, *Executive Secretary*

#### DIVISION OF MEDICAL EDUCATION

Richard M. Pearce, M.D.           *General Director*  
Allan Gregg, M.D.                   *Associate Director*  
William S. Carter, M.D.           *Associate Director*

#### DIVISION OF STUDIES

Edwin R. Embree                   *Director*

### Summary of Expenditures

The following summary of payments made by the Rockefeller Foundation for all purposes during the year 1924 outlines in expenditures the work described in terms of aims and results in the President's Review. In many instances payments involved sums appropriated in former years. On the other hand, in some instances payments represent but a portion of appropriations made during 1924, remainders of which will be paid during succeeding years. For a

full statement of the finances of the Foundation,  
see the Report of the Treasurer, pages 353-419.

TABLE 2: SUMMARY OF THE EXPENDITURES  
OF THE ROCKEFELLER FOUNDATION FOR  
THE YEAR 1924

I. PUBLIC HEALTH

A. International Health Board	
1. Regular program in control of Hookworm, Malaria, and Yellow Fever, and in County Health Work, Laboratory Service, and Public Health Administration.....	\$1,865,964
2. Tuberculosis in France.....	42,863
3. Fellowships and Public Health Education.....	405,876
4. Administration.....	221,631
B. Studies and Demonstrations	
1. Mental Hygiene.....	47,778
2. Hospital, Dispensary Service, and Nursing.....	182,034
C. Schools of Public Health	
1. Harvard University.....	425,000
D. Other Public Health Education and Demonstrations.....	
1. National Health Council.....	4,805
	<hr/>
	\$3,195,951

II. MEDICAL EDUCATION

A. China Medical Board	
1. Peking Union Medical College	
(a) Buildings and Equipment.....	\$36,723
(b) Operation (part of year).....	618,842
2. Aid to Medical and Premedical Schools and to Hospitals	363,098
3. Fellowships and Scholarships.....	52,557
4. Administration.....	75,078
B. Canadian Medical Program.....	513,664
C. University of Oxford.....	240,116
D. State University of Iowa.....	450,000
E. Free University of Brussels.....	144,000
F. University of Hongkong.....	127,812
G. University of Edinburgh.....	68,761
H. University College of South Wales and Monmouthshire....	61,132
I. Chulalankarana University, Siam.....	24,425
J. Central Europe—Journals and Apparatus.....	73,275
K. American University of Beirut.....	7,800
L. Studies in Medical Education, Visiting Commissions, and Exchange Professors.....	27,709

M. Fellowships for Medical Scientists.....	\$226,061
N. New York Academy of Medicine—Educational program..	22,970
O. American Medical Association (toward publishing a Spanish Edition of Journal) .....	5,938
P. Administration—Division of Medical Education.....	85,066
	<hr/>
	\$3,225,027

**III. MISCELLANEOUS****A. National Research Council**

1. Fellowships in Physics and Chemistry.....	\$86,004
2. Fellowships in Biological Sciences.....	41,112
3. Concilium Bibliographicum, Zürich .....	15,000
B. Marine Biological Laboratory, Woods Hole, Mass. ....	500,000
C. Travel—Union of American Biological Societies.....	2,783
D. Study of Australian Aborigines.....	2,306
E. Committee of Reference and Counsel of the Annual Foreign Missions Conference of North America (payment on ten-year pledge made in 1914).....	12,500
F. New York Association for Improving the Condition of the Poor (payment on ten-year pledge made in 1914).....	15,000
G. National Information Bureau (membership for 1924)....	1,000
H. Relief Work in Japan .....	18,373
I. Shakespeare Memorial Trustees.....	6,585
	<hr/>
	\$700,663

**IV. ADMINISTRATION**

A. Maintenance of Executive Offices, the Treasurer's Office, and the European Office.....	\$162,713
B. Furniture and fixtures, and books.....	4,468
	<hr/>
	\$167,181
	<hr/>
	\$7,288,822

**Funds and Property**

As for December 31, 1924

**PRINCIPAL FUNDS**

General Fund.....	\$165,204,624
Special Funds	
Gifts of Laura S. Rockefeller.....	\$50,000
Gifts of John D. Rockefeller.....	37,000
	<hr/>
	\$165,291,624

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LANDS, BUILDINGS, AND EQUIPMENT

In China: Medical School Lands, Buildings, and Equipment.....	\$8,875,169
In New York: Furniture and Equipment of Offices 39,627	<u>\$8,914,796</u>

UNDISBURSED INCOME

General Income (For offsetting liabilities see below).....	<u>\$7,607,187</u>
--	--------------------

UNPAID APPROPRIATIONS AND PLEDGES

Balance due on appropriations payable in 1924 and prior years.....	\$86,530,043
--	--------------

Appropriations and pledges which become effective in 1925 and following years:	
1925.....	\$9,449,178
1926.....	3,198,700
1927.....	2,748,550
1928.....	987,515
1929.....	1,115,325
1930.....	795,500      18,294,768
	<u>\$24,824,811</u>





# **INTERNATIONAL HEALTH BOARD**

**Report of the General Director**



## **INTERNATIONAL HEALTH BOARD**

### **Report of the General Director**

**To the President of the Rockefeller Foundation:**  
**Sir:**

I have the honor to submit herewith the report  
of the International Health Board for the period  
January 1, 1924, to December 31, 1924.

Respectfully yours,

**FREDERICK F. RUSSELL,**  
**General Director.**

## INTERNATIONAL HEALTH BOARD

### OFFICERS AND MEMBERS

GEORGE E. VINCENT, *Chairman*  
FREDERICK F. RUSSELL, *General Director*  
WALLACE BUTTRICK  
DAVID L. EDSELL  
JOHN G. FITZGERALD  
SIMON FLEXNER  
RAYMOND B. FOSDICK  
EDWIN O. JORDAN  
VERNON KELLOGG  
JOHN D. ROCKEFELLER, JR.  
WICKLIFFE ROSE  
VICTOR C. VAUGHAN  
WILLIAM H. WELCH

---

NORMA S. THOMPSON, *Secretary*  
FLORENCE M. READ, *Executive Secretary*

## PERSONNEL OF STAFFS DURING 1924<sup>1</sup>

### ADMINISTRATIVE STAFF

FREDERICK F. RUSSELL, M.D., *General Director*  
JOHN A. FERRELL, M.D., *Director for the United States*  
VICTOR G. HEISER, M.D., *Director for the East*  
HECTOR H. HOWARD, M.D., *Director for the West Indies*  
WILBUR A. SAWYER, M.D., *Director of Public Health  
Laboratory Service*  
FLORENCE M. READ, *Executive Secretary*

### FIELD STAFF<sup>2</sup>

#### AUSTRALIA

(including Queensland and Late German New Guinea)

W. C. SWEET	Hookworm control
A. J. LANZA <sup>3</sup> (resigned)	Industrial hygiene
F. F. LONGLEY <sup>3</sup> (resigned)	Sanitary engineering

#### BRAZIL

G. K. STRODE	Direction of work in Brazil and Paraguay; malaria, hookworm control, and county health
N. C. DAVIS	Malaria control
J. H. JANNEY, JR.	Organization of county health departments
M. F. BOYD	Malaria control
MRS. ETHEL PARSONS <sup>3</sup>	Public health nursing service
J. H. WHITE <sup>3</sup>	Yellow fever control
E. J. SCANNELL <sup>3</sup>	Yellow fever control
G. J. CARR <sup>3</sup>	Yellow fever control
A. F. MAHAFFY	Yellow fever control
H. R. MULLER <sup>3</sup>	Yellow fever studies

<sup>1</sup> Personnel employed by Government in co-operative work not listed.

<sup>2</sup> Names are listed under each country in which the staff members served for any part of the year.

<sup>3</sup> Special staff member.

A. M. WALCOTT <sup>1</sup>	Yellow fever control
L. C. SMITH <sup>1</sup>	Yellow fever control
HENRY BEEUWKEs	Yellow fever control

#### BRITISH GUIANA

M. E. CONNOR	Yellow fever survey
--------------	---------------------

#### BRITISH HONDURAS

E. I. VAUGHN	Yellow fever survey
--------------	---------------------

#### CEYLON

J. F. DOCHERTY	Hookworm control
----------------	------------------

#### CHINA

J. B. GRANT	Services lent to Peking Union Medical College as Associate Professor of Hygiene and Public Health Public health surveys Public health laboratory service
-------------	--

#### COLOMBIA

F. A. MILLER (resigned)	Hookworm control
D. B. WILSON	Hookworm control
HENRY HANSON <sup>1</sup>	Yellow fever control
L. H. DUNN <sup>1</sup>	Yellow fever control

#### DOMINICA

HUGO MUENCE, JR.	Hookworm survey
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#### DUTCH GUIANA

M. E. CONNOR	Yellow fever survey
--------------	---------------------

#### FIJI

S. M. LAMBERT	Hookworm control
---------------	------------------

#### FRANCE

SELSKAR M. GUNN	Director of Paris Office
GEORGE BEVIER	Assistant to Director of Paris Office
Miss F. E. CROWELL <sup>1</sup>	Public health nursing

<sup>1</sup>Special staff member.

**INTERNATIONAL HEALTH BOARD**

**77**

**FRENCH GUIANA**

M. E. CONNOR                   Yellow fever survey

**GUATEMALA**

J. E. ELMENDORF, JR.           Hookworm control  
                                  Public health laboratory service  
                                  Yellow fever control

**HAITI**

G. C. PAYNE                   Health survey  
W. A. HOFFMAN<sup>1</sup>           Malaria survey

**HONDURAS**

D. B. WILSON                Hookworm control  
R. M. TAYLOR                Public health laboratory service  
F. E. HULSE<sup>1</sup>              Sanitary engineering  
                                 Yellow fever control

**ITALY**

L. W. HACKETT               Malaria survey

**JAMAICA**

B. E. WASHBURN              Hookworm control

**JAVA**

J. L. HYDRICK               Hookworm survey  
CORNELIS VAN NOORT<sup>1</sup>    Hookworm survey

**MAURITIUS**

C. H. YEAGER                Hookworm control

**MEXICO**

E. I. VAUGHN                Hookworm control  
A. J. WARREN                Hookworm control  
H. P. CARR                  Hookworm survey  
M. E. CONNOR                Yellow fever survey

**NEVIS**

HUGO MUENCH, JR.            Hookworm survey

<sup>1</sup> Special staff member.

**NICARAGUA**

D. M. Molloy	Organization of public health activities Hookworm control Public health laboratory service Yellow fever control Malaria control Sanitary engineering
E. H. Magoon <sup>1</sup>	

**PALESTINE**

P. S. CARLEY	Malaria control
J. J. MIELDAZIS <sup>1</sup>	Malaria control

**PANAMA**

LOUIS SCHAPIRO	Hookworm control
----------------	------------------

**PARAGUAY**

F. L. SOPER	Hookworm control
-------------	------------------

**PHILIPPINE ISLANDS**

C. N. LEACH	Public health administration
W. D. TIEDEMAN <sup>1</sup>	Malaria survey and control
J. J. MIELDAZIS <sup>1</sup>	Malaria control
Miss ALICE FITZGERALD <sup>1</sup> (resigned)	Public health nursing
G. R. LACY <sup>1</sup>	Assistant to Director, Bureau of Science

**PORTO RICO**

R. B. HILL	Hookworm control
W. C. EARLE	Malaria survey
H. A. JOHNSON <sup>1</sup>	Malaria survey

**ST. KITTS**

HUGO MUENCH, JR.	Hookworm survey
------------------	-----------------

**ST. LUCIA**

HUGO MUENCH, JR.	Hookworm control
------------------	------------------

<sup>1</sup> Special staff member.

**SALVADOR**

<b>M. E. CONNOR</b>	Direction yellow fever control in Central America
<b>HENRY HANSON<sup>1</sup></b>	Yellow fever control
<b>C. A. BAILEY</b>	Hookworm control
<b>HENRY BEEUWKES</b>	Yellow fever control
<b>E. I. VAUGHN</b>	Yellow fever control
<b>H. R. MULLER<sup>1</sup></b>	Yellow fever studies
<b>C. B. BLAISDELL<sup>1</sup></b>	Yellow fever studies
<b>L. H. DUNN<sup>1</sup></b>	Yellow fever control

**SIAM**

<b>H. R. O'BRIEN</b>	Hookworm control
<b>P. M. LOWELL<sup>1</sup></b>	Hookworm control

**SOUTH SEA ISLANDS**

(Gilbert &amp; Ellice group, Rotumah, Tonga, Western Samoa)

<b>S. M. LAMBERT</b>	Hookworm surveys
----------------------	------------------

**SPAIN**

<b>C. A. BAILEY</b>	Hookworm and public health survey
---------------------	-----------------------------------

**TRINIDAD and TOBAGO**

<b>W. C. HAUSHEER</b>	Hookworm control
-----------------------	------------------

**UNITED STATES****Alabama**

<b>W. G. SMILLIE</b>	Director of training station
<b>C. N. LEACH</b>	Epidemiological service
<b>R. K. COLLINS</b>	Organization of county health departments

**Georgia**

<b>S. T. DARLING<sup>1</sup></b>	Director of Leesburg station for field studies in malaria control
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**Mississippi**

<b>H. A. JOHNSON<sup>1</sup></b>	Malaria survey
----------------------------------	----------------

**North Carolina**

<b>H. A. TAYLOR</b>	Malaria control investigations
---------------------	--------------------------------

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<sup>1</sup>Special staff member.  
■ Died May 20, 1925.

## Tennessee

**F. C. CALDWELL** Diagnostic laboratory service  
**E. L. BISHOP (resigned)** Public health administration

## Virginia

G. C. PAYNE Epidemiological service

## **AT HOME OFFICE**

## **ON STUDY LEAVE**

C. A. BAILEY  
M. E. BARNES  
W. P. JACOCKS  
J. F. KENDRICK  
R. M. TAYLOR  
GEORGE BEVIER<sup>1</sup>  
J. L. HYDRICK<sup>1</sup>  
P. F. RUSSELL<sup>1</sup>

## **AT TRAINING STATIONS**

GEORGE BEVIER  
R. K. COLLINS  
W. A. HOFFMAN<sup>2</sup>  
C. N. LEACH  
FRANK MILAM<sup>2</sup>  
P. F. RUSSELL  
R. M. TAYLOR  
E. I. VAUGHN

## **YELLOW FEVER ADVISORY COUNCIL<sup>8</sup>**

HENRY R. CARTER, M.D. (retired), Assistant Surgeon General, United States Public Health Service (died September 14, 1925)

HIDEYO NOGUCHI, M.D., Rockefeller Institute for Medical Research

**JOSEPH H. WHITE,<sup>2</sup> M.D., Assistant Surgeon General (retired), United States Public Health Service**

<sup>1</sup> Three-weeks' intensive course at Johns Hopkins School of Hygiene and Public Health.

\* Special staff member.

\* Not staff members; appointed to serve in an advisory capacity.

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## INTERNATIONAL HEALTH BOARD

### I

Public health activities may be divided roughly into two groups—those which approach their objective indirectly by improving the environment, and those which deal directly with individuals. In the first group the most important measures fall primarily in the field of sanitary engineering and include such fundamental requirements for public health as the provision of safe water supplies, adequate systems for the disposal of household and body wastes, and the safeguarding of food supplies. In the evolution of modern public health work in general, as well as in the development of activities in any particular country, this type of work has come first in point of time. Some of the most striking reductions in death and sickness rates have been effected mainly by environmental improvements. The second group includes activities in which medical science plays the leading rôle, such as medical inspection of school children, infant hygiene, prenatal and maternity service, tuberculosis and venereal disease dispensaries, and prophylactic measures against particular diseases, etc.

During 1924 the International Health Board co-operated with the governmental health agen-

cies of ninety states and countries in their efforts to improve the health and thereby the general well-being of their populations. In many of these countries the outstanding health needs are still mainly of the environmental type; in but few of them have these fundamental requirements been met outside of the larger cities.

In each instance in which the Board accepts an invitation from a government to lend its assistance, the co-operative program is carefully adapted to the actual stage of development. In many tropical and subtropical countries the outstanding health problem is hookworm and other diseases resulting from soil pollution. A large part of the world, in other words, is still in the first stage of development where the greatest need is for environmental sanitation.

It may also be pointed out that in all public health work and at every stage of its development, education both of government officials and of the public is of primary importance. Experience has shown, moreover, that the most efficient method of health education is the concrete demonstration. Fortunately hookworm disease lends itself readily to convincing demonstrations of disease control. Effective hookworm control work, therefore, not only brings immediate relief to practically the entire population in many

areas, but serves to create popular sentiment in favor of general programs of disease control and the establishment of adequate and permanent health agencies.

Campaigns against yellow fever and demonstrations in malaria control also have an educational value that may easily be more important in the end than their immediate object of alleviating suffering and disease. To a larger extent, therefore, than a casual reading of the following pages might suggest, the work of the International Health Board falls in the field of health education. Through its co-operative programs it aids in creating a popular demand for disease control; through the establishment of schools of hygiene and schools of nursing, its fellowship program, and its aid to the Health Organization of the League of Nations it seeks to aid in providing the trained personnel necessary for all kinds of public health work.

## II

### **Banishing Yellow Fever from the Americas**

The Board's yellow fever program was undertaken with the hope of completely eradicating an epidemic disease of international scope. Historic yellow fever centers, such as Havana, Rio de Janeiro, and Panama, had already been

freed, but in northern Brazil, and on the Pacific Coast from Mexico to Peru many dangerous foci remained. Since 1916, when a commission was sent by the Board to investigate the yellow fever situation in South America, the governments, with the help of the International Health Board, have driven the disease out of Ecuador, Peru, Mexico, and Colombia. At the close of the year 1924 the only areas remaining under suspicion in the western hemisphere were the interior of certain states on the northern coast of Brazil, and a limited section of Central America.

#### Flare-up in Salvador

All Central America had apparently been free from yellow fever since 1921, and the Board's active co-operation in yellow fever control measures in Salvador had ceased at the end of July, 1922. In June, 1924, however, an outbreak was reported in Salvador. The National Health Department at once intensified its antimosquito work, and a representative of the Board was sent to study the situation. On October first a co-operative control campaign was launched. The last case reported occurred at Ahuachapan, near the Guatemala border, on October 22. Due to precautions taken promptly by the neighboring countries and to the difficulty



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Photograph Excised Here



Photograph Excised Here

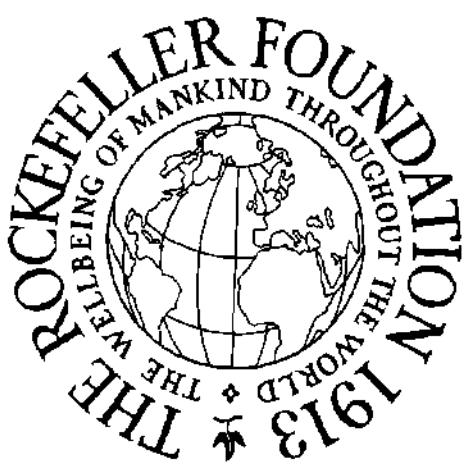
Fig. 7.—Staff of yellow fever control unit at Parahyba, Brazil

of travel on account of heavy rains, the infection did not spread to Guatemala, Nicaragua, or Honduras. Three suspicious cases were reported from Stann Creek District, British Honduras, during November. By the close of the year, however, the evidence so far submitted had not confirmed the diagnosis.

It cannot yet be definitely stated whether this latest outbreak in Salvador was due to reinfection from without or whether the disease had been continuously present since its apparent disappearance in 1921. The inclination of the men in the field is to believe that Salvador has been a permanent endemic focus in Central America and also that yellow fever has been continuously present there for an indefinite period. The present campaign is therefore based upon this theory, which best explains the occasional outbreaks on the north coast of Honduras in times past.

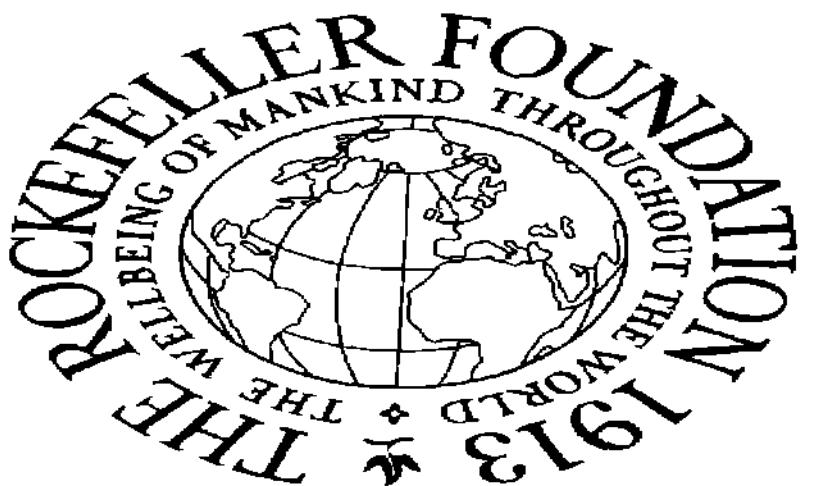
#### Mexico Free from Infection

Rumors of yellow fever in Mexico at the time of the outbreak in Salvador were found to be unwarranted. The fact that no case was known to have occurred during the extensive troop movements of the revolution offers further evidence that the country has remained free from infection. The antimosquito campaign



Photograph Excised Here

Fig. 8.—Types of earthenware jars used as water containers in Bahia, Brazil. Since wells or a piped water supply are lacking in many parts of South and Central America, it is necessary to purchase water from street vendors and store it in the home. From one to twelve jars of the type shown above may be used in a single home, and in all of them, in the absence of control measures, the yellow fever mosquito may breed prolifically



Photograph Excised Here

Fig. 9.—Using a flashlight to detect larvae of the yellow fever mosquito in water container

in which the Board co-operated in the beginning has been continued in Vera Cruz, Tampico, and Merida with excellent results.

#### Campaign in Brazil

The campaign in Brazil, which was initiated by the Department of Health about the beginning of October, 1923, covers a territory extending approximately 1,500 miles along the northern coast. Eleven control posts have been in operation, with several sub-stations, in the port cities and at Manaos, key to the Amazon region. In the city of Bahia, which had known yellow fever for three centuries, no case has been reported since September, 1923, although reports of occasional cases are still received from the interior of Bahia and the neighboring states. The remainder of Brazil appears to be free, and the Stegomyia index is low at all important points.

#### North Coast of South America

A thorough survey of British, Dutch, and French Guiana was made during the summer. No indication was found of the presence of yellow fever in these colonies since 1912. The campaign in Colombia was closed at the end of the year, after an investigation of all areas open to yellow fever infection had revealed nothing of a

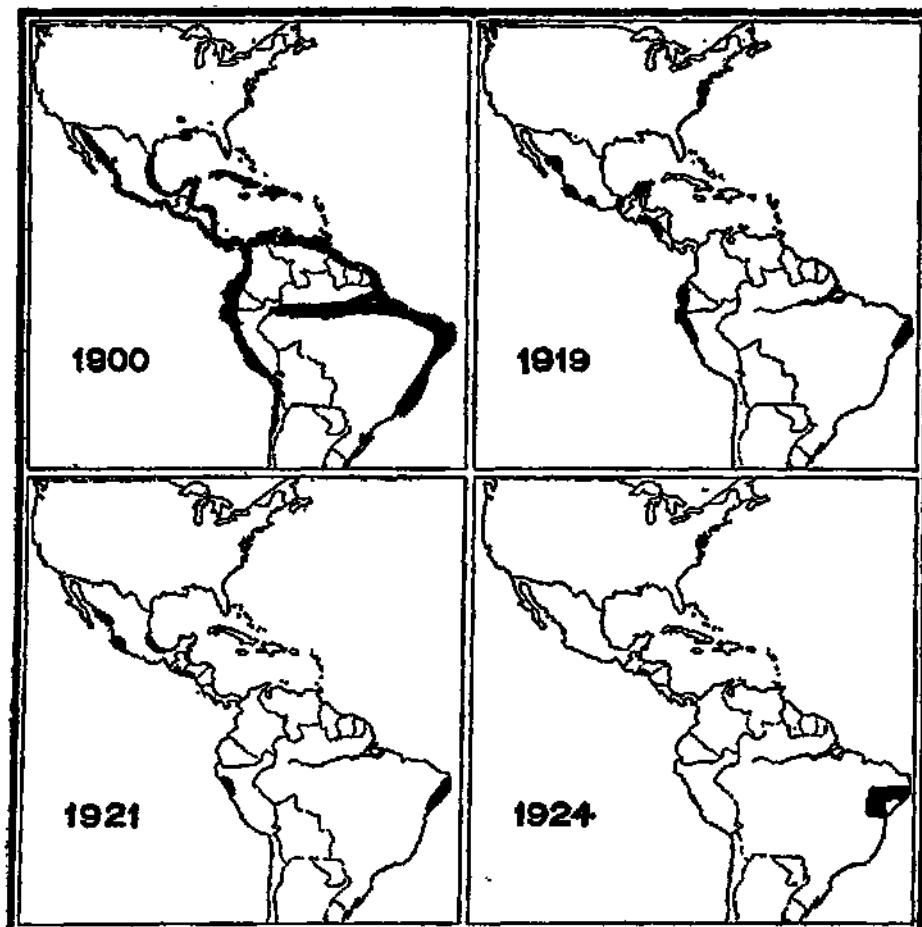


Fig. 10.—Yellow fever in retreat from the western hemisphere

suspicious nature. The last cases had occurred in May, 1923.

#### **Plan to Extend Fight to West Africa**

While the fight against yellow fever is drawing to a close in the Americas, men are in training and equipment is being assembled for the long-anticipated attack upon its ultimate stronghold—West Africa. All available records have been studied and maps have been prepared to illus-

trate the probable distribution of infection. It is hoped that an advance guard can proceed to the scene early in 1925. Careful field studies will be necessary before suitable control measures can be recommended. Entomological surveys, studies—clinical, pathological, and bacteriological—of West African fevers, and surveys of the living conditions of Europeans and natives must be made before a program can be elaborated.

### III

#### Aid to State and Rural Health Service in the United States

In the United States the Board, during 1924, extended financial assistance to thirty-five state boards of health. Thirteen of them have been aided in establishing or strengthening one of the four essential functional sub-divisions of their work: Laboratory service has been aided in eleven states, sanitary engineering in four, epidemiology in three, and vital statistics in one. Local health organizations, with the county as the customary unit of territory, were aided in twenty-five states, in twenty-four of which a general health program was promoted; in eleven states, county health service featuring county-wide malaria control was supported. Five state health executives were enabled to visit other

states to study the organization and activities of state and local boards of health, in order to aid them in formulating plans for their own states. Facilities for better qualifying the pivotal personnel by means of health officers' institutes, correspondence-study courses, or fellowships to training stations or schools of public health, have been supplied in nineteen states.

The Board's part in the development of public health agencies at first took the form of co-operation in hookworm control. Later, aid was extended to county health service, then to administrative divisions of the state boards of health, and finally to public health education for the state and other health officials. However, in reporting the present co-operative activities, it is convenient to start with the aid given to the state health officer, and then proceed to the activities which he supervises.

#### **Traveling Expenses for State Health Officers**

Many new state health officers and a number of the older ones have desired, as a basis for formulating or revising their state programs, to observe the organization and activities of other state boards of health. In many cases they have been unable to do this, however, because of limitations on funds available for traveling expenses outside of their own states.

In a number of meritorious instances of this character the Board has made grants sufficient to meet the cost of travel where the state health officer or division chiefs were making studies of the methods employed in the establishment, maintenance, and extension of various departments of health. During 1924 such journeys were financed by the Board for five state health executives.

#### **Specialized Activities of State Boards of Health**

The number of specialized activities which a state board of health finds it necessary to organize varies somewhat with the wealth and population of the state and the complexity of its problems. Special divisions for public health laboratory service, epidemiology, vital statistics, and sanitary engineering have been regarded as essential in all states. In many cases one or more of the following fields have developed to a stage requiring a special division or bureau: public health nursing, infancy and maternity, child welfare, food inspection, industrial hygiene, and mental hygiene.

#### **Public Health Laboratory Service**

A public health laboratory is necessary for any efficient department of health. It serves the physicians of the state by providing promptly

the information needed in making diagnoses; it supplies epidemiological data to all health officials; and furnishes a laboratory service, such as the bacteriological examination of water

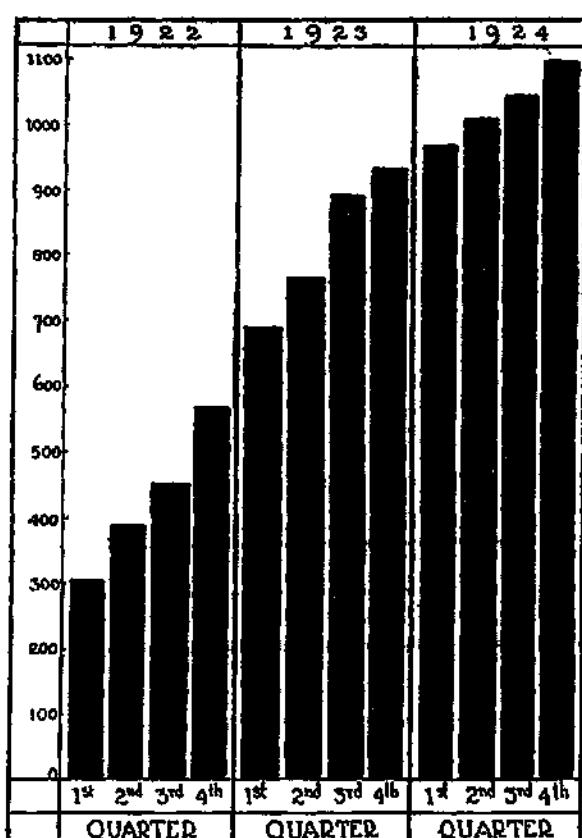


Fig. 11.—Number of doctors using the central and branch laboratories of the Alabama State Board of Health. Bars represent average for the quarter

and milk, to other divisions and to local health departments. Since 1921 the Board has aided twelve states (Kansas, Alabama, Missouri, Tennessee, Arkansas, Montana, Oregon, Virginia, Connecticut, Delaware, North Dakota, and Utah) in the develop-

ment of a laboratory service. Assistance was given to eleven of these states during 1924.

Almost every state of the Union now maintains a central laboratory. In the larger states, however, this is not sufficient to supply the needs of physicians requiring immediate service. For

this reason, branch laboratories have been established in a few states. During the year 1924 the Board has assisted in the maintenance of branch laboratories in Alabama, Virginia, and Tennessee.

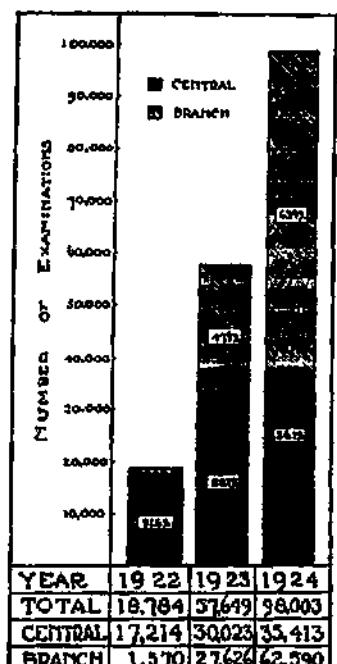
### Sanitary Engineering

Sanitary engineering is another essential activity of a state health department. In forty-one of the forty-eight states of the Union the state board of health now maintains a division of sanitary engineering. The activities carried on by the division of sanitary engineering vary in the different states but in general include:

- (1) Provision and maintenance of safe water supplies and systems for municipalities, schools, interstate common carriers, tourist camps, swimming pools, and ice plants;
- (2) safe sewage disposal, investigation of stream pollution, disposition of industrial waste;
- (3) inspection of dairies and milk supplies;
- (4) approval and filing of engineering plans for municipal waterworks, filtra-

Fig. 12.—Number of examinations made by central and branch public health laboratories in Alabama

supplies; and (4) approval and filing of engineering plans for municipal waterworks, filtra-



tion, and sewage plants. The prevention of water and soil-borne epidemic diseases, such as typhoid and the dysenteries, rests mainly upon the work of the sanitary engineer, which is correlated with that of the state epidemiologist. Within the last three years the Board has contributed toward the organization of this type of work in Missouri, Colorado, North Dakota, and Utah, and toward extending the work of a division already functioning in Montana. Co-operation in Utah began in 1922 and since that time the state has increased its appropriations to such an extent that the Board has been able to reduce its share of the budget, and will withdraw from the work entirely in 1925.

#### Divisions for Epidemiology

During the eras when yellow fever, plague, smallpox, and other pestilential diseases were prevalent, the chief thought in establishing a health department was to combat epidemics. Since these diseases have to a large degree been brought under control in this country, there has been a tendency to neglect the field of epidemiology and concentrate on special diseases, such as hookworm disease, malaria, tuberculosis, and venereal diseases. A better balanced organization is now being evolved, which requires a division of epidemiology under capable direction and

qualified to deal with all epidemic and endemic diseases. In the establishment of such a division the Board aided Virginia in 1923, and during 1924 has extended similar assistance to Alabama and Utah.

#### **Improvement of Vital Statistics**

At the close of 1924, nine states had not yet met the minimum requirements of the United States Bureau of the Census for admission to the registration area for deaths, and fifteen states had not been admitted to the registration area for births. A concerted effort is being made by all interested agencies to bring every state into the registration area for both births and deaths by 1930. The conditions which have prevented the acceptance of their vital statistics vary in the different states; in certain ones the laws are unsatisfactory; in others the appropriation is too small to permit the employment of the necessary clerical personnel in the central office; while in still others the facilities for field work designed to secure the co-operation of physicians and local registrars are lacking. The educational work needed to arouse public interest in the value of vital statistics has often been inadequate, and, in a few instances, the personnel has not been properly trained.

In 1923 an appropriation was made to enable Georgia to employ field agents to work among the physicians and local registrars, and in 1924 a similar appropriation was made for West Virginia. Fellowships were provided for the directors of the divisions of vital statistics of Montana and Connecticut.

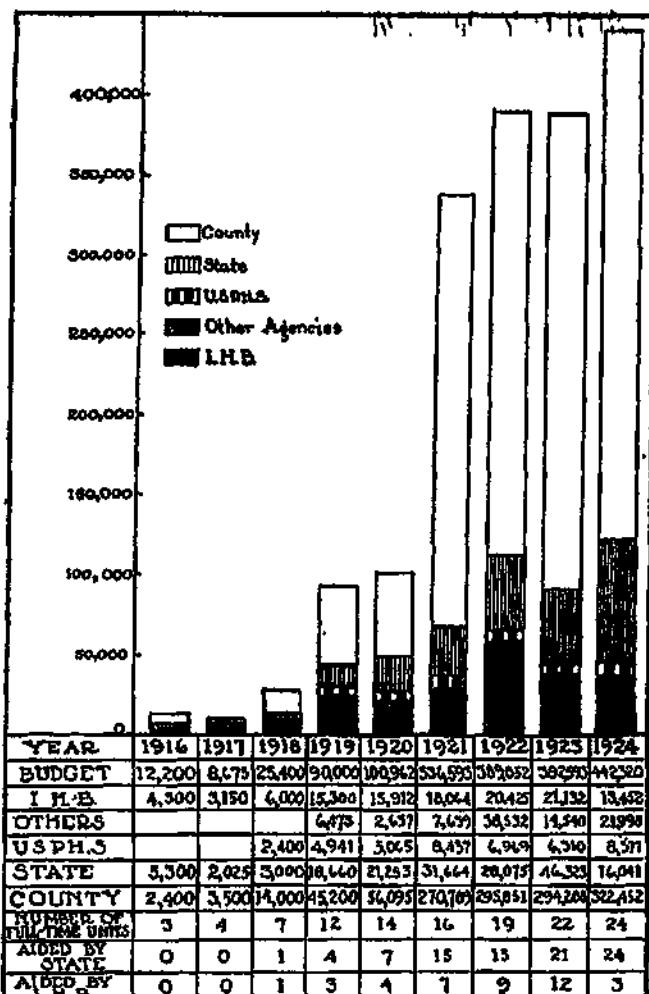


Fig. 13.—Sources of funds for the support of county health departments in Alabama. Graph shows the amounts appropriated by the county, the state, United States Public Health Service, International Health Board, and other agencies

#### Training of Health Workers

Better trained personnel is greatly needed in all fields of public health. Many health workers whose knowledge has been gained only in the school of experience find themselves handi-

capped, but because of their lack of preliminary education, or of funds, they are unable to take the full courses in the schools of public health. The Board is aiding in the training of health workers of this class by supporting correspondence-study courses and health institutes conducted by state health departments, and by furnishing brief periods of training in exceptionally effective health organizations within or without their states. A few selected young workers with adequate fundamental academic and scientific training, who have demonstrated an aptitude for their duties and have met other eligibility requirements, have been granted fellowships for study in schools of public health. Forty-six such fellowships have been granted, of which twenty-nine were operative in 1924. During the year fourteen young physicians were given temporary appointments on the staff of the Board and assigned to the training station at Andalusia, Alabama, for special field training in county health work or epidemiology, with the expectation that they would qualify for positions with the state boards of health. Four of the state boards of health have been assisted in giving this type of training to their own appointees. During 1924 eighty-two persons received field instruction at the training station, of whom thirty were members of the Board's

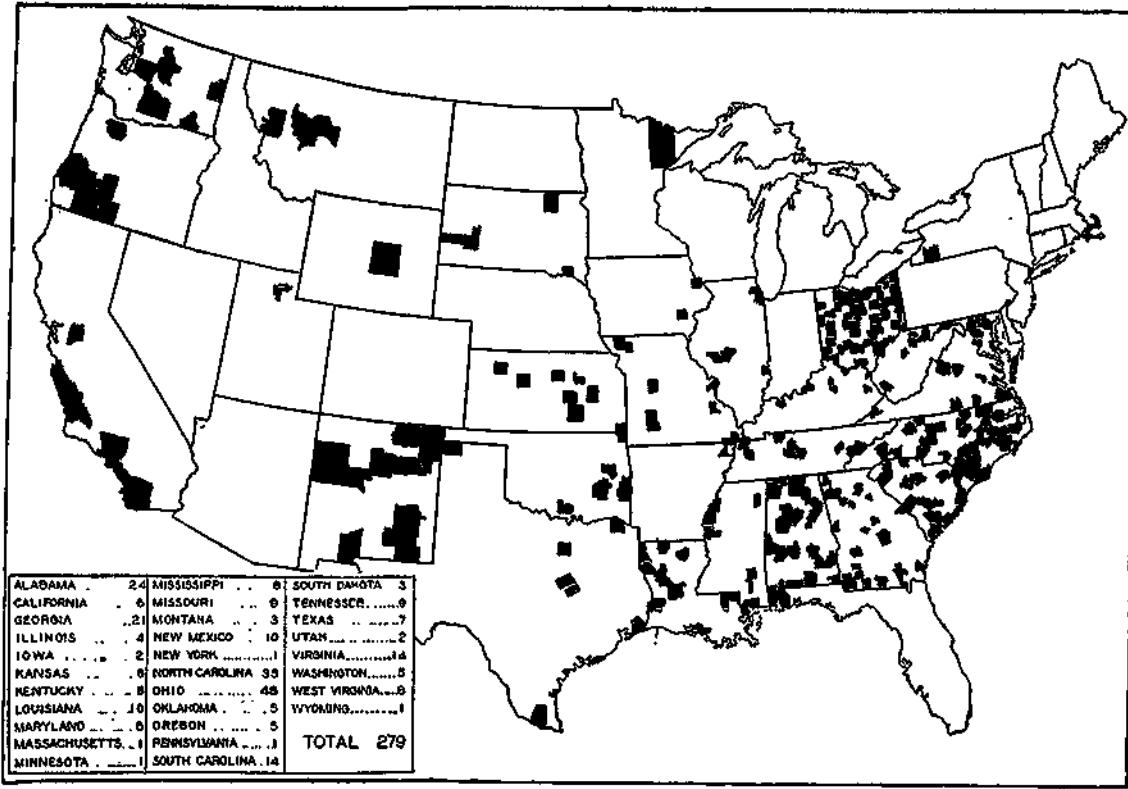


Fig. 14.—County health departments at the close of 1924

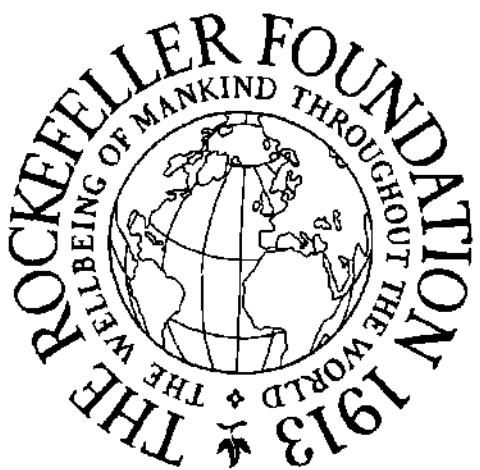
own field staff, ten were fellows, and forty-two were sent by state boards of health.

#### County Health Work

Every state has a health department which, in nearly every case, is directed by a full-time health officer, and varying progress has been made in the development of the specialized services discussed above. An effective local health service, on a full-time basis, for the smaller towns and rural districts is a development of the past ten years. The county, except in New England and a few other states, has proved to be the most satisfactory territorial unit. Generally it has enough population and wealth to support a well-rounded health organization. In the United States this is the branch of public health work toward which the Board is making its largest contribution.

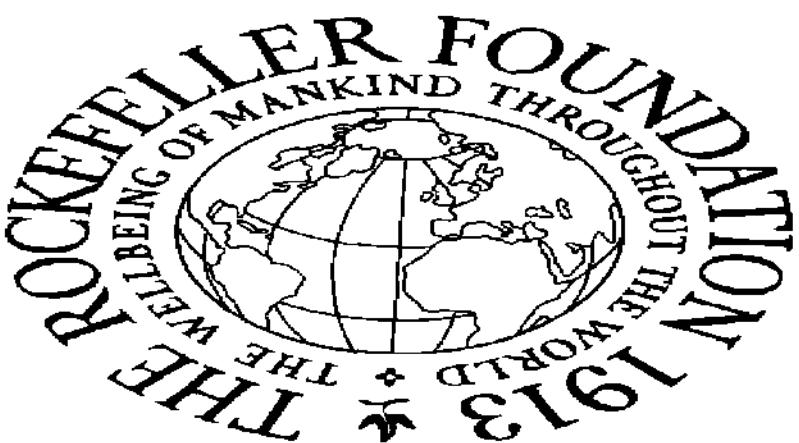
#### Financing the Full-Time Unit

The minimum county health organization, costing from \$6,000 to \$7,000 per year, is composed of a health officer and a public health nurse. The average unit, costing approximately \$10,000 per year, is composed of the health officer, an office assistant, a public health nurse, and a sanitary inspector. The larger units, however, may employ several nurses and sanitary



Photograph Excised Here

Fig. 15.—Exhibit of Houston County Health Unit at the Southeast Alabama Fair at Dothan, Alabama, October 27 to November 1, 1924



Photograph Excised Here

Fig. 16.—Yellow fever staff on inspection trip to interior of the State of Bahia, Brazil

inspectors without increasing overhead expenses. Fifty per cent or more of the cost of these units is usually appropriated by the county. In some instances the incorporated towns within the county make appropriations equal to those of the county governments. The state Board of Health ordinarily contributes amounts ranging up to 25 per cent of the total cost of the unit, but seldom more than \$2,500 a year to any one county. The Board has contributed altogether to the budgets of 149 county units which are now in operation, and such contributions were operative in eighty-three of these counties during 1924. Its aid has in no case exceeded 50 per cent of the amount appropriated by a county, nor is it customary for it to exceed the amount appropriated by the state. Assistance is always granted for a temporary period, is discontinued or gradually diminished after one to three years, and is rarely continued for more than five years for any unit. The Board has held that after the demonstration stage of a full-time county health service has been passed in any state, its maintenance and extension should be financed entirely from public funds.

#### Activities of the Typical Unit

In beginning work of this type in the Southern States sanitation as a means of controlling the

filth-borne diseases was featured. At a later stage the malaria problem gave rise to the initial interest which led to the establishment of full-time health organizations. Outside the South the diseases of infancy and childhood, social hygiene, or tuberculosis, were the outstanding problems used in arousing public interest in the establishment of county health organizations. It makes little difference which of the numerous health problems gives rise to the local health organization; the important thing is the employment of full-time, trained personnel, which is at all times within easy reach of every home and school. Although a considerable period is necessary to demonstrate the value of such health work in terms of death rates, the trends so far observed give encouragement. A brief reference to some of the activities of a county health organization will aid in understanding the scope and character of the services rendered.

Sanitation, which plays an important part in the control of filth-borne diseases, is one of the

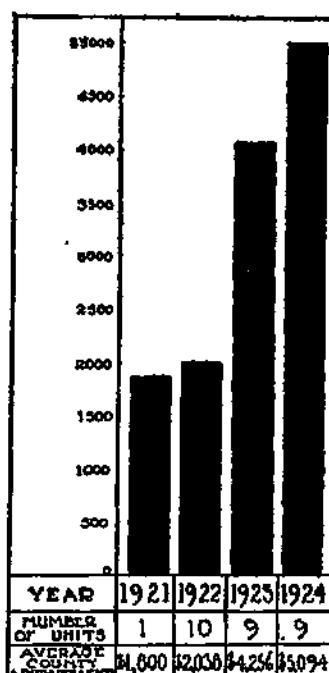


Fig. 17.—Average appropriations for health work by Missouri counties having full-time health departments

major problems of any health department. Every full-time county unit carries on this work to some extent. This includes inspection of milk and water supplies; sanitary disposal of human excreta, by inspection, construction, and improvement of latrines and sewerage systems; and investigation of sanitary conditions in general.

The work done among school children consists of: (1) a physical examination in which each pupil is weighed and measured, and examined for skin diseases, evidences of malnutrition, and defects of the eye, ear, nose, throat, heart, lungs, etc.; (2) clinics for the correction of such physical defects; (3) dispensaries for typhoid inoculation, diphtheria toxin and antitoxin treatment, and smallpox vaccination; and (4) educational work among school children, a most important feature of school hygiene work, since through it is aroused the interest and co-operation necessary to assure the success of a health program for school children.

Clinics for the examination of infants, conferences supplemented by home visits for expectant mothers, classes for the instruction of midwives, and the supervision of children of pre-school ages, constitute a large part of the work carried on by the public health nurse. In South Carolina a "child health truck," accompanied by two nurses, visited thirty counties and exam-

ined 6,000 children. These clinics promise to lead to permanent welfare centers in certain counties.

#### Malaria Control

In all the Southern States malaria is more or less of a public health problem. While in Maryland, Kentucky, Illinois, and Oklahoma it is of quite limited importance, it is one of the outstanding state-wide problems in Florida, Louisiana, and Mississippi, and is of importance in certain sections of North Carolina, South Carolina, Georgia, Alabama, Texas, Missouri, Tennessee, and Arkansas. The coastal counties of the Atlantic coast and gulf states have the heaviest infection. Interior counties in river valleys, such as those comprising the Mississippi Valley, are also heavily infected. From an economic standpoint the disease is much more difficult to control in rural than in urban communities.

In 1920, 1921, and 1922, the Board gave financial assistance to demonstrate the feasibility of malaria control in towns and villages. Its aid has since been given primarily to the development of practicable measures for rural control on a county-wide basis. The Board's funds are being applied mainly toward the salaries and traveling expenses of the malaria specialists on the staff of the various state boards of health. These malariologists make the necessary pre-

## CO-OPERATIVE WORK OF THE INTERNATIONAL

STATE	STATE HEALTH SERVICES					PUBLIC Fellowships in School of Public Health		
	Travel for State Health Executives	Public Health Laboratories		Epi- demio- logy	Sanitary Engi- neering			
		Central	Branch					
Alabama.....	..	1	4	1	..	..		
Arkansas.....	..	1	..	..	..	..		
California.....	..	..	..	..	..	1		
Colorado.....	..	..	..	..	1	..		
Connecticut.....	..	1	..	..	..	3		
Delaware.....	..	1	..	..	..	..		
Georgia.....	..	..	..	..	..	1		
Illinois.....	..	..	..	..	..	..		
Indiana.....	..	..	..	..	..	2		
Iowa.....	..	..	..	..	..	..		
Kansas.....	1	..	..	..	..	..		
Kentucky.....	..	..	..	..	..	..		
Louisiana.....	..	..	..	..	..	..		
Maine.....	..	..	..	..	..	1		
Maryland.....	..	..	..	..	..	..		
Massachusetts.....	..	..	..	..	..	..		
Michigan.....	..	..	..	..	..	2		
Minnesota.....	..	..	..	..	..	..		
Mississippi.....	..	..	..	..	..	1		
Missouri.....	..	1	..	..	..	..		
Montana.....	1	1	..	..	1	..		
New Mexico.....	..	..	..	..	..	2		
New York.....	..	..	..	..	..	2		
North Carolina.....	..	..	..	..	..	2		
North Dakota.....	..	1	..	..	1	..		
Ohio.....	..	..	..	..	..	5		
Oklahoma.....	2	..	..	..	..	..		
Oregon.....	1	1	..	..	..	..		
Pennsylvania.....	..	..	..	..	..	..		
South Carolina.....	..	..	..	..	..	..		
South Dakota.....	..	..	1	..	..	..		
Tennessee.....	..	..	..	..	..	2		
Texas.....	..	..	..	..	..	..		
Utah.....	..	1	..	1	1	..		
Virginia.....	..	..	2	1	..	2		
Washington.....	..	..	..	..	..	..		
West Virginia.....	..	..	..	..	..	1		
Wyoming.....	..	..	..	..	..	..		
<b>Totals.....</b>	<b>5</b>	<b>9</b>	<b>7</b>	<b>3</b>	<b>4</b>	<b>1</b>		
						<b>28\$</b>		

\* This column is included to show the total number of full-time counties.

\*\* The town of Herrin is included.

† One county unit was discontinued November 1938 and therefore does not appear in the totals.

## HEALTH BOARD IN THE UNITED STATES, 1924

HEALTH EDUCATION				COUNTY HEALTH WORK							
Field Training for Appointees of		Health Insti- tute	Corre- spond- ence Course	Central Administration		County Organizations (full-time)				Total 1924	
						Aided by I. H. B.		General	Malaria		
				General	Malaria	General	Malaria				
State	I. H. B.										
..	1	..	..	1	1	3	..	11	10	24	
..	2	..	..	..	1	3	..	..	3	6	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	1	1	..	..	2	19	21	
..	..	..	..	..	..	1	1**	..	3	4	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	1	..	..	1	2	
..	..	..	..	..	..	4	..	2	2	8	
..	..	..	..	..	..	6	..	1	1	8	
..	..	..	..	1	1	6	2	..	2	10	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	..	..	..	6	6	
..	..	..	..	..	..	..	..	..	1	1	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	1	..	..	..	1	
..	..	..	..	..	..	7†	2†	1	1	8	
..	..	..	..	1	..	5	2	1	1	9	
..	..	..	..	..	..	..	..	..	3	3	
..	..	..	..	..	..	..	..	..	..	10	
..	..	..	..	..	..	..	..	..	1	1	
..	..	..	..	..	..	..	..	14	14	35	
1	..	1	1	..	..	..	..	..	..	..	
3	..	..	..	1	..	4	..	..	1	5	
..	1	..	..	1	..	5	..	..	..	5	
..	..	..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	..	..	..	1	14	
..	..	..	..	..	..	..	..	..	2	3	
..	..	..	..	..	..	..	..	..	1	9	
..	..	..	..	..	..	..	..	..	2	7	
..	..	..	..	..	..	..	..	..	..	2	
..	..	..	..	..	..	..	..	..	..	14	
..	..	..	..	..	..	..	..	..	4	5	
..	..	..	..	..	..	..	..	..	1	8	
..	..	..	..	..	..	..	..	..	..	1	
7	6	1	1	15	9	83	24	45	130	279	

† Yazoo County is included because the subordinate personnel is full-time, although the health officer is part time.

‡ Assistant in vital statistics, Harvard School of Public Health, is not included in total.

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liminary surveys and supervise the local control work. During 1924 the Board co-operated in the malaria work of three states through the central administration alone; in eight states directly with counties—twenty-three in all (see pages 108 and 109).

#### IV

### **Hookworm Control and Public Health in Many Lands**

#### **Progress in the Far East**

The Board's commitment to furnish an aid to the Director of Health of the Philippine Islands and a consultant in nursing to the Governor-General expired during the year. Co-operation with the biological laboratory of the Bureau of Science and the field studies in malaria were continued, as this arrangement will not expire until next year. The Board has no co-operative arrangement for the control of hookworm infection in the Philippines, but one of its representatives interested the authorities in the problem and extensive control measures were undertaken by Government in a number of provinces.

The Board's representative who was lent to the Philippine Government as an assistant to the Director of the Bureau of Science arrived in the Philippines in 1923. His services were utilized in the reorganization of the biological laboratory

of the Bureau of Science, which is responsible for public health laboratory examinations. He also conducted research in connection with the high incidence of typhoid which prevails. The results of this and of several other researches have been published in the Philippine Journal of Science.

In Siam the five field units maintained throughout the year for the control of hookworm disease administered 276,396 treatments which represented a substantial increase over the number given in 1923. Through other agencies hookworm control measures have been extended to nearly all parts of Siam. During the year 47,821 new fly-proof latrines were constructed, a special effort being made to bring about more permanent installations. Homes to the number of 89,519 were inspected; 67 per cent of which were still without latrines.

A two months' intensive training course for health officers was inaugurated under the Department of Public Health. The first class was limited to twelve students, two from the Army, five from the Department of Public Health, and five from hookworm units. The faculty was recruited from the Department of Public Health, the Red Cross, and the Medical School of Chulalongkorn University. This school represents the first graduate course in public health ever held in Siam. Plans are being made to

lengthen the course in 1925 to a period of three or four months.

A special unit of the hookworm campaign, somewhat similar to the American county health department, was established at Lopburi under the direction of one of the medical officers who had completed the recently established training course, assisted by his wife who is a nurse. In addition to intensive hookworm measures and soil pollution control, this special unit undertook maternity work and child welfare activities, and gave a certain amount of medical relief.

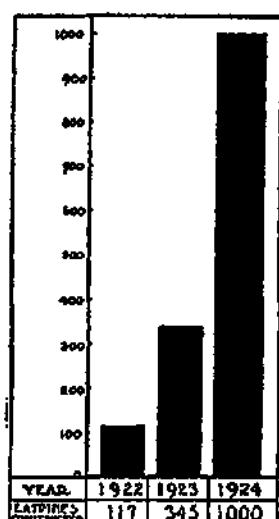
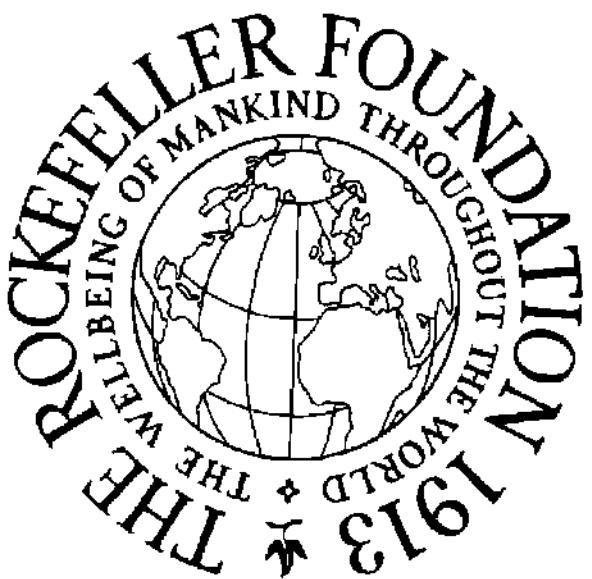


Fig. 18.—Number of pit privies installed by the Houston County (Alabama) Health Department

A total of 1,217,605 hookworm treatments were administered to 972,904 persons in Ceylon during 1924. Of the total number of treatments the Ankylostomiasis Campaign gave 186,700, the rest representing the work of the government hospitals and dispensaries, the state hospitals and dispensaries,

and traveling dispensaries. Government is responsible for the entire cost of the campaign, the Board merely furnishing a representative to assist in its direction. Efforts to extend control measures from plantations to villages and other rural areas made considerable progress during



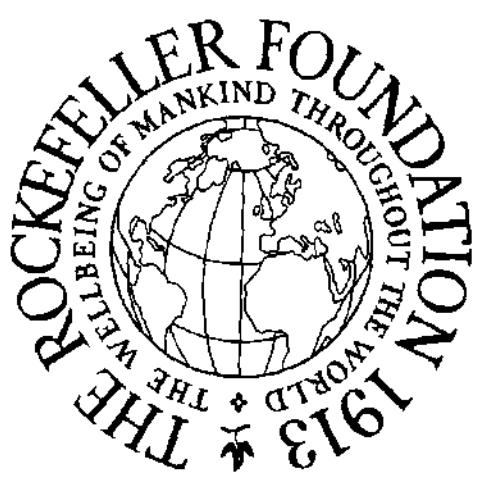
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Fig. 19.—Health conference for infants and children of preschool age, conducted by a county health department in Kentucky

the year. Progress was also made in the plan for giving hookworm treatment as a routine procedure to all who apply at dispensaries or hospitals for any form of medical relief.

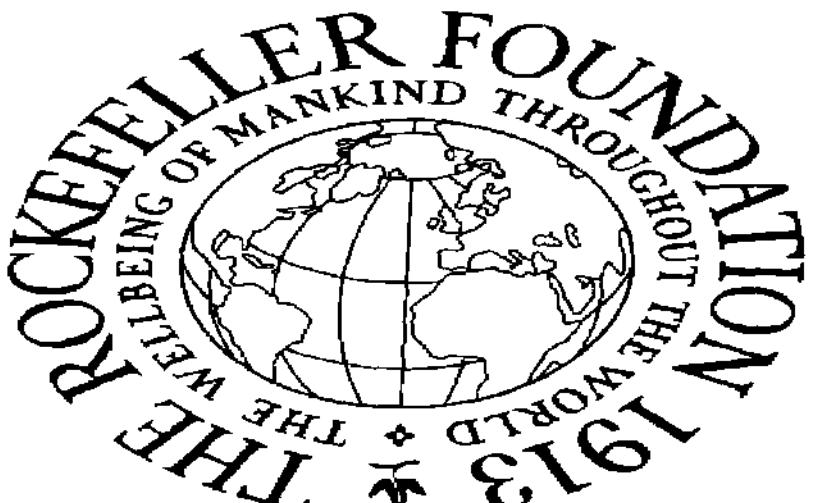
Preliminary surveys made in selected areas early in the year showed an infection rate of 89.5 per cent. In order to determine the intensity of the infection and, in areas previously treated, the amount of reinfection, an island-wide survey based on egg-counts was undertaken. A total of 20,000 examinations was made. This survey showed, as was to be expected, that the degree of reinfection increased with the length of time that had elapsed since treatment. The resurvey of the Homagama area immediately following the treatment campaign disclosed an infection rate of 40.3 per cent for those who had taken one dose of vermifuge, and 24.8 per cent for those who had taken two. Examinations made thirty-three months after treatment in a similar district of the Triangular area revealed 66.9 per cent infection among those who had received one dose and 63.4 per cent in the case of those who had received two. In both areas sanitation could be described as "good."

After a thorough study of the problem in Ceylon, made by a special representative of the Board, a new method for conducting hookworm operations was inaugurated. This plan consists



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Fig. 20.—Staff of the Department of Uncinariasis,  
Panama



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Fig. 21.—Float in health procession, San José, Costa Rica. On September 15, 1924, Costa Rica's Liberty Day, a health procession was held by the schools and reviewed by the President of the Republic. The establishment of a national health service on a permanent basis is one of the results of a hookworm campaign conducted from 1915 to 1921

of a series of mass treatment campaigns on plantations and in village areas to extend over a period of years. The intervals between treatments are to be determined in each community by the intensity of the infection as shown by egg counts. In this way it will be possible to focus attention on the most heavily infected areas. The test egg counts which will determine when treatment is to be repeated will be made by the representative of the Board. Estate managers will become responsible for routine treatments of the population on plantations.

The hookworm problem of India is staggering. In the Madras Presidency alone it is estimated that more than 70 per cent of the population of 45,000,000 is infected. In view of the comparatively small population that can be reached with the money available, continuous effort has been made to devise ways and means of reducing the cost of treatment. As large numbers of laborers are constantly emigrating to various parts of the tropical zone, the danger of spreading hookworm infection on a large scale is apparent. Ceylon has been endeavoring to guard itself against this danger by maintaining at Mandapam, India, a station where hookworm treatment is given to immigrants while en route. A similar station on a smaller scale is maintained at Negapatam for emigrants going to Malaya.

Control demonstrations were conducted during 1924 in Godavari, Coimbatore, Bellary, and North Arcot districts, as well as in the city of Madras. Demonstrations on a number of plantations aroused so much interest among the owners that a great deal of treatment is being undertaken on private initiative.

Owing to caste, poverty, and other difficulties, little progress has been made in the construction of latrines. Considerable attention is now being given to devising a latrine that will overcome the various religious and other obstacles that confront the sanitarian in India. It is not customary in Madras to use human excrement as fertilizer, which is a decided advantage in solving the problem of soil pollution.

Anticipating the termination in May, 1925, of the three-year program of co-operation of the Board, the Council of Mauritius has approved the establishment of a permanent hookworm service for which Government will assume full responsibility. Seventy-five per cent of the cost of the campaign is being paid by Government during the last year of the co-operative program. Of 42,085 persons examined during the year, 31,709 were found to be infected, an infection rate of 75 per cent. Curative work was completed in the Moka, Grand Port, and Port Louis districts, and was nearing completion in the

Savanne District. As an auxiliary to the usual campaign measures arrangements were made to have prisoners regularly examined and treated, as well as to have hookworm examinations made of all dispensary and hospital patients. The hookworm campaign has exerted a marked influence throughout the country and has stimulated interest in other public health measures.

The difficulties encountered in the pre-sanitation work in 1923 largely disappeared during the present year and excellent progress has been made. After the apathy was overcome in the Moka district, every house was provided with a sanitary latrine and gratifying progress made in overcoming the antipathy of the Indian and Creole populations to their use. The practice of using human feces in commercial fertilizer is being discontinued.

In response to an invitation from the Government of Java, a hookworm infection survey was undertaken in Java during the year. The work was begun in the district of Pandeglang, West Java, and by the end of the year the survey had been completed in West Java and Mid-Java. The rate and severity of the infection revealed by both egg counts and worm counts induced the Government to ask for the co-operation of the Board in organizing control measures, and ar-

rangements were made for an intensive campaign covering a five-year period.

#### Hookworm Surveys in the South Seas

At the request of various governments in the South Sea Islands, hookworm surveys were made by a representative of the Board in (1) Gilbert and Ellice Islands, (2) Rotumah, of the Fiji group, (3) Tonga or Friendly Islands, and (4) Western Samoa. On request from the governments the Board's representative also assisted in organizing hookworm control measures in Western Samoa, Tonga, and Rotumah. The entire cost of these campaigns is borne by the respective governments. The visits to these islands have resulted not only in treatment of hookworm disease on a large scale, but they have also been a great stimulus to other health measures.

#### Close of Co-operative Programs in Australia and the Fiji Islands

The five-year campaign for the control of hookworm disease in Australia, conducted jointly by the Commonwealth Government, the state and territorial governments, and the Board, was brought to a close in September. Hookworm measures, wherever required in Australia, are now being continued by the Commonwealth and State governments. Consultants in industrial hygiene, sanitary engineering, and public health

administration, who had been lent to the Australian Government, were also withdrawn and their places filled by Australians trained on fellowships provided by the Board.

Anticipating the termination of the co-operative agreement at the close of 1924, direction of the hookworm campaign in the Fiji Islands was transferred to Government early in the year. The original plan of treating the entire population of the Islands has been completed and a second curative campaign in Viti Levu, covering the "wet belt," or the South coast which has a high rainfall, is well under way. As the resurveys in this area indicate only a moderate reinfection it is hoped that the second round of mass treatment will reduce the disease to a level of no economic importance. On the north coast, which has a low rainfall and consequently a very light hookworm infection, the disease should come under complete control in the near future if the campaign for the construction of latrines is successful. Progress has been made in their installation and proper use in areas which are under the control of the large sugar plantations, but difficulty is still being experienced in the villages.

#### Development of National Health Organizations in Central America

In Panama Government has made a substantial increase in its appropriation for the hook-



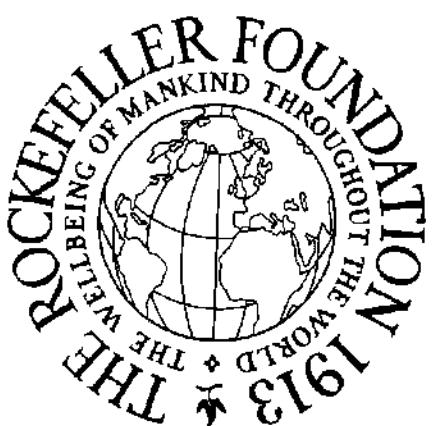
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Fig. 22.—Students in training for positions on the staff of the hookworm campaign in Siam

worm campaign, which has enabled the Board to reduce its contribution. Three laboratory and latrine construction groups conducted field operations during the year. More than 33,000 hookworm treatments were administered to approximately 13,000 individuals.

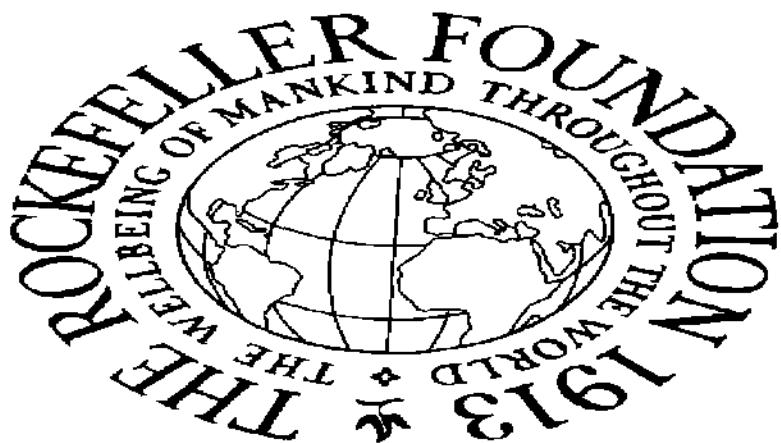
The policy of giving hookworm treatments only in areas that have actually taken definite steps to control soil pollution has been continued. Upon completion of treatment, a sanitary inspector has been left behind whose function it is to conduct a campaign of education and to see that the latrines are maintained and used. In order to give latrine construction further impetus, a demonstration in pre-sanitation was undertaken in the city of Chorrera, under the supervision of an experienced sanitary inspector provided by the Central Government. In the course of ten months, 88.6 per cent of the houses were provided with latrines of the concrete urban type. As a result of this demonstration a municipal board of health was established in Chorrera, and general interest in health matters greatly stimulated.

Owing to the revolution in Honduras, it became necessary in May to suspend the co-operative program. Government was well on the road to organizing an effective health department. A new building to house the Health Department



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Fig. 23.—Distribution of drinking water in the Port of Amapala, Honduras. Government is endeavoring to introduce modern methods of providing safe and adequate water supplies



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Fig. 24.—Scene from children's health play, Czechoslovakia. "The Princess Kazi," a fairy play based on Czech mythology, is designed to aid in the fight against tuberculosis by teaching children the love of nature, the woods, and the open air. Among the newer activities of the Ministry of Public Health, organized with the aid of the International Health Board, public health education has an important place

had just been completed. At the time operations had to be suspended, 13,000 hookworm treatments had been administered.

The development of the public health laboratory work had been making steady progress since its inception in 1923 and had reached a most encouraging state. Almost immediately upon the close of the revolution the laboratory was reopened with a staff trained by the Board's representative.

The sanitary engineer who had been sent to Honduras by the Board on the invitation of the Government continued his work without interruption and did much to minimize the danger from insanitary conditions. At the request of Government he submitted plans for a chlorinating plant for the city water supply, for an improved latrine system, and for adequate garbage collection, and served as consultant in numerous governmental projects. At the close of the year steps were under way to organize the sanitary police corps, of which the Board's engineer was to be the instructor.

The greater part of the Board's co-operative program in Guatemala is still in the field of hookworm control, although a public health laboratory is gradually being developed, and at the urgent request of Government, aid in the operation of the railway dispensary car was con-

tinued in 1924. Under a new joint project in hookworm control which became effective on July 1, the Government bears 25 per cent of the expenses during the first year and gradually increases its contribution until it assumes full financial responsibility at the end of a five-year period. Control measures were started during the year in three new departments and continued or completed in six others. Treatment was attempted for the first time among the purely Indian populations living in scattered settlements in the mountain districts. The owners of plantations appreciate to an increasing degree the economic advantages of sanitary improvements, and through their encouragement latrines are gradually being constructed. Of the 5,000 homes inspected during the year, 1,273 were found to be provided with latrines on first inspection; 732 new latrines were constructed.

The public health laboratory in Guatemala City has now been in operation for three years and the number of examinations is steadily increasing. The physicians of the capital now generally avail themselves of its facilities and there is no doubt but that it has already had an important influence in improving diagnosis.

During the three years which have elapsed since the Board's representative was withdrawn

from Costa Rica all public health activities have been under the control of a local official. The Board's representative in Panama visits Costa Rica several times a year and is available as consultant. Measured by increased appropriations and additional progressive legislation, Costa Rica is going ahead from year to year. Appropriations have increased from 64,500 colones in 1921 to 333,960 colones in 1925. A new health building has recently been provided, and a school for training sanitary inspectors started.

The hookworm work was hampered for a part of the year by severe earthquakes and a rainy season of unprecedented severity. In a population of 26,000 reached by ten rural units operated from forty-seven ambulatory dispensaries more than 35,000 treatments were given to over 13,000 individuals. The percentage of infection was particularly high in the provinces of Guanacaste and Alajuela. Government expenditures for the campaign in 1924 were increased from the 27,780 colones originally appropriated to 34,153 colones, and further increases have been promised for the year 1925. The sanitary disposal of human excreta presents many problems, particularly in small villages and rural areas. In April, 1924, a decree was issued making latrine construction compulsory and defining the types to be installed. The poverty of the population, however, and its

scattered distribution make official control of soil pollution unusually difficult.

A co-operative arrangement for the conduct of a public health laboratory came into operation during the closing weeks of the year. The Board furnishes the equipment and the services of a director.

In Nicaragua the four permanent hookworm dispensaries, at Granada, Leon, Managua, and Rivas, were continued during the year, and work was conducted in three other departments. Through the use of carbon tetrachloride as the anthelmintic large economies were effected. The expense of the campaign was met entirely by Government. Hookworm disease and malaria are so severe in certain districts, notably in Jicaro and Jalapa, that some of the most fertile regions of the Republic have been in danger of being depopulated. The inauguration of mass treatment in those districts has brought about remarkable improvement in the health of the population.

The public health laboratory is very popular with the medical profession, as shown by the rapid increase in the volume of its work. The number of examinations was increased from 16,606 in 1923 to 27,034 in 1924. The director furnished by the Board has been withdrawn and a Nicaraguan is now filling the position. The

Board has offered fellowships to help in the training of enough Nicaraguan physicians to take charge of all the public health work.

On requests received from various municipalities, as well as from private corporations, a sanitary engineer on the staff of the Board has made surveys for water supplies and sewage disposal plants. In most instances these are being followed by appropriate installations.

Although the Board no longer makes a contribution toward hookworm control in **Salvador**, Government nevertheless keeps it fully informed of its work and program, and the Board's representative in Nicaragua also makes several visits each year for consultation. In 1924 work was conducted in nine departments of the Republic; 45,865 hookworm treatments were given to 22,-108 persons. During the year 5,839 latrines were completed, and 3,257 were in process of construction at the end of December. This represents greater activity in sanitation than in any year since the campaign was begun in 1916. Municipal officials have taken an active part in improving sanitation and have imposed fines for failure to construct latrines as ordered. The attitude of the whole population, and especially of the poor, has been most praiseworthy.

Owing to the stronger financial position of the Government many public improvements have

been inaugurated during the year, among them a number of public water supplies. Requests from local authorities for help in the highly technical matter of providing chlorinated water were granted, and the Board's engineer stationed in Nicaragua rendered considerable assistance in installing chlorinating plants which had been ordered from abroad. Surveys for various projects were also made by the Board's engineer.

The public health laboratory, for which equipment was provided in 1924, is now in operation.

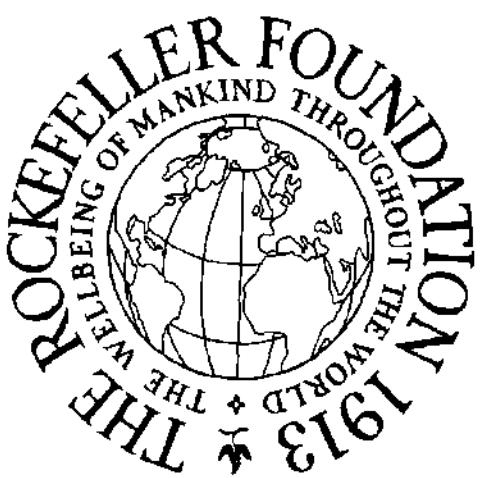
#### **Hookworm Campaigns Broaden into County Health Work in Brazil**

On December 31, 1924, the Board terminated an eight-year period of active co-operation in intensive hookworm campaigns in Brazil, the work having been inaugurated in the state of Rio de Janeiro in 1916. Co-operation during 1924 was confined to the state of São Paulo where demonstrations of hookworm control in rural areas have been carried on since November, 1918. Six posts were in operation. The unit at Bragança closed early in the year. Work had been completed in Tiete and Jardinopolis by the end of the year, but the intensive campaigns were still unfinished in Angatúba, Araraquara, and Piracicaba. The state will continue soil pollu-

tion control in Angatúba, while the units in Araraquara and Piracicaba will continue their activities as integral parts of the permanent county health services already established.

The Federal rural sanitary service was extended to the state of Piauhy during the year, leaving Goyaz as the only state of the Brazilian Federation unprovided with a service of this kind. At the close of 1924, 122 active Federal-State hookworm posts were in operation in seventeen of the twenty states of the Republic.

The development of rural health work has continued to be an important feature of the public health program of Brazil. Nine county health units were in operation during the year, four in São Paulo and five in Minas Geraes. A new five-year program of co-operation with the State of São Paulo, which began in October, 1924, provides for a bureau of county health services. County health work will be extended and developed, the number of units to increase each year until twenty-one are in operation at the close of the co-operative period. During the first year, the State will assume 23.4 per cent of the cost of each approved county health unit and 25 per cent in each succeeding year of the five-year period. The Board will contribute on a diminishing scale.



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Fig. 25.—Group of villagers in North Arcot District, India, eagerly waiting to look into the microscope to see the hookworm ova



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Fig. 26.—Collecting malaria mosquitoes. In studying the habits of malaria-transmitting mosquitoes and in making malaria surveys, it is necessary to collect the different species of adult mosquitoes from the places where they are in the habit of resting after taking their blood meal

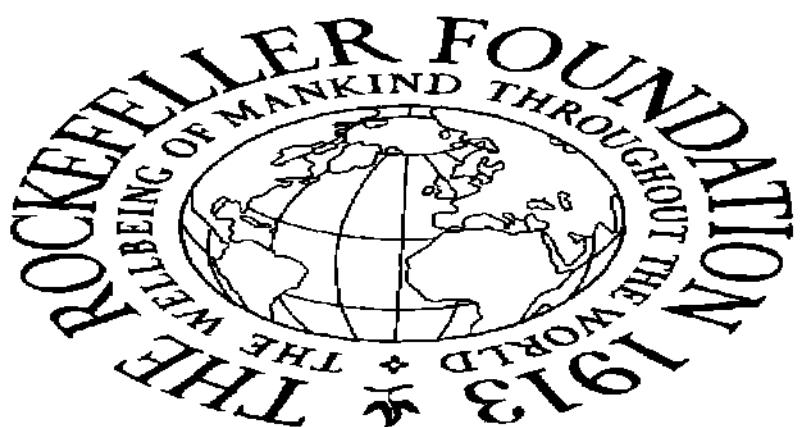
The activities of each unit include prevention of soil pollution, hookworm and trachoma treatments, public health education, and public health laboratory service. Of the four units, those at Orlandia and Sertãozinho made the most satisfactory progress. In Orlandia, the number of laboratory examinations increased 58 per cent over 1923. The health work in the schools of Sertãozinho received special emphasis and will be continued on a larger scale. At the Piracicaba post more than 30,000 treatments were given for trachoma which is one of the outstanding health problems in that community.

Measurable progress was made in 1924 by the five county health units operating in the state of Minas Geraes. Owing to the impaired finances of Government no new units were organized although several counties voted funds for that purpose. The efforts of the unit at Barbacena centered about sanitation, the dispensary, and the laboratory. In Itajubá the emphasis was placed upon educational work, especially in rural zones, while a diversified service prevailed at Oliveira. The work of the Ubá unit which is financed entirely by the Board is improving. The unit at Queluz continued to serve as the model organization. It has been designated as the center for training doctors and other personnel for service in other units. Excellent



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Fig. 27.—Large circular *pila* in Salvador. The *pila*, which provides a water supply for the general public, is the only permanent breeding place of the yellow fever mosquito in many communities



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Fig. 28.—Director of hookworm campaign and his staff, Paraguay

progress was made in all its activities, especially in public health education, latrine construction, and dispensary work. A "Pelotão de Saude" (Crusaders for Health) established in the schools to train the children in simple health rules and to form health habits has aroused such enthusiasm that work of the same kind will probably be extended to other counties.

#### Hookworm Control in Colombia and Paraguay

In Colombia campaigns were carried out during the year in the six departments of Antioquia, Boyacá, Cundinamarca, Huila, Santander, and Tolima. The Government appropriation for the Department of Uncinariasis in 1924 amounted to 60,000 pesos.

Mass treatment, adopted during the year as the most effective method for Colombia, resulted in striking progress in the curative work, 294,711 treatments having been administered to slightly more than 159,000 persons. By the close of the year a weekly average of 10,000 treatments had been attained. Various field laboratories are making egg counts to determine the intensity of infection in the different departments and thus secure a reasonable basis for future control operations.

Sanitation, financed entirely by Government, was carried on in five departments: Antioquia,

Boyacá, Cundinamarca, Santander, and Tolima. Ten sanitary inspectors, although paid by Government, have been placed under direct control of chiefs of field laboratories who are thus made responsible for both sanitary and curative work in their respective areas. The sanitary staff inspected nearly 20,000 homes, of which but 5 per cent had latrines on the first visit. About 7,000 new latrines were constructed in the course of the year and improvements effected in 235 others. An increasing interest in the control of soil pollution on the part of local authorities is illustrated by the recent action of the town of Socorro, Department of Santander, in appointing a full-time sanitary inspector to carry on the work initiated in that area.

A five-year co-operative program in hook-worm control was inaugurated in Paraguay at the beginning of the year. The Board's share of the expense, which is on a descending scale, amounted to 50 per cent the first year. The first post was established in the capital city of Asunción which, with its environs, is by far the most important zone in Paraguay as regards density of population and intensity of infection. Despite the lack of personnel which delayed the scheduled extension of control activities, a second post was inaugurated in Itá, the center of the country's richest agricultural area, and in the

latter part of the year subposts under the direction of the Itá campaign were opened in Itauguá and in Guarambare. An appreciable number of latrines have been constructed both in the towns and in rural areas. In conjunction with the curative work, the hookworm personnel also aided the Department of Health in a campaign of vaccination against smallpox which has reappeared in Paraguay after an absence of thirty years. More than 4,500 persons were vaccinated. Because of the peculiar bilingual situation, printed propaganda does not make an effective appeal. The principal avenues of



Fig. 29.—Map of Mexico showing areas in which hookworm infection reaches a degree of intensity sufficient to produce clinical symptoms

publicity have therefore been the schools and open-air lectures at public fiestas.

#### Inauguration of Hookworm Campaign in Mexico

During the year the Department of Health of the Mexican Republic inaugurated a campaign against hookworm disease in which the Board was invited to assist. As a first step a survey was made of the prevalence and distribution of the disease. While the fundamental biology of hookworm is, of course, the same wherever the disease occurs, its epidemiology varies greatly in different lands. Geographically, Mexico is characterized by a great central table-land, bounded by high mountain ranges and low-lying coastal regions. The climate, temperature, and rainfall, all of which are important in determining the prevalence of hookworm disease, vary greatly in these different regions. It was known in advance that the infection was not likely to be found, except under unusual or artificial conditions, as in mines, in areas of the altitude of the great central plateau, where the rainfall is extremely light. For this reason only one typical area was selected for study—the state of Tlaxcala which has an altitude of approximately 8,000 feet and an average rainfall of half a meter. No hookworm infection was found under these conditions. On the eastern coastal plain surveys

were made in the state of Vera Cruz at Tierra Blanca and in the foothills at Cordoba and Fortin, in the state of Oaxaca at El Hule and El Barrio, and in the state of Tabasco at Frontero and Villa Hermosa. Two additional areas, in Colima and Chiapas on the west coast, were also surveyed.

The Willis method was used for qualitative and the Stoll for quantitative studies. For worm counts Darling's technique was followed after a dose of two mils of oil of chenopodium. In order to secure a representative sample of the population, specimens for examination were collected during the house to house canvass and never from schools or institutions. In this survey it was considered that an egg count of 700 per gram of feces represented an infestation of twenty to thirty worms, too small a number to produce disease or to require medical treatment, since better sanitation alone will care for such cases adequately.

High rates of infection and clinical hookworm disease were found in the hot and humid eastern coastal region (see Fig. 29), and little or none on the central plateau, in Colima on the west coast, or in Yucatan in the southeast. The survey showed, in other words, that the hookworm area of Mexico is limited to the coastal plain regions of high temperature and heavy rainfall (from 1.5 to 5

meters), and that the disease is much more prevalent on the east than on the west coast. In Eastern coastal plain the disease is severe, as shown by egg counts, worm counts, and hemoglobin determinations (see Fig. 30).

The control campaign began on April 23, and was continued throughout the year, at first in the mines of the high plateau.

Later, on August 15, the work was transferred to Cordoba, in the foothills of the state of Vera Cruz, where the disease is present in a severe form, and affects 75 per cent of the population. For this reason mass treatment was the rule. Attention was given to sanitation and education during the course of the treatment campaign.

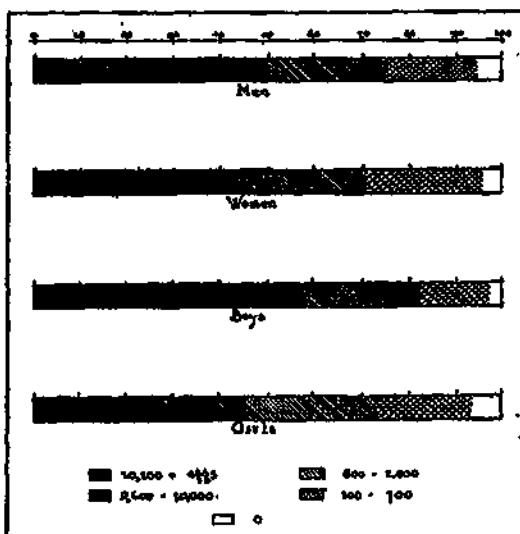


Fig. 30.—Intensity of hookworm infection in the hookworm area of Mexico, by age and sex, based on egg count in 1,120 cases

#### Surveys and Control Campaigns in the West Indies

In co-operation with the Government of Haiti and the medical department of the United States Navy, a comprehensive disease and sanitary

survey of the Island has been undertaken by the Board. Examinations thus far conducted in the Carrefour area disclose a hookworm infection of about 38 per cent, which is lower than in some other West Indian islands and lower than the rate indicated by recent studies made in five prisons, where an infection of 49.2 per cent was found among all prisoners and of 56.6 per cent among those of less than two months' incarceration. The heaviest infection was found among prisoners from the northern side of the southern peninsula and the lowest among those claiming residence in regions north of Port-au-Prince along the coast. In the Jeremie Hospital 69 per cent of the patients examined were positive.

On December 31, 1924, the Board terminated a ten-year period of active co-operation with Trinidad. In Trinidad and in Tobago, its island dependency, virtually every area suitable for the Board's operations has been covered. It is rare now to see a severe case of hookworm disease in the streets of Trinidad and the general level of hygiene and public health in the Island is much higher than in 1914.

Two units were in operation throughout 1924, one in Trinidad under the immediate direction of the Board's representative, and the other unit in Tobago. In Trinidad the 1924 campaign was limited to Couva Ward, on the west coast, which

has a population of 13,000 about equally divided between towns and scattered villages and estates. The examinations in this area indicated an infection rate ranging from 80 to 92 per cent.

Sanitation, carried on in conjunction with treatment, made satisfactory progress. A new law has been enacted revising and strengthening rules and regulations for soil pollution control, with increased penalties for non-observance. A standardized pit latrine of good type has been officially approved as the minimum requirement.

In conjunction with control operations in Trinidad a campaign was begun and concluded during 1924 in Tobago under the direction of a member of the Government medical service. A survey of the entire Island, with about 24,000 inhabitants, showed an infection rate of about 50 per cent. A preliminary survey made in 1917 had indicated a rate of 63 per cent. Treatment was given to over 91 per cent of the infected. The government sanitary latrine campaign was carried out thoroughly and on a permanent basis. Even in remote and inaccessible regions it is not unusual now to find new and satisfactory latrines. Before the campaign began sanitary latrines, except for a few in the towns, were quite unknown.

Activities in Jamaica in 1924 were confined almost entirely to St. Mary Parish, the Old Har-

bour area of St. Catherine Parish having been completed early in the year. The campaign in St. Mary Parish, inaugurated in Richmond area in March, is considered the most effective thus far conducted in the Colony. Co-operation of the people in sanitation and treatment was practically perfect. To push the intensive sanitary campaign the Parochial Board supplied lumber and other building materials at cost. Householders not only constructed their own latrines, many with concrete bases, but maintained them in satisfactory condition. The Richmond area, with a population of almost 20,000, was sanitized at a per capita cost of approximately 4½ pence.

During 1924 Clarendon and St. Andrew Parishes employed full-time medical officers of health for the first time; St. Mary and Portland Parishes included provision for such officials in their budgets for 1925. Clarendon Parish, where the work was started in 1919, on its own initiative and without outside financial aid has incorporated hookworm measures in its permanent health program, the staff consisting of the medical officer of health and six assistants.

The deleterious effects of hookworm disease in retarding mental development and reducing the hemoglobin index of children is shown in a comparative study of groups of bright and dull

pupils in St. Mary Parish. An infection rate of but 23.3 per cent was found among the pupils classed as "bright," as compared with a rate of 83.3 per cent for the "dull" children. The average hemoglobin index among bright pupils was 84 in contrast to an index of 54 for the dull children. Infected laborers in Richmond who were weighed before treatment and again three and one half months later had gained an average of 6.2 lbs. in that interval. Hemoglobin tests on another group of laborers showed an average gain of 47.7 per cent.

The outstanding event of the year in Porto Rico was the inauguration of an island-wide program of rural sanitation. Until July, 1924, rural sanitation work was limited to certain municipalities in northwestern Porto Rico and was supervised by twenty-three full-time inspectors attached to the three latrine construction units of the Insular Health Department. The local inspectors of the Department, stationed in each of the seventy-six municipalities, confined their activities to urban areas. On July 1, 1924, the scope of the work of the Bureau of Uncinariasis was enlarged and an active program of rural sanitation initiated for the entire Island. The seventy-six local inspectors are now required to devote one third of their time to rural sanitation under the Bureau, their work being supervised

and correlated by an inspector-general especially appointed by the Department of Health. During the last six months of 1924, 12,565 new latrines were constructed, 3,912 by the local service and 8,653 by the three regular construction units.

Special efforts have been made to strengthen and popularize the publicity and educational programs. More lectures and conferences were held outside of the areas where sanitation and treatment campaigns were in progress. These included a series of lectures for teachers and student-teachers during the summer session of the University of Porto Rico, addresses at teachers' institutes in different parts of the Island, and talks at parent-teacher associations and meetings of the Porto Rican Medical Association. The press gave excellent support, publishing comprehensive articles at frequent intervals.

Hookworm infection surveys of St. Kitts, Dominica, and Nevis, were completed during 1924. The general infection rate in St. Kitts, where the work was completed early in the year, was not high—only 21.2 per cent—and the average egg count was low. Clinical manifestations of the disease were often apparent among the French white settlers, but more rarely among the black and colored populations. Trichuris is widespread and the ascaris rate is also high. The survey of Dominica disclosed a

widespread and fairly severe hookworm infection. Individual infection as shown by egg counts is not so severe as in some other areas in the West Indies, though much more severe than in any other part of the Leeward Islands. Hookworm disease, together with an ascaris infection reaching 76 per cent, represents a serious economic handicap. The hookworm infection rate in Nevis was found to be 23.4 per cent. No definite clinical evidences of the disease were noted. Two of the areas surveyed showed a heavy infection with schistosomes, and typhoid fever was prevalent.

The close of 1924 marked the termination of the Board's co-operation with the Government of St. Lucia in a program inaugurated in 1915. The Colony has now been completely surveyed. During the past two years, in accordance with special arrangements with Government, a second campaign was carried out, in which approximately one half the estimated population was examined. The well-marked clinical symptoms encountered during the earlier campaign were absent and the rate of reinfection was comparatively low. The resurvey also disclosed improved sanitation. Government has arranged for the training of sanitary inspectors, and will continue to push the work of soil pollution control throughout the Island. Hospitals and

public institutions now provide for examination and treatment of hookworm infection.

## V

### Aid to Other Countries in the Development of Modern Health Services

On the invitation of the Japanese Government, the Regional Director and the Board's representative in China made a study of health conditions of Japan, extending over a period of several months. It was found that beriberi, intestinal diseases, and diseases of infancy and childhood are responsible for a very high percentage of the mortality. The training of health officers, as in the United States, is a matter of great importance.

Owing to the disturbances of public order and the political agitation, not much field work was undertaken in China because of the small promise of permanent results. The absence of public health work in China seems not to be due to the need of funds or personnel or stable government, although the latter are of course important. If the significance of public health activities were understood, enough machinery could be found to inaugurate a minimal program.

During a two-year period, terminating August 31, 1924, the Board has co-operated with the Health Department of the Province of New

Brunswick, Canada, by providing \$27,000 yearly to aid in the development of a permanent rural health service. These funds were employed in a reorganization of the school medical inspection service on a full-time basis. The work has developed successfully and has been taken over by Government as an essential feature of the governmental health program.

Preliminary to further consideration of a program of co-operation with the Province of Quebec, which desires to reorganize its public health service along modern lines, a survey of public health conditions in that province was made by a representative of the Board.

Several years ago the Board approved a plan to develop a health service in some selected department of France by means of a demonstration in departmental organization, but the initiation of such a project was delayed until 1924. During the year a five-year co-operative agreement was made with the Department of Hérault

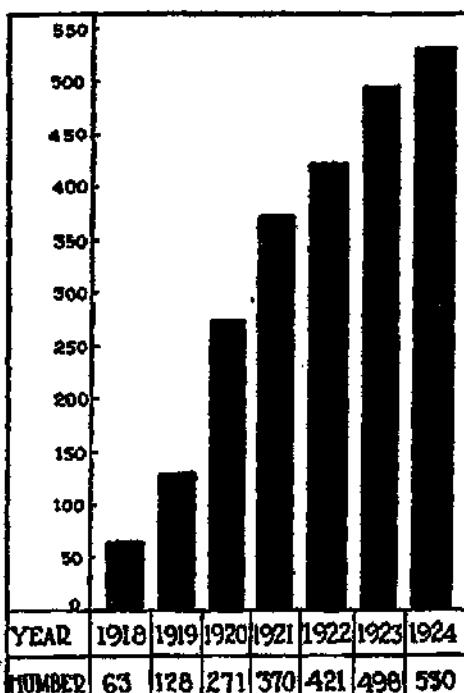


Fig. 31.—Number of tuberculosis dispensaries in operation in France, by departments, 1918 to 1924

to develop a public health organization somewhat similar to county health work in the United

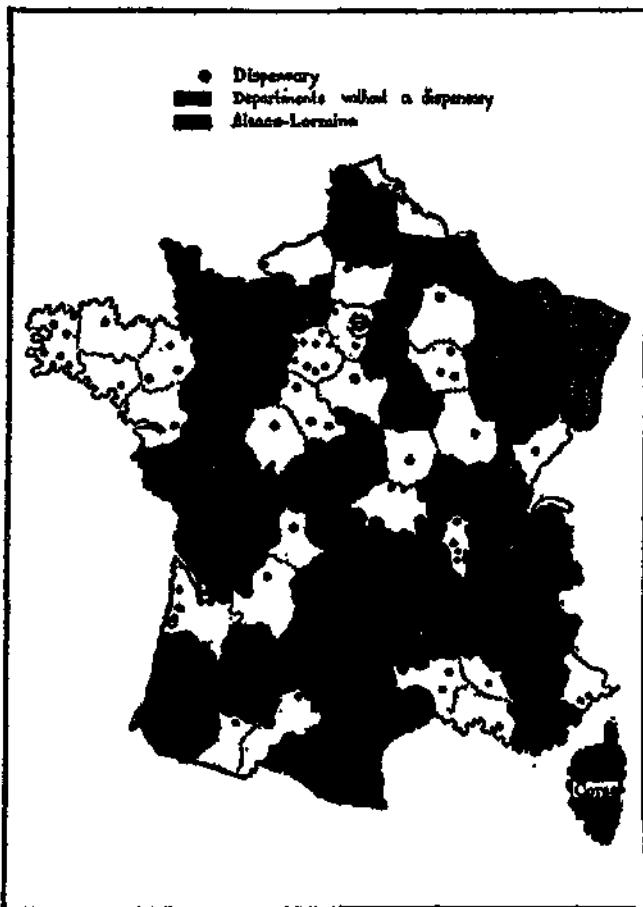


Fig. 32.—Tuberculosis dispensaries in operation in France on December 31, 1918, by departments

States. The Board will give financial aid on a diminishing scale. Since the Foundation's tuberculosis commission began its work in the Department in 1920 the departmental authorities have shown an increas-

ing interest in public health work.

It is proposed to develop a modern and efficient health organization at a cost which will be within the financial resources of the Department and of a type which can be adopted by other departments. Efforts are being made to centralize at Montpellier, under the direction of the chief medical officer, the existing public health services of the Department and also such other activities

in the prefecture as pertain to public health. A building admirably adapted to serve as the central health office of the Department has been secured, which will also provide accommodations for local tuberculosis and venereal disease dispensaries and for the city health officer.

The Board's agreement to aid the Comité National de Défense Contre la Tuberculose in taking over the activities of the Commission for the Prevention of Tuberculosis in France will be concluded during 1925. The Comité has developed a successful tuberculosis campaign. The direc-

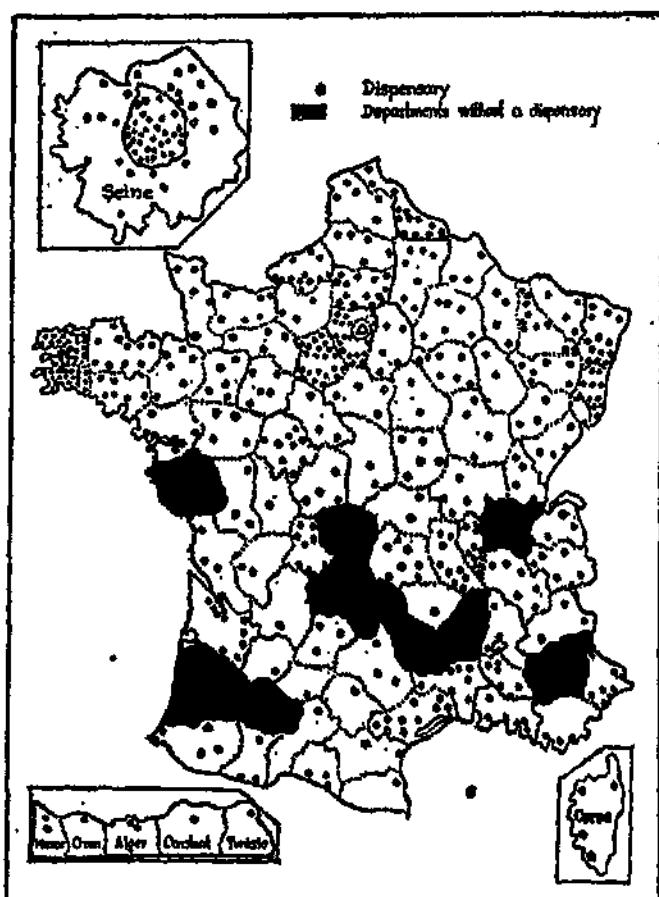


Fig. 33.—Tuberculosis dispensaries in operation in France on December 31, 1924, by departments

tor of its bureau of Education and Propaganda visited the United States during 1924 as the guest of the Board.

A survey of hookworm infection in the mines of Spain was begun toward the close of the year 1924.

The Division for Study and Reform of Health Activities in the Ministry of Health of Czechoslovakia, which is being aided by the Board, continued its program of stimulation and encouragement in widely diversified fields. Among the outstanding accomplishments of the year may be mentioned: (1) completion of a study of the nursing situation; (2) continuation of the rural demonstration in Kvasice district, the success of which has resulted in the creation of a new demonstration in the Kladno and Lany districts; (3) continuation of nutrition studies; (4) continuation of the active and highly successful popular health education campaign; (5) preparation of special regulations to assure a safe milk supply for the larger cities; (6) studies in sanitation which have led to an increase of appropriations for water and sewage works from 1,000,-000 crowns in 1921 to 7,000,000 in 1924, with a possible increase to 8,000,000 in 1925, and a plan for supplying potable water to forty-six agricultural communities; (7) progress in preparation of a primer on hygiene for industrial workers; (8) co-operation on the part of the district medical officer of Marienbad in the development of public health work in large watering places,

and (9) progress in the preparation of a new national public health law.

The Division of Vital Statistics of the State Statistical Office was assisted during the year in making studies looking toward a revision of the federal law on vital statistics. So essential has this work proved itself in the program of the Ministry of Health that Government will assume financial responsibility for its maintenance after 1924, the sum of 250,000 Czech crowns having been appropriated for 1925.

## VI

### **Co-operation with the League of Nations**

The Board continued its co-operation with the Health Committee of the League of Nations through the international interchanges of public health personnel and the development of the epidemiological intelligence service and the improvement of public health statistics. A contribution of \$21,000 was also made to provide specialized training in vital and public health statistics for representatives of national health administrations.

A total of six general Interchanges of Public Health Personnel have been held since this work was inaugurated in 1922, of which three took place during 1924, in Great Britain, the

Netherlands and Denmark, and Switzerland, attended by ninety-nine health officials of twenty different countries. Two specialist interchanges were also accomplished, with twenty-eight participants from thirteen countries. One group, composed of tuberculosis officers, visited Austria, Belgium, Czechoslovakia, France, Great Britain, the Netherlands, Hungary, and Switzerland, while the other exchange, for experts in school hygiene, studied conditions in Belgium, Great Britain, and the Netherlands.

During 1924 a system was definitely worked out for the future. As planned, four general interchanges will be held yearly, each to extend over a period of about seven weeks and to include a maximum of twenty persons. Two specialist interchanges annually were also decided upon, with a maximum of ten persons for each group. The Board's subvention of \$60,080 a year, under the three-year agreement commencing October 1, 1922, was increased, effective July 1, 1924, to a sum not exceeding \$100,000 yearly for the remainder of the period. The League Assembly has increased its appropriation to the Health Committee from 50,000 Swiss francs in 1924 to 150,000 Swiss francs in 1925.

In accordance with a five-year agreement commencing January 1, 1923, the Board continued its appropriation of \$32,840 for the main-

tenance of the Epidemiological Intelligence Service. The study of procedure in the compilation of vital statistics in European countries has been continued and improvement effected in the form of presentation of reports sent to the Service by various countries. Technical advice has been furnished to governments when requested. The Polish Government, for example, was assisted in the preparation of proposed legislation for registration of deaths. Four small groups, comprising seventeen experts who are serving in important official capacities in various governments or in universities, have undertaken intensive studies of such important problems in the comparability of international vital statistics as a uniform method for classifying joint or contributory causes of death, the classification and statistical treatment of still-births, a standard million population for the adjustment of crude death rates, and age and sex classification. A conference of experts from Austria, Denmark, Italy, Prussia, Saxony, and Switzerland, was called at the central office of the Service in Geneva to discuss statistical problems. To improve methods of notification of communicable diseases and the statistical utilization of the data, the first of a series of group conferences was held in Geneva during the latter part of the year.

The publication of regular monthly reports embodying authoritative data on case incidence and mortality of notifiable diseases has made possible a comparatively complete epidemiological survey with occasional observations on epidemic situations in various countries, and has established what might be termed a voluntary and unofficial registration area for notifiable diseases, involving a large number of the civilized nations. A significant step forward in the control of communicable diseases was the proposal submitted at the Third Session of the Health Committee in 1924 to consider the feasibility of creating a world registration area for notifiable diseases.

In order that the work of the Epidemiological Intelligence Service might be extended to the Far East, the Board agreed to aid the League in the establishment and maintenance of an Eastern Bureau, which is to be located at Singapore.

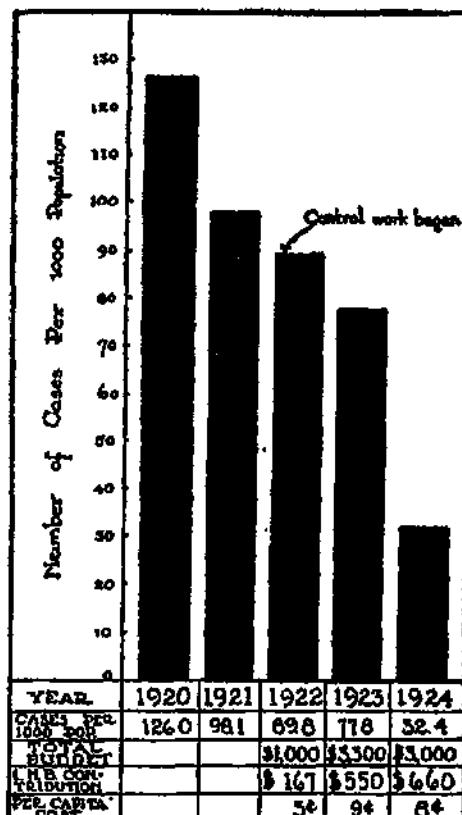


Fig. 34.—Malaria cases per thousand population reported by physicians in Yazoo County, Mississippi

This commitment is not to exceed \$125,000 over a five-year period. During 1924 the Board appropriated \$40,000 for the establishment of the Bureau and its maintenance during the first year of operation, and \$5,000 for the expenses of a preliminary conference to be held at Singapore early in 1925 to mature plans for its organization.

## VII

### Field Studies and Demonstrations in Malaria Control

#### Studies and Experiments in the United States

In 1923 a field station was established at Leesburg, Georgia, under the direction of Dr. S. T. Darling, for the purpose of studying certain specific problems of significance in the control of malaria, and to offer opportunities for training and instruction in malariology. Various research problems such as the incidence and distribution of malaria, the method of its treatment, the habits and relative importance as malaria carriers of the three species of *Anopheles* mosquitoes, and the effect of the standard quinine treatment, have been studied at this laboratory during the year.

The investigations begun in 1923 in Jones County, Mississippi, were continued in 1924 under the direction of Dr. H. H. Howard, in

co-operation with the State Board of Health, for the purpose of studying mosquito production, the incidence and distribution of malaria and its transmission and drainage conditions,—all looking toward the formulation of control methods.

Since 1921 experiments on the preferential feeding of mosquitoes have been carried on by Bull, King, and Darling. Precipitin tests conducted by Dr. Bull show a marked preference for animal blood on the part of *A. crucians* and *A. punctipennis*. This is in accordance with the results of Dr. Darling's epidemiological studies which have confirmed the observations of Carter and others that in Southern United States

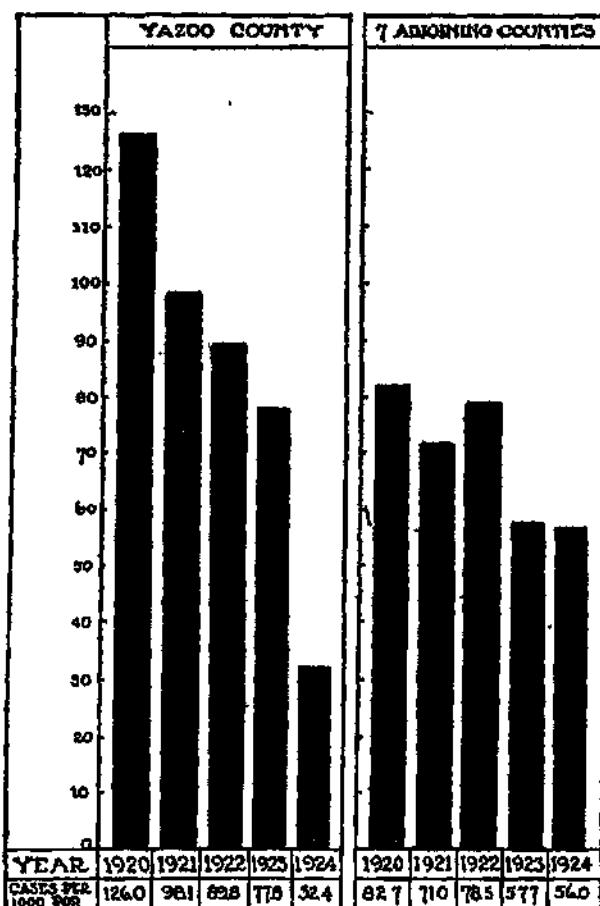


Fig. 35.—Reduction in the number of cases of malaria per thousand population in Yazoo County and the seven adjoining counties. Malaria control work began in Yazoo in 1922; no control work was done in the adjoining counties

*A. quadrimaculatus* is the only effective transmitter of malaria.

#### Surveys Continued in Palestine

The Board's participation in the health work of Palestine has been practically confined to lending the services of members of its field staff to the Government Health Department for the purpose of making malaria surveys. Some assistance was also given to provide survey facilities which Government was unable to furnish.

During 1924 the surveys included the Lake Huleh District, part of the Jordan Valley, the shores of the Dead Sea, and field studies at Jericho and the Tantura marshes. It was found that in towns the presence of malaria was largely dependent upon *Anopheles (A. bifurcatus)* breeding in wells or cisterns. This has been largely controlled by oiling, with great improvement in health among town dwellers. Surveys in rural areas where the principal vector is *A. elutus* give much promise of ultimate control at reasonable costs. Much help is expected through a law that makes it obligatory for occupants of land to put a stop to mosquito breeding.

The conservation and proper control of the available water supplies, rather than drainage,

seems to be the main problem in Palestine. If impounding the waters of the Jordan, which will help to make the country self-sustaining, causes no uncontrollable malaria, there is much reason to believe that the handicap of malaria in agricultural development can be removed.

#### **Adapting Control Methods to Conditions in the Philippine Islands**

The primary object of the malaria field studies in the Philippine Islands was to develop a method of control under tropical conditions at a cost that could be met by the communities in which it was required. The cost of the work is not yet definitely known, but the preliminary figures indicate that it may be between \$.20 and \$.30 per capita per annum. In connection with the control operations practical field training was given to six sanitary engineers and inspectors. Several of these have already found positions with plantations and municipalities that desire to control mosquito breeding.

#### **Surveys and Field Studies in Porto Rico and Haiti**

In response to an invitation from Government, which desires to inaugurate control measures, the Board is conducting field studies of the malaria problem in Porto Rico. A survey has

been undertaken in several small areas representing average conditions, to determine the incidence and origin of the infection, including a study of the species of anophelines present, their breeding habits, and the importance of each in the transmission of the disease. The Board has contributed scientific equipment and the services of a medical director, a sanitary engineer, and a technical assistant; Government has provided a medical assistant and the subordinate personnel. The survey will probably be completed in the spring of 1925.

During 1924 studies were made of the Barceloneta, Ponce, and Fajardo areas. The findings in each case indicate that while the malaria incidence is high and affects all classes of the population, both urban and rural, the disease is most prevalent among those living in closest proximity to cane fields. Although in no two of the areas surveyed was the anopheline situation the same, yet in each one cane cultivation, because of poor drainage or improper irrigation, or both, furnished constant and abundant opportunities for breeding.

Observations will be continued for a full year in the Barceloneta-Manati area where the basic survey was inaugurated and where a great variety of mosquito breeding conditions is present. Low-lying lands which are never dry and ditches

installed in cultivated sections for drainage purposes give rise to constant anopheline production. The houses of numerous laborers were found grouped closely together in the midst of or near areas of heavy anopheline breeding. It is believed that through efficient agricultural drainage by pumping, and through the transportation of several colonies of laborers to higher ground, malaria control in the Barceloneta area is feasible and can be secured at moderate cost. The fact that the lands are all owned by one central is an important consideration in any scheme for agricultural drainage.

Short-term surveys were made of the Ponce and Fajardo areas. The survey of Ponce, the second largest city in Porto Rico, with a population of about 41,000, yielded interesting information but disclosed a much more complicated situation as regards mosquito control than the Barceloneta area. Observations in the city itself showed very little breeding, but the city is surrounded on three sides by irrigated cane lands owned by a number of companies and individuals. Careless, wasteful methods of irrigation and inadequate provision for drainage are the chief factors in promoting anopheline production. Breeding opportunities are further increased by draining storm water from the city into low-lying areas situated partly within the

city limits. About 10,000 malaria histories were taken in representative areas of the town. With the excellent co-operation of school authorities spleen examinations were made of almost 5,000 children of school age, and many histories and examinations of pre-school children secured. In rural sections the spleen rate was found to be 47 per cent, in urban districts 16 to 20 per cent, in central urban or hilly areas 10 per cent, and on the beach 15 per cent, while back from the beach the rate was 27 per cent. Approximately 600 blood smears were made to check spleen and history indices.

The types of anophelines present are *A. albimanus*, a few *A. grabhamii*, and an occasional *A. vestitipennis*. Albimanus is a prolific breeder and is found in both fresh and brackish water. It prefers pools which are exposed to the sun and support some vegetation.

In Fajardo the population of about 14,000 is largely urban. The rural population comprises the colonies of the sugar central which owns all the cane lands in the area. The evident prosperity of the central is reflected in the good living conditions of the laborers; the colonies are wisely located and a superior type of house is furnished free of charge.

A large part of the town, in which efficient drainage prevails, is apparently free from malaria.

A few cases are reported from the colony living along the cane fields near the central, but most of them come from the poorly drained section of the town near the hills and some distance from the fields.

Histories were secured and spleen and blood examinations made of representative groups of the population (1) in the town, (2) in the colony living on the irrigated lands, and (3) in a section near the sea where malaria is reported non-existent. These findings revealed a serious malaria problem in Fajardo; parasites were found in the blood in 80 per cent of the population in certain sections.

Owing to natural conditions, control of mosquito breeding in the Fajardo area should be fairly simple and the expenditure required well within the financial resources of the community. The presence of good agricultural drainage and proper housing for laborers greatly simplifies the control program.

In Haiti studies are being made of all insect vectors of disease and especially of malaria-carrying mosquitoes. The indications are that in the Carrefour area the maximum breeding of anophelines in the rainy season takes place in rice fields. When these become dry, sparse breeding is found in springs, seepage areas, and in irrigation ditches. *A. albimanus* predomi-

nates and *A. grabhamii* is found in small numbers.

#### Control Demonstrations and Field Studies in Brazil

In Brazil the Board continued to co-operate in the support of malaria control demonstrations and field studies in the state of Rio de Janeiro. The first year of the malaria control demonstrations conducted by the two units in four selected areas near Rio de Janeiro ended June 30. A careful study<sup>1</sup> has been made of the control measures adopted in each of the areas and their resultant effect on anopheline production and the incidence of malaria as shown by the blood and spleen indices. Despite the handicap of an unfavorable season, the control measures employed in 1924 secured a marked reduction over 1923 in the number of cases in the four areas.

Striking results were observed in Magé, an area of low endemicity, where no cases have been reported since the end of March, 1924. Very satisfactory conditions prevailed in Itamby, an area of high endemicity, no cases having been reported up to the end of October. The records of Porto das Caixas during the last six months of the year indicate that by the continued use of

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<sup>1</sup>The data collected during the course of the field studies have been analyzed in a report covering the period July 1, 1922-June 30, 1924, and will be published as a Monograph of the *American Journal of Hygiene*.

paris green on the marshy river flat it may be possible to secure a hoped-for reduction of fever cases to below ten per month during the 1925 season. Antilarval measures were inaugurated at Sant' Anna during 1924. The greatest problem has been the very rapid growth of aquatic vegetation in streams and ditches, the clearance of which is still dependent upon manual labor, and also the damages to cleared ditches by roving cattle and swine. A study of the results obtained in these four areas justifies the conclusion that through the employment of antilarval measures alone malaria control in similar situations in the tropics is feasible at reasonable cost. In each of the areas antilarval work has been the outstanding factor in securing a reduction in the malaria rate. Quininization has not been found to be an indispensable aid.

A field training station for malaria epidemiologists was established in Rio de Janeiro early in the year. A member of the Board's field staff was the first to participate in the opportunities offered by this course of training and continued his intensive studies throughout the year.

The state of Rio de Janeiro has entered into a co-operative program of malaria control extending over a term of years, for which it has voted funds amounting to ninety-seven contos. A preliminary survey has already been accom-

plished in the counties of Itaperuna and Macahe where it is expected that the co-operative program will be inaugurated.

#### **Successful Demonstration in Nicaragua**

The demonstration in malaria control which was begun at Rivas, Nicaragua, in 1921 was continued by the municipality with a very small subvention from the Board. Surveys made by the Board's sanitary engineer at Leon and other places were followed by control measures under Governmental auspices. An important gold mine which had been closed for some years owing to the high malaria rate among the laborers was reopened after the installation of simple drainage measures. This malaria work has stimulated much interest and emulation in a number of other communities.

#### **Field Studies in Italy**

In response to an invitation from Government, field studies in malaria were undertaken in Italy in 1924 and a general survey of the malaria situation was completed, during the course of which most of the regions where malaria exists were visited. While fifty-two out of sixty-nine provinces into which the country is divided have been declared by Government to have endemic malaria, the disease may be said to constitute a

serious problem in only thirty-eight. Thirty per cent of the area of the country is malarious and 41 per cent of the population, or about fifteen million people, live more or less exposed to the infection.

Control measures, particularly in the South, have been confined largely to the administration of quinine which is distributed freely by the State through temporary distribution centers, malaria dispensaries and sanatoria, and ambulant posts. The state also carries on a program of popular education and maintains a malaria school for medical and lay personnel at Nettuno. The Red Cross and various philanthropic organizations have rendered active and valuable assistance. Government now furnishes screened houses to its employees and offers premiums to private employers who follow its example.

## VIII

### Public Health Nursing

The consultant in nursing to the Governor-General of the Philippine Islands completed over two years' service. During that time a public health nursing school was organized, which has graduated two classes, and legislation affecting the practice of nursing was secured. A visit to all the nursing schools in the Philippines, made at the request of the Secretary of Public Instruc-

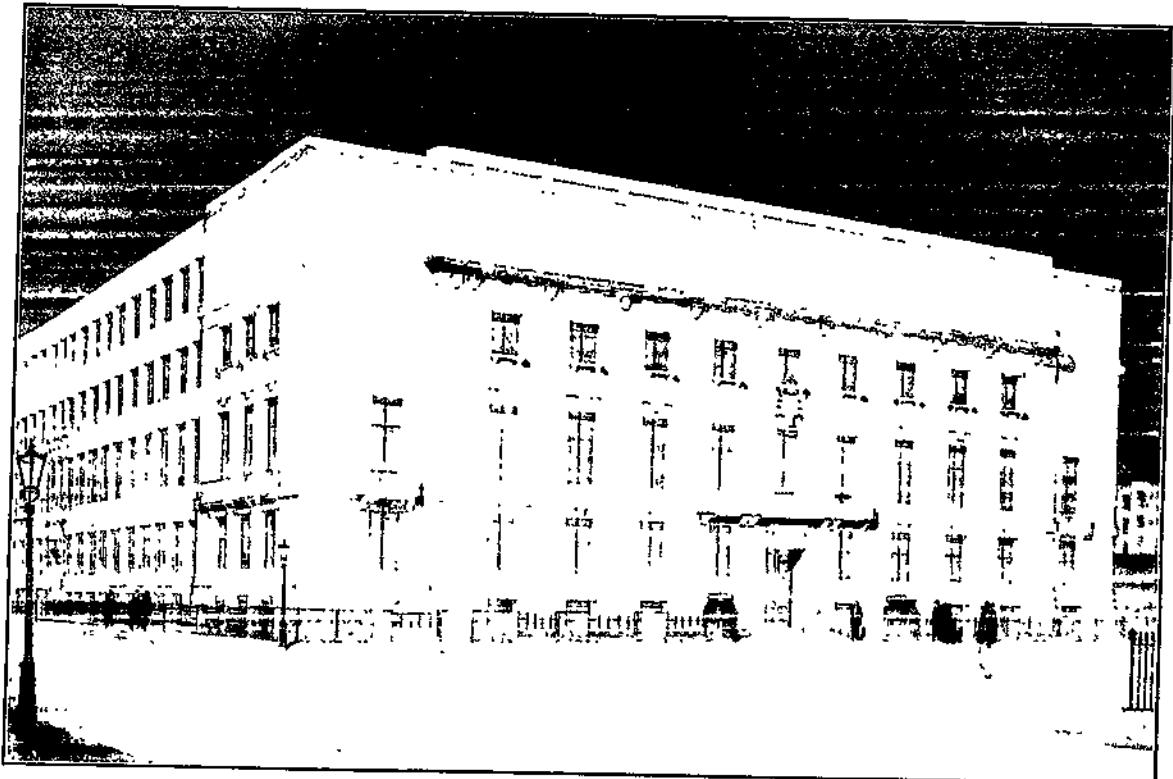


Fig. 36.—Architect's projection of the London School of Hygiene and Tropical Medicine

tion, resulted in the establishment of minimum standards for nursing courses. After the completion of this work she returned to the United States via Siam, where she conducted a nursing survey.

Since 1922 the Board has been co-operating with the Government of Brazil in the development of a nursing service. Early in 1924 legal standing was given to the Service as an integral part of the National Department of Health of Brazil. The visiting work of the bureaus of Child Hygiene, Tuberculosis, and Venereal Diseases is directed by the Service. The activities of the public health nurses and the health visitors engaged in tuberculosis and child hygiene work have been augmented by follow-up care of surgical and medical cases discharged from the Hospital Gerál de Assistencia. This experiment has proved most successful, not only in continuing the supervision of patients after their discharge from hospital or clinic, but also in providing an opportunity to give instruction in nursing care of the sick in their homes.

At the beginning of 1924, there were 4,507 patients under the care of the Service of Nursing; 15,944 new patients were enrolled during the year, and 12,099 were under care at the close. The supervisors and health visitors in this division accomplished 2,255 nursing visits and



Photograph Excised Here

Fig. 37.—An examination in practical nursing in the School of Nursing of the National Department of Health of Brazil



Photograph Excised Here

Fig. 38.—Class in the School of Nursing of the National Department of Health of Brazil on the day the students received their caps

72,520 instructive visits relating to child hygiene, prenatal, tuberculosis, and venereal disease work. A total of sixty health visitors was employed during 1924, of whom forty-seven remained on December 31. Because of necessary economies this number will be still further reduced in 1925 by the elimination of twelve, six of whom will matriculate in the School of Nursing.

Public health officials and physicians have continued their active and enthusiastic co-operation. The Federal Government has been so impressed with the value of a service of nursing that, in spite of widespread retrenchments in other governmental activities, the nursing budget for 1925 was passed with but a slight reduction from the original estimates presented.

The second class matriculated in the School of Nursing in 1924. Seventeen of the twenty-seven students in this class were normal school graduates, and six had been transferred from the emergency service. In October a preliminary group of four students entered for the class of 1927. At the close of the year forty-six students were enrolled, of whom nearly two fifths were normal school graduates. Those who have entered more recently represent a higher educational and social background, showing that the opportunities of the nursing profession are making an appeal to the young women of Brazil.

Two groups of health visitors, numbering eleven in all, completed the ten months' emergency course, marking the termination of this type of training.

The service of the school in the São Francisco de Assis Hospital was extended and three additional wards taken over—a second women's medical, the men's ear, nose, and throat, and the men's surgical wards. At the close of the year nine hospital wards were under the direction of the School, as well as the operating rooms and the out-patient department. To secure much-needed training in contagious diseases, an arrangement was effected with the São Sebastiao Hospital for Communicable Diseases. The first group detailed for one month's service consisted of five students of the class of 1925, who, after graduation, will be employed in the Bureau of Communicable Diseases of the National Health Department. Plans were also matured for sending students to the port quarantine hospital for smallpox cases. Practical field service in follow-up work was obtained in a selected area adjacent to the hospital.

In order that the administrative and teaching organization of the service of nursing may be ultimately assumed by the graduates of the school, fellowships have been authorized for a group to obtain postgraduate training in the

United States. To meet the growing needs of the School of Nursing, an additional residence was acquired which furnished living accommodations for the director and twenty-six students whose former quarters now provide a home for the head nurses and additional classrooms and meet other special needs.

The Bureau of Public Health Visiting has furthered the development of nurse training in France by subventions to training schools, awards of scholarships and fellowships to pupil nurses and graduate nurses, respectively, and by inspections of public health nursing work. The activities of the Bureau are being gradually transferred to French authorities.

Collaboration was continued in 1924 with training schools for nurses and health visitors at Paris, Lyons, Nantes, Marseille, Lille, Nancy, and Bordeaux, to which subventions were granted toward the payment of salaries of the teaching staffs. The number of instructors in these schools, paid wholly or in part by the Board, has been reduced from seventeen to ten, of whom but three are foreign nurses. The number of scholarships to undergraduate nurses, covering a residence of one year, has been reduced from sixty in 1924 to thirty-three in 1925. After 1925 scholarships need no longer be given. Of the six nurses who received fellowships in 1924, four

from the Salpêtrière Training School in Paris spent the year in England studying teaching methods and training school organization, one from Strasbourg divided her year between England and the United States to secure additional training in teaching methods and training school administration, and one from Bordeaux studied public health organization and teaching methods in Toronto, the United States, and France.

Inspection of public health nursing activities has been accomplished in eleven departments. It is proposed to incorporate this work in the program of the Bureau of Nursing as soon as it is established as a governmental organization. Inspection of schools for nurses and health visitors is already being carried on by the directress of nursing in the Liberated Regions under the auspices of the Ministry of Health in Paris.

## IX

### Training Public Health Personnel

#### Brazil

Since 1918 the Institute of Hygiene of São Paulo, Brazil, has received an annual subvention from the Board, but beginning January 1, 1925, full responsibility for its support will be assumed by the Government of the State of São Paulo. In addition to the prescribed course in hygiene given to the students of the

medical school, health instruction at the Institute during 1924 included: (1) a course for laboratory assistants; (2) students, including physicians, at work on special problems; (3) special training at the experimental post for two physicians appointed as chiefs of posts in the interior of the state and for eight microscopists; (4) a special course for normal school teachers to meet the needs of the program in home visiting proposed by the State Sanitary Service.

During 1924 an increased number of field studies were made by the Institute, particularly in industrial hygiene, and valuable data were secured for the preparation of suitable regulations for dangerous trades. A detailed sanitary survey of a suburban district of São Paulo was undertaken to learn the extent of water-borne diseases, an investigation conducted of the chemical composition and food value of several kinds of fish; and experiments made with certain Brazilian essences to determine their value as vermicides. The experimental post of the Department of General Prophylaxis of the São Paulo public health department, which is located at the Institute, has been transformed into an active health center with a daily attendance of approximately 150 persons; life extension work has been instituted and free physical examinations are conducted daily. At the dispensary

more than 13,000 examinations were made for parasitic infections and 8,900 treatments administered; smallpox and typhoid vaccinations were also performed.

#### Prague

The first four buildings of the State Hygienic Institute at Prague, towards the buildings and equipment of which the Board in 1921 pledged 27,000,000 crowns, have now been completed and considerable progress has been made on the additional structures. A farm for the use of the serum institute has been purchased, the existing building altered and improved, and antitoxin production started on a small scale. The formal opening of the Institute is expected to take place some time in 1925, after the various departments which are now operating in temporary quarters have been brought together in its new home. Satisfactory rules and regulations, authorized by the law creating the Institute, have been adopted by the Ministry of Health.

#### Poland

The School of Hygiene at Warsaw, Poland, is one of several departments of the State Institute of Hygiene. Excellent progress has been made in the construction of the building. It is expected that the building will be com-

pleted and the school opened in the fall of 1925. Government has made liberal appropriations for construction and maintenance.

Two departments began to function during 1924, the Division of Vital Statistics and Epidemiology and the Division of Biological Chemistry. Special short courses of six weeks' duration have been pursued by two groups of thirty sanitary inspectors each and by one group of nineteen physicians, all district health officers. All health officers at present employed in Poland will take this course.

Dormitory accommodations for the students are situated about twelve minutes' walk from the School. Nearby are located the recently completed Government disinfection station and the sewage experiment station which will afford facilities for instruction; also the proposed health center for the Mokotow District of Warsaw, to be utilized as a field teaching district for students of the School.

Many Polish doctors who have studied abroad under fellowships granted by the Board have now returned and are filling important positions in the central office and in the "county" organizations.

#### London

The Board agreed in 1922 to provide \$2,000,-000 toward the land, building, and equipment for

a school of hygiene and public health in London. Later the London School of Tropical Medicine was incorporated in the new institution which is to be known as the London School of Hygiene and Tropical Medicine. Substantial progress has been made during the past year in the organization of the School. The charter of Incorporation was approved by the King in April, and letters patent under the Great Seal have been granted. The court of governors of the School has been duly constituted; the board of management has been appointed and has replaced the transitional executive committee. These bodies are actively functioning. Although it will be some time before the new building will be available, the courses heretofore given in the London School of Tropical Medicine have been continued and somewhat amplified.

During 1924 the Board continued its policy of inviting leading health authorities in foreign countries to study public health activities in the United States and elsewhere. Thirteen representatives from eight foreign countries participated in these opportunities.

### Publications

During the year 1924 staff members and others directly associated with projects in which the Board participated made the following contribu-

tions to public health literature, most of them in the form of articles published in medical journals that are widely circulated among persons interested in medical and public health topics:

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- Same, in Portuguese, with title, Dados sobre o Aedes Calopus ou estegomia fasciata. *Boletim Especial da Repartição Sanitária Pan-Americana*, July, 1924, pp. 18-22.
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- LACY, G. R. Report of committee on sanitary survey of truck gardens in Manila. *Journal of Philippine Islands Medical Association*, November, 1924, v. 4, pp. 408-416.
- LACY, G. R. Some of the difficulties encountered in differentiating lactose non-fermenting gram negative bacilli. *Journal of the Philippine Islands Medical Association*, July, 1924, v. 4, pp. 264-267.
- LANZA, A. J. The place of industrial hygiene in the general scheme of disease prevention. *Medical Journal of Australia*, (Suppl.), May 10, 1924, pp. 304-306.
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## **APPENDIX**



# I

## MALARIA INVESTIGATIONS

Experience in various parts of the world has shown that each malarial region presents its own specific problems, which are determined by climatic, topographical, and economic conditions and by the prevailing species of mosquitoes and their habits. If the best results are to be obtained from antimalaria measures in a country, therefore, control methods must be derived from local studies and observations rather than from experiences in other lands where conditions may be quite different.

With a view to defining the particular malaria problems existing in the southern United States, a station for research studies and field investigations has been established in Leesburg, Lee County, Georgia. Among the questions considered there during 1924 were the following: (1) the relative importance of the three species of anopheline mosquitoes, *A. quadrimaculatus*, *A. crucians*, and *A. punctipennis* in transmitting malaria in the Southern States; (2) the preferred breeding places of these mosquitoes; (3) the specific anatomical characters of the larvae of the three species; (4) the effect of temperature on the habits of the larvae; (5) flight and resting habits of the adult mosquito; (6) the importance of the spleen index in malaria diagnosis; (7) the effect of the standard quinine treatment in reducing malaria infection and spleen enlargement.

### RÔLE OF THE ANOPHELINES IN DISSEMINATING MALARIA

From time to time during 1923 and 1924 observations were made of the relation between malaria incidence, as determined by spleen, blood, and history indices, and the

density of the three species of anopheline mosquitoes. In the warmer months, which were marked by a rise in malaria cases, *A. quadrimaculatus* was found in large numbers. *A. crucians* and *A. punctipennis* on the other hand were prevalent during the cooler months when the incidence and intensity of malaria were at their lowest points, and decreased in number with the onset of hot weather.

**Infectivity Rates of the Three Anopheline Species.** To determine the extent to which malaria is carried by each of the three anopheline species of Georgia, a series of 2,179 mosquitoes collected from various localities during the warm months were dissected and examined. At the time of the collections the spleen and blood indices of the children in the neighborhood were taken. The mosquitoes examined were those obtained in the vicinity of habitations where the spleen rates ranged from 8 to 100 per cent. For the most part the specimens were gathered at a time when these rates were 40 per cent or over.

Of 1,531 specimens of *A. quadrimaculatus* dissected, 3.9 per cent were positive to malaria, but of 571 *A. crucians* and 77 *A. punctipennis*, none were found infected. The *A. crucians* examined were frequently secured at the same spot and at the same time as the infected *quadrimaculatus*, a circumstance which strengthens the negative evidence against *A. crucians* as a malaria carrier. The evidence against *A. punctipennis* is incomplete owing to the scarcity of adults of this species during the malaria season, and further dissections will be necessary before definite conclusions can be reached as to its importance as a vector. All information obtained up to the present time, however, points to *A. quadrimaculatus* as the chief disseminator of malaria in Georgia, and for all practical purposes it may be considered the sole carrier of the disease in that state.

**Preferential Breeding Places.** It should not be assumed that the habits of the various species of mosquito are the same in all regions. In India, wells serve as the breeding places of malaria-carrying *Anopheles*, but it does not fol-

low that in the United States attempt should be made to control Anopheles breeding in wells, for in this country the mosquito usually encountered in these deposits is the inoffensive *A. punctipennis*. In borrow pits, against which warning is frequently given, little or no Anopheles was found breeding in southern Georgia, even in localities in the heart of the malarial district. A study of the limnology of these pits showed that in the newer ones plankton is scanty; and they will not, therefore support a rich anopheline fauna. Older pits in the vicinity of habitations sometimes become temporarily implanted with *A. quadrimaculatus* when the customary breeding places of this mosquito have dried out. While all borrow pits therefore possess potentialities inimical to the public health, experience does not incriminate them unreservedly as a malaria menace.

Surveys in Georgia showed that *A. quadrimaculatus* and *A. crucians* select as breeding places still waters abundantly stocked with plankton, but *A. punctipennis* breeds by preference in and near running water or in wells, where plankton is relatively scanty. These conditions were found to be true not only in that immediate locality but throughout the entire southeastern section of the United States. The hill-stream mosquito of the Piedmont Plateau, the Appalachian Mountains, and the Cumberland Plateau is *A. punctipennis*, while *A. quadrimaculatus*, the proved carrier of malaria, is found in the flat

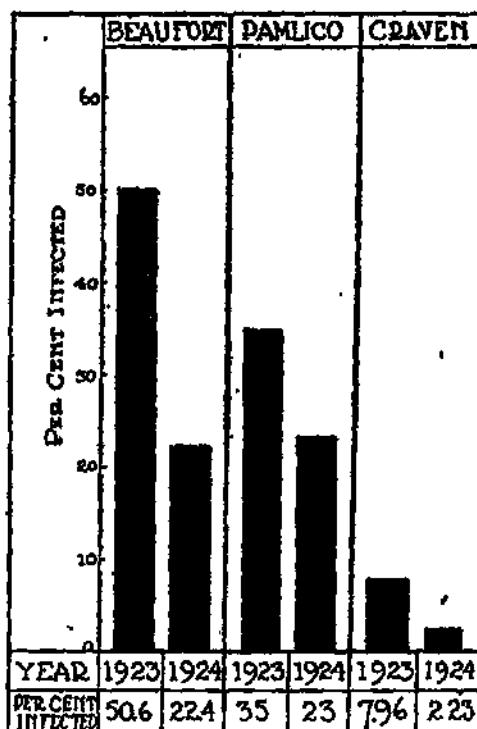


Fig. 39.—Reduction of the number of cases of malaria in three counties of North Carolina after one year of control work. Figures are based on blood examinations

lands or in the hill country in swamps or lime sinks, or wherever water has been impounded in reservoirs, mill-ponds, or fish-ponds, or in the pools which form in stream-beds in the late summer. With the re-establishment of the current in a stream *A. quadrimaculatus* begin to disappear.

While it is true that the three anopheline species are sometimes discovered breeding in the same collection of water, decided tendencies in the selection of breeding places very apparently exist.

**Relation between Topography and Malaria Incidence.** A definite correlation has been found to exist in Georgia between the topography of the country, the malaria incidence, and the prevalence of anopheline species. Observations made up to the present tend to show that the state may be divided with reference to certain topographical and geological formations into about seven regions, each of which has a characteristic surface formation and yields a characteristic history in regard to the severity of malaria. Regions 1 and 3, the Cumberland Plateau and the Appalachian Mountains, have numerous waterfalls and rapid streams, types of water in which *A. punctipennis* breeds but where *A. quadrimaculatus* is not usually encountered. No fatal cases of malaria are recorded from these sections.

In region No. 2, the Appalachian valley, *A. punctipennis* is the predominating Anopheles species, but *A. quadrimaculatus* finds a few suitable breeding places. A small number of deaths from malaria are recorded from this region annually.

Region No. 4, the Piedmont Plateau, is a rolling country throughout, with a characteristic red clay eroded by streams, many of which have falls along their course. *A. punctipennis* is the predominant species except where water has been brought to rest and becomes favorable for the breeding of *A. quadrimaculatus*. There is a small amount of fatal malaria reported from this section.

Region No. 6, the piney flat woods region, is relatively free from severe malaria. Here *A. crucians* is the predominating species of mosquito, but *A. quadrimaculatus*

occurs in places. *A. punctipennis* is apparently absent.

Regions No. 5 and 7 represent a peculiar limestone formation in which sinks, ponds, and swamps occur in large numbers. The sinks are formed by the corrosion or solution of the subterranean limestone strata. The falling-in of the superincumbent layers of soil has formed basin- and bowl-like depressions, often containing standing water in which *A. quadrimaculatus* will breed if habitations or animals are within reach. Although *A. punctipennis* and *A. crucians* may be found breeding in various waters in this region *A. quadrimaculatus* exists in very much larger numbers than in any other area of Georgia so far as investigations have disclosed, and this is preeminently the malarial region of the state.

**Effect of Temperature on Habits of Larvae.** Observations of the effect of cold on mosquitoes in all stages of development were made both in the laboratory under artificial conditions and in the field. It was found that when the temperature of the water is reduced to a point below 55° F. larvae leave the surface for the bottom and remain there for long periods. They rise to the top, however, when the temperature becomes higher.

During the winter months when the temperature of the water ranges from 39° to 50°, larvae spend most of their time on the bottom in a quiescent state. If they are disturbed they may return momentarily to the surface, but they usually drop quickly back to the bottom and remain there. It is evident, therefore, that when search is being made for breeding places during the cooler months, the bottom of the water must be well disturbed so as to bring the larvae to the surface, and inspection must be made rapidly.

**Identification of Species of Anopheles by the Anatomical Characters of the Larvae.** In regions such as the Southern States where not all species of Anopheles are malaria transmitters it is necessary in organizing malaria control measures, to determine the particular species of mosquito breeding in each body of water within the territory to be worked in order that attention may be concentrated on the

haunts of the malaria carriers. It is of great advantage in such an undertaking to be able to make immediate diagnosis of the various species of *Anopheles* from the larvae without the delay usually attendant upon the breeding out of adult mosquitoes.

In a study of a total of 1,000 larvae of the three anopheline species common in the Southern States, Dr. Paul F. Russell during the past year determined a number of the specific anatomical characters of the larvae of each species. He has formulated the following key which makes possible the positive differentiation of the three species in the fourth-stage larvae.

Distinguishing characteristics of the larvae of *A. crucians*, *A. punctipennis*, and *A. quadrimaculatus*:

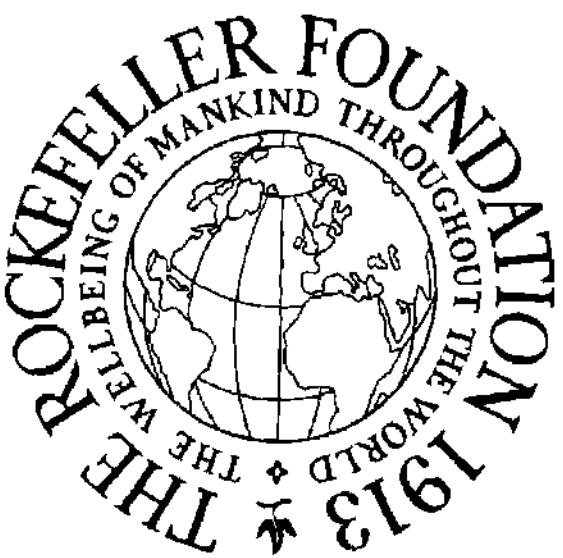
*A. crucians*.—Abdominal segments 4 and 5 have two dorsal tufted hairs directly anterior to the palmate hair, one in front of the other.

*A. punctipennis*.—Abdominal segments 4 and 5 have but one dorsal hair directly anterior to the palmate hair, and the anterior internal clypeal hairs are close together at the base.

*A. quadrimaculatus*.—Abdominal segments 4 and 5 have but one dorsal hair directly anterior to the palmate hair, and anterior internal clypeal hairs are well separated at the base.

Larvae may be examined in a drop of water with or without a cover glass, using a 16 mm. objective and a 10x ocular on a compound microscope.

**Resting and Flight Habits of Anopheles Mosquitoes.** Illustrative of the tendency to borrow observations and generalizations from abroad and to apply them erroneously to conditions in the United States is the common belief that the malaria mosquito of the Southern States can be recognized at a glance by its attitude when at rest on a wall. It is thought that this mosquito always rests with its body projecting outward from the wall at an angle of 45°, while the Culex rests in a position more nearly parallel with the wall. The fact is, however, that *A. quadrimaculatus*, the malaria transmitter of the Southern States, has a Culex-like attitude when at rest and does not project from the wall in the attitude assumed by *A. crucians* and *A. punctipennis*.



Photograph Excised Here

Fig. 40.—A folding field microscope, devised by Dr. S. T. Darling, for the identification of mosquito larvae in the field



Photograph Excised Here



Photograph Excised Here

Fig. 41.—Identifying the larvae of Anopheles mosquitoes by means of a portable microscope

The dispersal of *A. quadrimaculatus* from a large breeding area in a sparsely populated community was studied for the purpose of ascertaining the approximate limits within which malaria control would be required. Most of the mosquitoes were found within three fourths of a mile of the breeding place; a very few had traveled as far as one and one half to one and three fourths miles. None were seen beyond this.

From observations of the relative number of male and female mosquitoes taken at various distances from breeding haunts, it appears that the proportion of males to females diminishes directly with the distance from these centers. In general, the male mosquitoes are found in greatest numbers close to the breeding places, near which locations mating probably occurs. This knowledge has proved helpful in searching out breeding spots.

### SPLEEN EXAMINATIONS

Analysis of the results of spleen and blood examinations made during 1924 confirmed the findings of the previous year as to the correlation between splenic enlargement and the intensity of malaria infection as measured by the presence of plasmodia in the peripheral blood. When malaria histories were taken and compared with the spleen and blood indices, it was found that the spleen rate corresponded more closely with the history rate than did the blood index.

Malaria infection is a condition in which, on the whole, the deeper viscera are involved to a greater extent than the peripheral blood. During infection mature and segmenting forms of the plasmodium often retire from the peripheral blood to these organs. After the administration of quinine the peripheral blood is more thoroughly cleared of parasites than are the internal organs, particularly the spleen and bone marrow. The splenic enlargement which has occurred during malaria infection and in relapse persists after parasites have become sparse or have disappeared from the peripheral blood. The examination

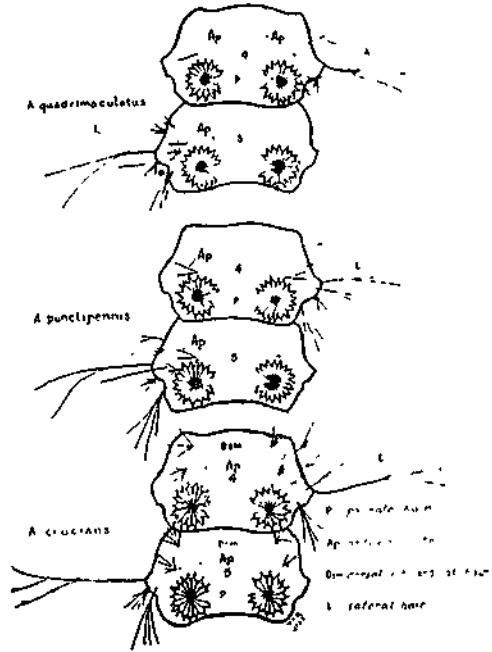


Fig. 42.—Fourth and fifth abdominal segments of mature larvae of the three common anopheline mosquitoes of the Southern United States

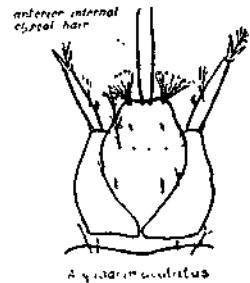


Fig. 43.—Dorsum of head and anterior thorax of mature larvae of the three common anopheline mosquitoes of the Southern United States

of the spleen, therefore, should give more reliable information as to the malaria incidence of a community than that furnished by the examination of the peripheral blood.

**Effect of Standard Quinine Treatment on Spleen Index.** An experiment was undertaken early in the spring to ascertain to what extent malaria infection and spleen enlargement are reduced by the standard quinine treatment. Seventy-five severely infected negro children with enlarged spleens were included in the experiment; fifty of these received the standard quinine treatment for a period of ten weeks, while twenty-five were used as untreated controls. The controls were brothers and sisters of the treated children, living in the same houses and under the same economic and environmental conditions. The members of both groups were carefully examined at monthly intervals for about eight months.

It was found that the peripheral blood of the treated children remained free of malaria plasmodia so long as the treatment was continued. These children also showed a progressive reduction in the size of the spleen in each type of enlargement during treatment. In the more enlarged spleens the reduction was far more marked than in those that were merely palpable on inspection.

Among the untreated controls there was a slight increase in the size of the spleen during this period. After the discontinuance of treatment there was noted a gradual increase in the spleen mass in both the treated and untreated groups. This was thought to be due to relapses or to new infections.

It was observed that hard work in the fields, plowing in the hot sun, or harvesting heavy crops, would provoke relapses in treated cases even when plasmodia had been driven from the peripheral blood.

## II

### HOOKWORM STUDIES IN ALABAMA

At Andalusia, in Covington County, Alabama, the Board maintains a field unit for research studies in hookworm infection. The station was established primarily for the purpose of working out a practicable method of controlling hookworm disease in the southern United States, and all the studies undertaken have had this end in view. It has been hoped, however, that the investigations might establish certain broad principles in regard to the epidemiology of the disease which would be of general application. During the year 1924 the unit completed five investigations: (1) a series of observations of the viability of infective-stage hookworm larvae in the soil, made for the purpose of ascertaining the seasons of the year at which hookworm infection may be acquired in the Southern States; (2) an inquiry into the relationship between the type of soil in a locality and the intensity of the hookworm infection obtaining there; (3) a study to determine the reliability of the Stoll ova count as a means of discovering the intensity of infection; (4) an investigation of the influence of place of residence, age, sex, and color on intensity of infection; and (5) studies to determine the effect of varying degrees of hookworm intensity on the growth and development of children of school age.

#### VIABILITY OF LARVAE IN THE SOIL

To ascertain the duration of the life of the infective-stage *Necator* larvae in the soil of Alabama, feces containing ova of these worms were planted under natural conditions in the yard of the research laboratory and samples of the soil were examined for larvae, with the aid of the Baermann apparatus, at regular intervals during the year. Soil specimens were also taken from the environs of a

home where there were several persons heavily infected with hookworms. Records were kept of rainfall and daily maximum and minimum temperatures.

The experiments showed that infective-stage larvae are not to be found in the soil of southern Alabama between late October and early May. A minimum night temperature of about 40° F. is sufficiently low to check their development. Since Covington County is as far south as any portion of the United States except the Florida peninsula, it can be safely stated that, as a general rule, hookworm infection may be acquired in the United States only during the summer months.

All evidence of the feces deposited in the laboratory yard disappeared within a few days, but in the summer the soil remained infested with larvae for several weeks.

**Lateral Migration of Larvae.** It was observed that the larvae did not migrate laterally to any extent. They were invariably found within a few inches of the spot where the feces had been placed. This would indicate that any method of collective disposal of human feces, however crude, as for example the open-back latrine, affords considerable protection against hookworm infection. The infective material from an open-back latrine may be scattered some distance by heavy washing rains or by animals, and such structures are not to be recommended; but it is not probable that they are an important source of infection. The chief cause of soil infestation is the almost universal rural custom of using the shady protected spots in the immediate environs of the house as places of defecation.

#### EFFECT OF SOIL ON INTENSITY OF INFECTION

Sections of Alabama where such factors as climate, occupation, sanitary habits, and economic conditions are similar, frequently show a wide variance in intensity of hookworm infection. To discover whether this is due, as was believed, to differences in type of soil, samples of earth were procured from the eight geological strata of the

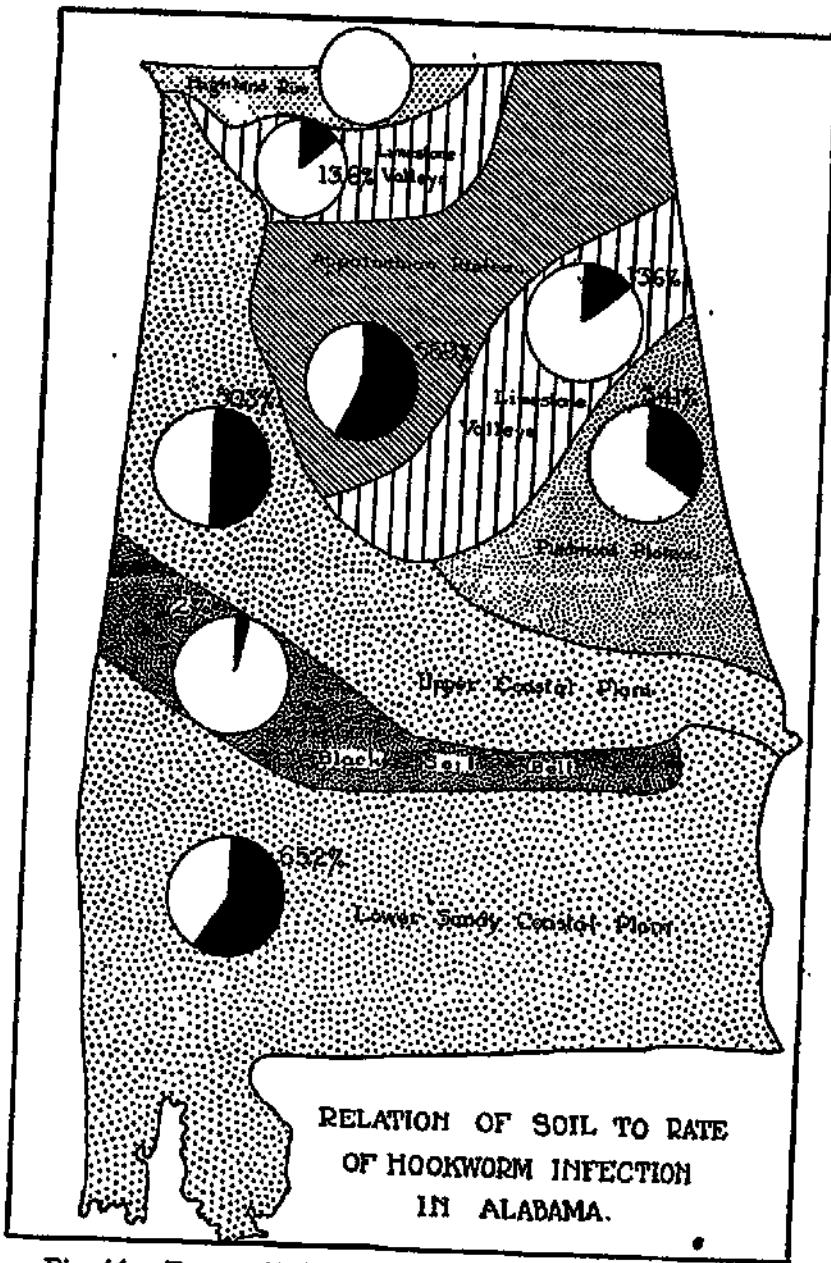


Fig. 44.—Rates of infection in the seven main soil provinces of Alabama as disclosed by detailed hookworm surveys. The character of the soil plays a large part in determining the potential intensity of hookworm disease in any area

state and observations were made of the development of hookworm larvae in the various samples. In the clay soils the larvae developed to the infective stage with great difficulty, but the sandy soils were found to be most favorable to their growth.

Following these preliminary observations hookworm infection surveys were made in various parts of the state; areas representative of each of the eight types of soil were visited. Analysis of the survey findings is not yet completed; it may be said, however, that in general they confirm the preliminary laboratory observations. In areas where the type of soil is unfavorable to larvae development the incidence of hookworm infection is low. In areas where the soil is somewhat more conducive to their development the percentage of infection may be high but the intensity of individual infection is low. Only in southern Alabama, in the regions of fine sandy soils such as gave the richest laboratory cultures of infective-stage larvae, was there found both a high percentage and a heavy intensity of infection. The hookworm distribution follows the type of soil very closely, and there is little overlapping. For example, at the dividing line between the sandy coastal plain and the black soil belt, one community in the sandy belt was found with every child infected, most of them heavily; whereas in a similar community in the black soil belt, only two or three miles away, not a single child was infected. The accompanying map of the state of Alabama presents at a glance the whole hookworm problem of the state (see Fig. 44).

The type of soil is therefore a factor of great importance in determining the intensity of hookworm infection in a community. An experienced observer should be able by a glance at the soil of the area, providing he knows the mean temperature and rainfall of the region, to determine whether there is, or ever can be, a real hookworm problem there.

#### EFFICIENCY OF THE STOLL OVA COUNT

The Stoll dilution egg count has been widely used as a method of determining the intensity of hookworm infection, but its reliability has been frequently questioned. Experiments conducted at the Andalusia laboratory showed the method to be a satisfactory measure of the

degree of infection obtaining in a community, but it was found that unless counts were made on a series of samples from each patient it did not prove a satisfactory index of the exact number of worms harbored by an individual. It is the opinion of Smillie, however, that the exact worm index of a person is of no great importance; the essential thing is to know whether his infection is light, moderate, or heavy. This information the Stoll method supplies.

The egg count was used in the hookworm studies made on school children of Alabama during the year, and the results were substantiated by the worm counts. Repeated Stoll counts on untreated persons also checked very closely.

#### FACTORS INFLUENCING INTENSITY OF INFECTION

Studies to determine the influence of place of residence, age, sex, and color on the degree of individual hookworm infection were made on school children of various communities of Covington County. On a basis of egg counts the children to be included in the tests were classified in accordance with the intensity of their infection in the following six groups:

1. Negative (No ova detected in stool examinations by salt-flotation and Stoll methods)
2. Very light infection (1 to 25 worms as estimated by ova count)
3. Light infection (26 to 100 worms)
4. Moderate infection (101 to 500 worms)
5. Heavy infection (501 to 1,000 worms).
6. Very heavy infection (1,001 to 3,000 worms)

In some studies only four groups were used, groups 2 and 3 being combined under "light infection" and groups 5 and 6 under "heavy infection."

**Comparative Infection Rates of Urban and Rural Children.** Examination of a total of 664 urban and rural white school children between the ages of six and sixteen years showed the town children either negative to hookworm

infection or infected only lightly. A large proportion of the country children, however, were heavily infected.

Some of the heavily infected urban children had moved into town from the country districts within two years of the time of their examination. Had these been excluded in reckoning the infection percentage of the town group the difference between the rate for these children and that for rural children would have been even more striking.

The urban communities of Covington County are not uniformly well sanitized throughout. The residences in the central section of each town as a rule have sewerage connections, but more than half the homes of most communities have only open-back latrines. Where people live in close proximity, however, decency prevents promiscuous defecation, and village children have little opportunity to come into contact with larva-infested soil. Since town children as well as rural children go barefoot during the summer months, shoe wearing is not a factor in preventing infection among the former.

**Age in Relation to Hookworm Infection.** A study of the incidence and intensity of hookworm infection among 1,158 white school children between the ages of 6 and 18 years, from all parts of the state of Alabama, showed the following infection percentages: 38.2 for the group 6 to 7 years of age, 50.3 for the group 8 to 9 years, 57.1 for the group 10 to 11 years, 62.2 for the group 12 to 13 years, 64.7 for the group 14 to 15 years, and 65.2 for the group 16 to 18 years. If every case of hookworm infection is to be considered as a case of hookworm disease, the most serious condition obtained, then, among persons between sixteen and eighteen years of age. But the percentage of infection does not give as true a conception of conditions as does the intensity of infection. A study of the latter shows that the maximum degree of infection was reached in the fourteen- to fifteen-year age period, and that there was a rapid decline in intensity in the sixteen- to eighteen-year period (see table, page 199). Other groups examined, for example rural white children of Covington County, negro children of the same area, and negro children throughout Alabama,

showed similar intensity curves in relation to age, that is, a low intensity in the early years which increased gradually

*Infection rates showing relation between intensity of hookworm infection and age of 1,158 white children in Alabama. Both urban and rural groups showed a gradual increase of infection until about the fourteenth year, and then a rapid decline*

AGE GROUP	6-7	8-9	10-11	12-13	14-15	16-17-18	ALL AGES
<i>Infection Group</i>							
Very heavy .....	.8	1.0	3.2	2.3	5.0	—	2.0
Heavy.....	1.6	1.7	2.9	4.2	6.4	5.0	3.2
Moderate.....	11.5	17.6	18.2	22.1	21.6	14.0	18.5
Light.....	9.9	15.2	19.7	16.1	13.7	18.0	16.0
Very light.....	14.4	14.8	13.1	17.5	18.0	28.2	15.9
Negative.....	61.8	49.5	42.7	37.4	35.2	34.6	44.3

up to the ages of fourteen or fifteen years and declined rapidly after that period. Children under four or five years of age were seldom found to have a sufficiently heavy infection to produce true hookworm disease, and, with one or two exceptions, no adults even in the heavily infested rural districts showed an infection greater than 100 worms. The decrease in intensity of infection throughout the state after the fifteenth year is due to the fact that all white children begin to wear shoes at about the age of fourteen while the negroes do so a little later.

Data furnished by the Alabama studies as to the age periods of greatest hookworm severity substantiate the general law suggested by Smillie's observations in Brazil, namely, that hookworm infection is slowly acquired and slowly lost. The findings also show that so simple a precaution as the wearing of shoes, even though these are rough and coarse, may be the determining factor between severe hookworm disease or a simple light infection even in an area where there is heavy soil pollution.

**Sex Not a Factor in Severity of Infection.** Little or no difference was observed in the intensity of infection of boys and girls of Alabama belonging to the same race or the

same occupational group. This was to be expected inasmuch as the sanitary habits and customs of both sexes are the same up to the age of puberty. In Brazil the sexes show marked difference in intensity of infection in adult life. This difference does not occur in the United States because both boys and girls begin to wear shoes at about the same age, and both show a low hookworm index after reaching maturity.

**Relation of Color to Intensity of Infection.** The examination of 887 white, and 375 negro, school children in rural districts of six counties of Alabama showed clearly that when the two races are living under almost identical economic, sanitary, and climatic conditions and are engaged in similar occupations, the whites may have a heavy hookworm infection while the negroes are but lightly infected. Hardly a negro among those examined was found with an infection sufficiently severe to produce clinical symptoms (see following table).

*Comparative intensity of hookworm infection in white and negro rural school children of south Alabama between the ages of six and sixteen years*

<i>Infection Group</i>	<i>Per cent of total number examined</i>	
	<i>White</i>	<i>Negro</i>
Negative.....	3.6	41.9
Very light (1 to 25 worms)....	15.3	29.9
Light (26 to 100 worms)...	24.5	19.8
Moderate (101 to 500 worms)	42.5	6.6
Heavy (501 to 1,000 worms)	7.8	1.4
Very heavy (1,001 to 3,000 worms).....	6.3	0.4

No final explanation of this racial difference in susceptibility to infection has been reached. Smillie believes that it is due to a physiological difference in the two races, namely, the greater thickness of the epidermis of the negro; Darling thought that it might be due to slightly different sanitary customs, Payne, that it might be the result of racial

immunity. The health report of the Colombian Government for the year 1923 shows a higher hookworm infection rate among the negroes of that country than among the whites, but this is probably attributable to the different social and economic status of the two races and their different living conditions.

**The Problem of the Lightly Infected Case.** From the evidence of these various studies it was concluded that in the southern United States severe hookworm infestation exists only in rural white children of school age. Hookworm infection, however, is widely distributed among all ages and all social, economic, and racial groups. The next point to be determined was whether a light hookworm infection constitutes a real menace to the health of the individual or whether lightly infected cases may be regarded merely as carriers not requiring anthelmintic treatment. To this end certain physical tests were made on groups of school children having hookworm infections of various degrees of intensity.

#### EFFECT OF HOOKWORM INFECTION ON THE CHILDREN

The measurements used to gauge the physical effects of hookworm infection on the growing child were those of height, stem height, weight, hemoglobin, and vital capacity. Dr. Taliaferro Clark's standard tables of normal white children of the Southern States having excellent nutrition were used as the basis of comparison. The children selected for the tests were of school age and represented both town and rural districts of southern Alabama. Ova counts were made to determine the intensity of the infection of these children, and in accordance with the results of these counts they were divided into six groups, as follows: negative, very lightly infected, lightly infected, moderately infected, heavily infected, and very heavily infected. Height, stem height, weight, hemoglobin, and vital capacity curves were plotted for the various groups

and these curves were compared with the Clark standard curve.

**Weight in Relation to Degree of Infection.** The weights of children negative to hookworm infection were found to correspond almost exactly with the standard weights. When the weights of lightly infected children (1 to 100 hookworms) were plotted against the standard the two curves were again almost identical, indicating that the presence of a small number of hookworms has no effect upon normal increase in weight. When the weights of moderately infected (101 to 500 hookworms) and heavily infected (500 to 3,000 hookworms) children were compared with the standard, marked differences were noted. Children harboring between 100 and 500 worms were somewhat heavier than normal children up to the age of nine. After that period a slow loss of ground was observed, and at the age of fourteen or fifteen these children weighed ten pounds less than normal children. The heavily infected groups averaged fifteen pounds under weight.

**Effect of Infection on Growth in Height.** The standing height curve for children negative to hookworm disease coincided closely with the Clark standard standing height curve for southern children. The curve for lightly infected children also corresponded closely with the standard, showing that an infection of from 1 to 100 hookworms has no measurable effect on normal growth in height. The curves for moderately and heavily infected children showed a definite deviation from the standard, particularly in the older age group.

When the stem heights of the children of the various groups were compared with the Clark stem-height curve it was found that, as in the case of weight and of total height, the moderately and heavily infected groups were below standard, especially in the older age periods, but lightly infected children showed no variation from the normal. In the course of these measurements the discovery was made that negro children have a shorter trunk length than white children though the total height curves of the two races correspond closely.

**Vital Capacity Not Effected by Hookworm Infection.** To discover whether the vital capacity of the growing child is impaired by hookworm infection the expired air of children in the various intensity groups was measured by the spirometer and the results tested by Stewart's findings for normal white children. It was found that even the heavily infected groups did not show a sufficient deviation from the normal to warrant using the vital capacity test in determining the effects of hookworm infection.

One very interesting point was brought out by the study, however, namely, that negro children have a markedly lower vital capacity than white children. The difference was striking and constant throughout all age groups. This phenomenon may be the result of the shorter trunk length of the negro and may be a factor in the lower resistance of the race to respiratory diseases.

**Influence of Infection on Hemoglobin.** Hemoglobin tests with the Dare apparatus, frequently checked by the Newcomber method, were made on children of the various groups. Non-infected children showed an index of 73.3 as compared with indices of 75.2 for lightly infected cases and 73.4 for moderately infected cases. For the heavily and very heavily infected groups the indices were 66.8 and 57.7 respectively. The low hemoglobin average of the non-infected group was probably due to the fact that most of the negative cases were children between six and seven years of age. Negro children, for some undetermined cause, had a slightly higher hemoglobin average than white children. Non-infected urban children had a slightly higher index than non-infected rural children, owing, in all probability, to the better economic status and better nutrition of the former.

#### HOOKWORM INFECTION VERSUS HOOKWORM DISEASE

In the studies made in Alabama during 1924 it was possible, as has been seen, to estimate with some degree of

accuracy the actual harm caused by severe hookworm infestation, i.e., the presence of 500 or more hookworms, but with the measurements employed, no decrease in height, weight, vital capacity, or hemoglobin could be determined in children harboring less than 100 worms.

The common clinical picture of a case of hookworm infection as it is usually presented is that of an under-nourished, undersized child, listless, apathetic, dull, with severe anemia, dry skin, and scanty hair. This picture represents true hookworm disease and is found when there is an infection of 500 hookworms or more. It was not seen in the lightly infected children of Alabama. These children were as bright, active, alert, and well nourished as their fellows who harbored no hookworms at all. Their hemoglobin was not reduced below normal, and in so far as it was possible to measure their physical condition they were normal in all respects. It is possible that other more delicate and more exact measurements of physiological condition may be introduced which will show that even as light an infection as fifty hookworms may do some slight harm to the growing child. It seems fair to assume, however, that an average infection of thirty-five to fifty worms has no measurable effect upon the normal growth and development of the child. To be on the conservative side, the maximum number of worms that may be harbored without ill effect may be considered to be twenty-five. Any child harboring twenty-five worms or less may be regarded as an economic cure. He may be counted a hookworm carrier but not a case of hookworm disease.

**Treatment to a Cure Unnecessary.** It is sometimes very difficult and costly to effect a complete cure of hookworm infection by treatment. Often five or six treatments are required to eliminate a half dozen refractory worms. But it has been shown that a single standard treatment will remove 90 to 95 per cent of all hookworms harbored, and two treatments properly given will bring even a heavily infected case to the status of economic cure. In public health work treatment should be used solely to reduce infection to a point where there is no more hookworm disease.

It is not practicable to employ it to any other end. The elimination of carriers can be accomplished only by sanitation and education.

If these general principles in regard to hookworm infection are accepted the plan employed by the public health administrator in conducting control measures would be as follows: He should first inform himself of the mean yearly temperature and rainfall of the area to be worked. He should then study the types of soil in the area to discover whether hookworm larvae can readily develop in them to the infective stage. These preliminary observations, together with a brief study of the sanitary habits of the inhabitants will enable him to estimate with considerable accuracy the economic importance of hookworm infection to the community. His next step is the microscopic examination of about 10 per cent of the total population to determine the average intensity of the infection obtaining. Examination should be made by the salt-flotation method and Stoll egg counts should be done on positive cases.

If the average hookworm index of the persons examined is less than 100 no treatment need be administered in the community, since no true hookworm disease exists there, and sanitation and education will slowly and gradually eliminate the light infections. If the average worm content is found to be over 100, one standard treatment may be administered to all moderately infected persons and two treatments to those having heavy infections. This will reduce the infection of the community to the point of economic cure. Only sanitation and education can permanently hold it at this point. But reinfection is slowly acquired, and even though no sanitary measures are instituted, some time will elapse before it becomes necessary to give another course of treatments. The length of this interval will depend on the number of factors favorable to the development of hookworm larvae in the soil of the area and on the status of sanitation. The Stoll ova count may be employed from time to time to determine the status of the infection in the community.

### III

#### THE DILUTION EGG COUNT

In previous Annual Reports<sup>1</sup> reference has been made to the development by Stoll of a dilution egg-counting technique for determining the intensity of hookworm infestation in a community. This technique was offered as a practical substitute for the more laborious worm-counting method designed for the same purpose.

During 1923 and 1924 the Stoll method, in substantially the form first announced by its author, had rather wide use. Besides a somewhat extensive series of investigations made with it by Cort, Grant, Stoll, et al., in China, it has been employed in the southern United States, in Porto Rico, Brazil, Australia, Paraguay, Ceylon, and other places. The Alabama State Board of Health has adopted it as the official method of stool examination. With the formal publication of results from these and other sources there will gradually be defined the scope of its possibilities. In the meantime it continues its promise of being a most valuable asset in analyzing the degree of hookworm infection in a community and the rate of its reduction, and in testing the efficacy of anthelmintics under field conditions.

**Egg Content of Formed Stool the Basis of Comparison.** Stoll<sup>2</sup> has found in intensive studies, continued for fifteen and for forty days, on individuals harboring hookworms,

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<sup>1</sup> Rockefeller Foundation. *International Health Board. Annual Report*, 1922, p. 104-108; 1923, p. 110.

<sup>2</sup> Stoll, N. R. The significance of egg-count data in *Necator americanus* infestations. *American Journal of Hygiene*, Baltimore, September, 1924, v. 4, 446-500.

that there is a relatively steady output of eggs from a given host which is disturbed in amount chiefly by the fluctuating size and consistency of stools. He has observed further that a relationship of approximately 1:2:4 exists in general between the weighed amounts of formed, mushy (un-formed), and liquid (diarrheic) feces passed per day. The natural dilution of ova occurring in mushy and in liquid fecal specimens can be largely, and for practical purposes, wholly, compensated, therefore, by multiplying by two the number of eggs counted in specimens of the former type and multiplying by four those counted in liquid specimens.

**The Egg Count As an Index of Intensity of Infection.** In a study of a group of heavily infected cases in Porto Rico, Stoll<sup>3</sup> found that the number of hookworm ova passed by an individual, per day or per gram of feces, reflected the degree of his infection with adult worms. Davis,<sup>4</sup> in Brazil, working with lightly infected cases, had results differing from Stoll's. Davis, however, computed the ova for a period of only twenty-four hours before treatment. Stoll points out that so limited a count permits a large percentage of error and holds that future correlations must be based on the study of the egg output of an individual over a period of at least three consecutive days preceding treatment.

**Purpose of Count Not Diagnostic.** Some confusion seems to have resulted from the assumption that the dilution egg-counting technique is designed as a competitive diagnostic method for the demonstration of positive and negative cases. Cort, Stoll, and their co-workers do not regard this as its purpose. Their contention is that all positives are revealed by the method except a certain very

<sup>3</sup> Stoll, N. R. On the relation between the number of eggs found in human feces and the number of hookworms in the host. *American Journal of Hygiene*, Baltimore, March, 1923, v. 3, p. 156-179.

<sup>4</sup> Davis, N. C. Experience with the Stoll egg-counting method in an area lightly infested with hookworm. *American Journal of Hygiene*, Baltimore, May, 1924, v. 4, p. 226-236.

lightly infected group. Egg-count negatives thus may be held to include cases that are parasite-free and also some positive cases with a slight infection. The important consideration is that whether the number in this latter group is large or small, it is known to be composed of cases with very light hookworm burdens, probably unimportant clinically. Cort has emphasized this point in recent articles.<sup>5,6</sup>

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<sup>5</sup> Cort, W. W. Methods of measuring human infestation. *American Journal of Hygiene*, Baltimore, May, 1924, v. 4, p. 213-221.

<sup>6</sup> Cort, W. W. Investigations on the control of hookworm disease. XXXIV. General summary of results. *American Journal of Hygiene*, Baltimore, January, 1925, v. 5, p. 49-89.

## **STATISTICAL TABLES**

### **TABLE I**

### NOTES ON TABLE 1

1. Table 1 on the following pages presents a concise statistical summary—by the main geographical divisions of the work, by states and countries, and by years—of the persons examined and treated in the world-wide campaign for the relief and control of hookworm disease aided by the International Health Board. It shows that in the fifteen years from 1910 to 1924, inclusive, a total of 4,922,707 persons have been examined in thirty-nine<sup>1</sup> different states and countries, of whom 2,878,855, or 58.5 per cent, were found infected. A total of 4,150,969 persons were given at least one treatment; while 2,312,476, or 55.7 per cent, received two or more treatments.
2. Differences between figures which appear in this report and in the 1921 and earlier reports arise (1) from the fact that Table 1 must be prepared for publication each year before final statistical data are received from all areas, and (2) from the further fact that in areas where mass treatment has been followed in previous years the number of persons examined and found infected was estimated on the basis of the findings for those actually examined in preliminary surveys. In the following table the figures represent only those actually examined. It follows, therefore, that for some countries the number of persons treated is in excess of the number of those examined and found infected.
3. The figures in this table do not in all cases represent the exact numbers examined and treated in each country during the calendar year. The statistics show, rather, the total number of persons examined and treated in the areas in which the work was completed and for which final reports were made to the Board during each calendar year. In other words, some of the work reported in this table for each year was actually done in the preceding year but not reported until the campaign in the sub-area was definitely completed.
4. Two treatments of a standard remedy remove, on the average, from 88 to 95 per cent of the worms harbored, depending upon the drug used and the method of administration; and it is seldom that they leave more than ten worms in the intestine. Thus, though some persons may remain lightly infected after two treatments, this number is nevertheless

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<sup>1</sup> See footnote 3, page 224.

adequate to establish what may be termed a "practical" cure. One treatment, similarly, removes from 75 to 90 per cent of the worms.

5. Though the figures have been itemized by states and countries and by years, this has not been done primarily to invite comparison of the results for one state with those for another, or of one year's work with that of another. Too many variable factors affect the results for such comparisons to be entirely valid. For instance, among other reasons, the variations or fluctuations may be due to the density of population or severity of infection in the areas of operation, to size of working staff, or to differences in the plan of work pursued. In other instances, as in British Guiana in 1919 and Dutch Guiana in 1921, the figures may represent results for only a few months instead of a complete year.

6. The table includes the results of the early dispensary effort aided by the Rockefeller Sanitary Commission in the Southern States. These figures are not itemized by years, but are reported, under the respective states, as the total for the years 1910 to 1914, inclusive. Some of the work for 1914, separately indicated, was aided by the International Health Board. Since 1915, when work by the dispensary plan ceased in these states, the chief effort against hookworm disease has been directed toward the building and use of latrines. Therefore the aggregate figures for examination and treatment are not so large as in previous years, nor do they represent in all cases such thoroughgoing effort in the curative phase of the work.

7. In a number of countries operations were suspended during the war and resumed after its close; in others there have been temporary periods of suspension due to industrial depression, lack of trained directors, or similar causes.

8. Only the results of campaigns aided directly by the International Health Board or Rockefeller Sanitary Commission are included. In a number of countries, as in Brazil, government or voluntary agencies are conducting extensive independent campaigns against the disease, the results of which, if they could be included, would substantially increase the aggregate examinations and treatments. \*

TABLE 1: Persons Examined and Treated for Hookworm Disease, 1910 to 1924, inclusive, in World-Wide Campaign Aided by International Health Board. Figures by main geographical divisions of work, by states and countries, and by years

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments	
		Number	Per Cent		Number	Per Cent <sup>1</sup>
<b>ALL COUNTRIES</b>						
All years	4,922,707	2,878,855	58.5	4,150,969	2,312,476	55.7
1910-1914	1,179,406	458,606	38.9	441,408	213,488	48.4
1914	35,100	17,791	50.8	16,106	11,925	74.0
1915	162,835	93,480	57.4	86,242	60,340	70.0
1916	223,976	133,744	59.7	126,834	93,302	73.6
1917	295,103	183,949	62.3	168,429	137,563	81.7
1918	343,867	217,023	63.1	216,757	164,815	76.0
1919	295,883	175,440	59.4	238,352	199,115	83.5
1920	385,410	219,243	56.9	309,411	241,689	78.1
1921	553,861	337,246	60.9	457,237	231,180	50.6
1922	667,535	456,793	68.4	685,146	429,120	62.6
1923	402,106	313,898	78.0	732,371	283,697	38.7
1924	377,625	271,642	71.9	672,676	246,242	36.6
<b>DIVISIONS</b>						
<b>SOUTHERN STATES</b>						
All years	1,413,000	518,668	36.7	498,333	239,921	49.0
1910-1914	1,179,406	458,606	38.9	441,408	213,488	48.4
1914	9,211	2,434	26.4	2,264	653	28.8
1915	18,145	3,961	21.8	3,779	931	24.6
1916	22,169	4,569	20.6	4,544	2,939	64.7
1917	37,299	7,834	21.0	7,596	6,293	82.8
1918	44,241	8,074	18.3	7,636	4,681	61.3
1919	26,282	10,266	39.1	9,391	6,689	71.2
1920	44,644	12,732	28.5	12,528	1,554	12.4
1921	31,603	10,192	32.3	9,187	2,693	29.3

WEST INDIES						
All years	503,288	332,811	66.1	314,604	284,961	90.6
1915	61,604	36,568	59.4	33,648	24,559	73.0
1916	62,642	36,582	58.4	33,077	28,811	87.1
1917	75,779	46,051	60.8	42,739	40,738	95.3
1918	31,314	23,636	75.5	22,057	20,604	93.4
1919	20,350	14,537	71.4	13,534	12,962	95.8
1920	28,890	16,067	55.6	15,274	14,395	94.2
1921	27,402	15,712	63.6	14,443	13,882	96.1
1922	74,311	57,333	77.2	53,656	51,502	96.0
1923	53,707	41,378	77.0	37,480	35,463	94.6
1924	67,289	44,947	66.8	48,696	42,045	86.3
CENTRAL AMERICA						
All years	1,393,683	876,399	62.9	855,493	605,359	70.8
1914	5,321	2,907	54.6	2,562	578	22.6
1915	83,086	52,951	63.7	48,815	34,850	72.0
1916	131,520	85,235	64.8	82,461	57,534	69.8
1917	127,652	77,585	60.8	71,809	47,204	65.7
1918	173,931	109,193	62.8	95,539	71,316	74.6
1919	175,201	98,857	56.4	86,079	70,061	81.4
1920	148,714	82,272	55.3	70,470	51,016	72.4
1921	138,222	85,444	61.8	71,796	55,634	77.5
1922	172,942	120,943	69.9	103,807	81,985	79.0
1923	133,512	95,889	71.8	143,741	77,127	53.9
1924	103,582	65,123	62.9	78,414	58,054	74.0
SOUTH AMERICA						
All years	897,178	728,702	81.2	1,058,014	712,917	67.4
1918	10,490	6,922	66.0	5,894	4,208	71.4
1919	52,775	35,780	67.8	31,233	21,456	68.7
1920	98,956	73,286	75.6	73,901	61,276	82.9
1921	171,764	140,069	81.5	194,598	126,239	64.9
1922	289,322	243,136	84.0	335,347	223,074	66.5
1923	150,572	130,359	86.6	207,233	137,061	66.1
1924	123,299	99,150	80.4	209,808	139,603	66.5

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments	
		Number	Per Cent		Number	Per Cent <sup>1</sup>
<b>THE EAST</b>						
All years	715,568	422,275	59.0	1,424,525	469,318	33.0
1914	20,568	12,450	60.5	11,280	10,694	94.8
1916	7,645	7,358	96.3	6,752	4,018	59.5
1917	54,373	52,479	96.5	46,285	43,328	93.6
1918	83,891	69,198	82.5	85,631	64,006	74.7
1919	21,275	16,000	75.0	98,115	87,947	89.6
1920	64,206	34,886	54.3	137,238	113,448	82.7
1921	184,870	85,829	46.4	167,213	32,732	19.6
1922	130,960	35,381	27.0	192,336	72,559	37.7
1923	64,315	46,272	71.9	343,917	34,046	9.9
1924	83,455	62,422	74.8	335,758	6,540	2.0
<b>SOUTHERN STATES</b>						
<i>Alabama</i>						
All years	86,995	48,852	56.2	48,114	13,370	27.8
1910-1914	74,473	43,718	58.7	43,520	9,857	22.6
1917 <sup>2</sup>	564	47	8.3	47	42	89.3
1918 <sup>2</sup>	675	79	11.7	79	79	100.0
1919	102	17	16.7	17	15	88.2
1920	4,574	1,335	29.2	1,334	1,227	92.0
1921	6,607	3,656	55.3	3,117	2,150	69.0
<i>Arkansas</i>						
All years	48,483	8,866	18.3	6,705	1,614	24.1
1910-1914	47,983	8,863	18.5	6,702	1,614	24.1
1918 <sup>2</sup>	500	3	.6	3	—	—

<i>Georgia</i>							
All years	75,341	46,058	61.1	45,552	14,251	31.8	
1910-1914	73,518	45,564	62.0	45,095	14,023	32.2	
1919	1,518	373	24.6	336	107	31.8	
1920 <sup>a</sup>	305	121	39.7	121	121	100.0	
<i>Kentucky</i>							
All years	134,855	44,404	32.9	38,611	872	2.3	
1910-1914	128,991	43,635	34.6	37,916	475	1.3	
1915 <sup>a</sup>	1,833	460	25.1	460	316	68.7	
1920	2,541	169	6.6	116	56	48.3	
1921	1,490	140	9.4	119	25	21.0	
<i>Louisiana</i>							
All years	74,368	39,342	52.9	38,556	14,858	38.5	
1910-1914	68,165	37,720	55.3	37,225	14,524	39.0	
1914 <sup>a</sup>	2,568	879	34.2	876	324	37.0	
1918 <sup>a</sup>	1,161	208	17.9	55	—	—	
1921	2,474	535	21.6	400	10	2.5	
<i>Mississippi</i>							
All years	280,757	109,809	39.1	108,323	74,496	68.8	
1910-1914	184,944	75,813	41.0	74,598	58,687	78.7	
1915	4,414	1,422	32.2	1,410	53	3.8	
1916	3,780	1,466	38.8	1,455	1,182	81.2	
1917	14,874	4,348	29.2	4,223	4,223	100.0	
1918 <sup>a</sup>	8,468	4,084	48.2	4,069	3,541	87.0	
1919	16,036	8,479	52.9	8,471	6,461	76.3	
1920	31,198	9,730	31.3	9,720	42	.4	
1921	17,043	4,467	26.2	4,377	307	7.0	

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments		Per Cent <sup>1</sup>
		Number	Per Cent		Number	Per Cent	
<i>North Carolina</i>							
All years	337,179	112,639	33.4	106,828	60,264	56.4	
1910-1914	300,457	104,279	34.7	99,075	57,538	58.1	
1914 <sup>2</sup>	4,837	1,429	29.5	1,321	294	22.3	
1915 <sup>2</sup>	3,405	898	26.4	802	228	28.4	
1917	9,048	2,057	22.7	1,984	1,149	57.9	
1918	18,431	3,503	19.0	3,272	987	30.2	
1920	728	238	32.7	142	—	—	
1921	273	235	86.1	232	68	29.3	
<i>South Carolina</i>							
All years	101,442	47,696	47.0	45,812	22,853	49.9	
1910-1914	81,311	42,677	52.5	41,751	21,413	51.2	
1914 <sup>2</sup>	840	90	10.7	31	4	12.9	
1915 <sup>2</sup>	3,581	721	20.1	648	230	35.5	
1916	6,665	1,991	29.9	1,980	1,206	60.9	
1918 <sup>2</sup>	931	24	2.6	—	—	—	
1919	4,966	1,057	21.3	327	—	—	
1920	2,268	989	43.6	965	—	—	
1921	880	147	16.7	110	—	—	
<i>Tennessee</i>							
All years	81,582	22,316	27.3	21,680	16,087	74.2	
1910-1914	74,997	21,410	28.5	20,979	15,828	75.4	
1915 <sup>2</sup>	1,172	116	9.9	116	20	17.2	
1916	1,217	49	4.0	48	23	47.9	
1917	856	129	15.1	126	71	56.3	
1918	127	3	2.4	3	2	66.7	
1919	378	17	4.5	9	3	33.3	
1920	608	26	4.3	17	7	41.2	
1921	2,227	560	25.1	382	133	34.8	

<i>Texas</i>	All years	89,482	19,947	22.5	19,492	4,861	24.9
	1910-1914	63,376	17,790	28.1	17,490	3,588	20.5
	1916 <sup>2</sup>	2,801	570	20.3	568	357	62.9
	1917	7,084	1,058	14.9	1,021	662	64.8
	1918	11,025	81	.7	70	51	72.9
	1919	3,044	322	10.6	230	103	44.8
	1920	2,115	123	5.8	112	100	89.3
	1921	37	3	8.1	1	—	—
<i>Virginia</i>	All years	102,516	18,745	18.3	18,660	16,395	87.9
	1910-1914	81,191	17,137	21.1	17,057	15,941	93.5
	1914 <sup>2</sup>	966	36	3.7	36	31	86.1
	1915 <sup>2</sup>	3,740	344	9.2	343	84	24.5
	1916	7,706	493	6.4	493	171	34.7
	1917	4,873	195	4.0	195	146	74.9
	1918	2,923	89	3.0	85	21	24.7
	1919	238	1	.4	1	—	—
	1920 <sup>2</sup>	307	1	.3	1	1	100.0
	1921	572	449	78.5	449	—	—
<i>WEST INDIES</i>							
<i>Antigua</i>	Both years	18,599	2,919	15.7	2,634	2,566	97.4
	1916 <sup>2</sup>	7,477	2,229	29.8	2,054	2,031	98.9
	1917 <sup>2</sup>	11,122	690	6.2	580	535	92.2
<i>British Guiana</i>	All years	71,322	44,073	61.8	39,906	35,394	88.9
	1915	21,070	13,135	62.3	11,903	10,039	84.3
	1916	18,498	9,808	53.0	8,263	6,225	75.3
	1917	16,044	9,508	59.3	8,906	8,722	97.9
	1918	11,719	8,727	74.5	8,175	7,900	96.6
	1919 <sup>2</sup>	3,991	2,895	72.5	2,659	2,508	94.3

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments	
		Number	Per Cent		Number	Per Cent <sup>1</sup>
<i>Dutch Guiana</i>						
All years	44,292	38,956	88.0	35,189	33,065	94.0
1916	4,411	3,900	88.4	3,667	3,414	93.1
1917	13,159	12,045	91.5	11,133	10,664	95.8
1921	924	817	88.4	744	714	96.0
1922	11,708	11,371	97.1	10,601	10,182	96.0
1923	14,090	10,823	76.8	9,044	8,091	89.5
<i>Grenada</i>						
All years	31,706	20,662	65.2	20,571	15,650	76.1
1915	18,584	11,194	60.2	11,522	8,064	70.0
1916	5,312	4,226	79.6	4,147	2,950	71.1
1917	7,810	5,242	67.1	4,902	4,636	94.6
<i>Jamaica</i>						
All years	47,960	19,668	41.0	18,038	16,785	93.1
1919 <sup>2</sup>	2,842	1,552	54.6	1,346	1,291	95.9
1920 <sup>2</sup>	13,748	3,915	28.5	3,605	3,203	88.8
1921	9,807	3,085	31.5	2,754	2,635	95.7
1922 <sup>2</sup>	6,740	3,281	48.7	2,996	2,859	95.4
1923 <sup>2</sup>	8,467	5,736	67.7	5,358	4,864	88.0
1924	6,356	2,099	33.0	1,979	1,933	97.7
<i>Porto Rico</i>						
All years	66,249	54,064	81.6	57,678	56,025	97.1
1922	22,413	18,504	82.6	17,223	16,957	98.5
1923	15,247	12,470	81.8	11,651	11,477	98.5
1924 <sup>2</sup>	28,589	23,090	80.8	28,804	27,591	95.8

<i>Saint Lucia</i>						
All years	48,799	30,598	63.0	29,384	24,534	83.6
1915	7,924	4,436	56.0	4,106	2,177	53.0
1916	6,003	2,336	38.9	2,201	1,904	86.5
1917	4,601	3,060	66.5	2,962	2,653	89.6
1918	5,004	3,126	62.5	2,892	2,068	71.5
1919	4,350	2,597	59.7	2,547	2,364	92.8
1920	6,373	4,743	74.4	4,656	4,331	93.0
1921	3,181	2,274	71.5	2,225	2,164	97.3
1922	11,363	8,026	77.4	7,795	6,873	88.2
<i>Saint Vincent</i>						
All years	21,915	12,758	58.2	11,905	11,383	95.6
1915 <sup>2</sup>	3,822	1,676	43.9	1,590	1,562	98.2
1916	7,494	4,062	54.2	3,748	3,653	97.5
1917	9,482	6,065	64.0	5,683	5,303	93.3
1918 <sup>2</sup>	1,117	955	85.5	884	865	97.8
<i>Trinidad</i>						
All years	131,005	98,244	75.0	89,304	84,732	94.9
1915 <sup>2</sup>	10,204	6,127	60.0	4,527	2,717	60.0
1916	13,447	10,021	74.5	8,997	8,634	96.0
1917	13,561	9,441	69.6	8,573	8,225	95.9
1918	13,474	10,828	80.4	10,106	9,771	96.7
1919 <sup>2</sup>	9,167	7,493	81.7	6,982	6,799	97.4
1920	8,769	7,409	84.5	7,013	6,861	97.8
1921	13,490	9,536	70.7	8,720	8,369	96.0
1922	22,087	16,151	73.1	15,041	14,631	97.3
1923	15,903	12,349	77.7	11,427	11,031	96.5
1924	10,903	8,889	81.5	7,918	7,694	97.2
<i>Tobago</i>						
1924	21,441	10,869	50.7	9,995	4,827	48.3

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments			
		Number	Per Cent		Number	Per Cent <sup>1</sup>		
<b>CENTRAL AMERICA</b>								
<i>Costa Rica</i>								
All years	389,610	214,232	55.0	194,861	142,149	72.9		
1915	30,297	19,401	64.0	18,816	12,152	64.6		
1916	40,579	22,608	55.7	22,037	9,899	44.9		
1917	48,488	29,940	61.7	28,909	19,180	66.3		
1918	56,371	29,398	53.0	27,487	19,154	69.7		
1919	64,371	29,872	46.4	26,551	22,798	85.9		
1920	36,342	10,743	29.6	9,006	6,415	71.2		
1921	37,902	18,991	50.1	15,677	12,398	79.1		
1922	31,923	21,738	68.1	19,278	15,802	82.0		
1923	21,528	15,715	73.0	13,619	12,350	90.7		
1924	21,809	15,326	70.3	13,481	12,001	89.0		
<i>Guatemala</i>								
All years	287,892	189,134	65.7	168,218	148,249	88.1		
1915 <sup>2</sup>	25,587	15,001	58.6	13,783	11,851	86.0		
1916	39,596	26,665	67.3	25,961	23,618	91.0		
1917 <sup>2</sup>	13,670	7,198	52.7	6,777	6,552	96.7		
1918 <sup>2</sup>	32,861	22,299	67.9	19,950	19,057	95.5		
1919	44,495	28,752	64.6	25,283	23,639	93.5		
1920	21,469	12,805	58.7	11,429	10,402	91.0		
1921	25,405	19,020	74.9	14,337	11,185	78.0		
1922	28,673	18,310	63.9	15,651	12,822	81.9		
1923	29,742	22,122	74.4	19,909	16,414	82.4		
1924	26,394	16,962	64.3	15,138	12,709	84.0		
<i>Honduras</i>								
Both years	12,191	6,363	52.2	49,284	3,164	6.4		
1922 <sup>2</sup>	4,903	2,083	42.5	1,547	702	45.4		
1923	7,288	4,280	58.7	47,737	2,462	5.2		

<i>Mexico</i>	1924	2,599	251	1.0	3,265	775	23.7
<i>Nicaragua</i>							
All years		202,008	136,551	67.6	136,818	87,116	62.2
1915 <sup>2</sup>		2,192	1,659	75.7	1,298	18	1.4
1916 <sup>2</sup>		12,829	9,073	70.7	8,362	1,166	13.9
1917		33,781	18,422	54.5	16,950	5,652	33.3
1918		24,186	16,760	69.3	15,042	9,524	63.3
1919		12,246	5,820	47.5	4,829	2,146	44.4
1920		41,627	28,964	69.6	24,502	17,157	70.0
1921		23,183	16,312	70.4	13,940	11,265	80.8
1922		37,603	29,139	77.5	24,770	19,466	78.6
1923		7,277	5,691	78.2	13,692	10,877	79.4
1924		7,084	4,711	66.5	13,433	9,845	73.3
<i>Panama</i>							
All years		159,010	126,013	79.2	127,304	97,206	76.4
1914 <sup>2</sup>		5,321	2,907	54.6	2,562	578	22.6
1915		25,010	16,890	67.5	14,918	10,829	72.6
1916		30,094	24,193	80.4	23,747	21,340	89.9
1917		16,676	14,088	84.5	13,262	11,126	83.9
1918		16,185	13,656	84.4	11,966	9,537	79.7
1919		15,307	13,490	88.1	11,812	8,313	70.4
1920		13,104	10,050	76.7	8,353	4,009	48.0
1921		5,932	5,014	84.5	4,595	3,151	68.6
1922		18,093	16,219	89.6	13,200	9,445	71.6
1923		9,088	7,198	79.2	11,900	10,095	84.8
1924		4,200	2,308	55.0	10,989	8,783	79.9
<i>Salvador</i>							
All years		340,373	203,355	59.9	175,743	126,700	72.1
1916 <sup>3</sup>		8,422	2,696	32.0	2,354	1,511	64.2
1917		15,037	7,937	52.8	5,911	4,694	79.4
1918		44,328	26,580	60.0	21,094	14,044	66.6
1919		38,782	20,923	54.0	17,604	13,165	74.8
1920		36,172	19,710	54.5	17,180	13,033	75.9
1921		45,800	26,107	56.9	23,247	17,635	75.9
1922		51,747	33,454	64.4	29,361	23,748	97.9
1923		58,589	40,883	69.7	36,884	24,929	67.8
1924		41,496	25,565	61.6	22,108	13,941	63.1

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments	
		Number	Per Cent		Number	Per Cent <sup>1</sup>
<b>SOUTH AMERICA</b>						
<i>Brasil<sup>2</sup></i>	All years	626,733	476,273	76.0	701,176	449,364
	1918	10,490	6,922	66.0	5,894	4,208
	1919	52,775	35,780	67.8	31,233	21,456
	1920	92,093	67,243	72.2	68,207	56,923
	1921	131,288	101,417	77.7	157,739	92,883
	1922	221,802	181,820	82.0	274,936	172,923
	1923	51,758	34,386	66.4	112,871	65,903
	1924	66,527	48,705	73.2	50,296	35,068
<i>Colombia</i>	All years	270,445	252,429	93.3	356,838	263,553
	1920 <sup>3</sup>	6,863	6,043	88.1	5,694	4,353
	1921	40,476	38,652	95.5	36,859	33,356
	1922	67,520	61,316	90.8	60,411	50,151
	1923	98,814	95,973	97.1	94,362	71,158
	1924	56,772	50,445	88.9	159,512	104,535
<b>THE EAST</b>						
<i>Australia<sup>4</sup></i>	All years	248,719	48,256	19.4	33,249	15,498
	1920 <sup>4</sup>	33,129	10,954	33.1	9,124	462
	1921	113,556	26,386	23.2	13,691	5,240
	1922	91,923	9,247	10.1	8,879	8,255
	1923	10,111	1,669	16.5	1,555	1,541
<i>Borneo</i>	Both years	15,059	12,428	82.5	22,039	18,402
	1921 <sup>5</sup>	5,325	4,556	85.6	10,568	9,951
	1922	9,734	7,872	80.9	11,471	8,451

<i>Ceylon</i>							
All years	119,664	108,007	90.3	498,230	386,570	77.6	
1916 <sup>2</sup>	7,645	7,358	96.3	6,752	4,018	59.5	
1917	42,828	41,613	97.2	35,675	33,440	93.7	
1918	26,424	25,624	97.0	50,374	47,181	93.7	
1919	15,542	11,852	77.5	88,602	84,712	95.6	
1920	16,961	12,814	75.5	117,337	112,089	95.5	
1921	497	422	84.9	20,958	16,533	78.9	
1922	7,137	5,975	83.7	93,475	52,567	56.2	
1923 <sup>2</sup>	1,907	1,830	96.0	46,088	31,675	68.7	
1924	723	519	71.8	38,969	4,355	11.2	
<i>China</i>							
Both years	14,529	8,493	58.5	6,542	2,669	40.8	
1918 <sup>2</sup>	12,504	7,556	60.4	5,694	2,519	44.2	
1919 <sup>2</sup>	2,025	937	46.3	848	150	17.7	
<i>Egypt</i>	1914	20,568	12,450	60.5	11,280	10,694	94.8
<i>Fiji</i>							
All years	16,154	11,077	68.6	133,014	6,197	4.7	
1917 <sup>2</sup>	3,434	3,088	89.9	3,010	2,877	95.6	
1918 <sup>2</sup>	3,190	2,887	80.5	2,770	2,674	96.5	
1922 <sup>2</sup>	4,417	2,559	57.9	44,440	203	.5	
1923	3,713	2,015	54.3	38,173	330	.9	
1924	1,400	528	37.7	44,621	113	.3	
<i>Mauritius</i>							
Both years	55,175	36,631	66.4	23,612	5,122	21.7	
1922	12,643	5,279	41.8	3,680	3,083	83.8	
1924	42,532	31,352	73.7	19,932	2,039	10.2	
<i>Seychelles</i>							
All years	23,819	21,004	88.2	20,251	19,386	95.7	
1917 <sup>2</sup>	8,111	7,778	95.9	7,600	7,011	92.3	
1918	10,475	9,113	87.0	8,671	8,449	97.4	
1919	3,708	3,211	86.6	3,127	3,085	98.6	
1920 <sup>2</sup>	1,525	902	59.1	853	841	98.6	

TABLE 1—Continued

Division, Country, and State	Persons Examined	Persons Found Infected		Persons Given at Least One Treatment	Persons Given Two or More Treatments	
		Number	Per Cent		Number	Per Cent <sup>1</sup>
<i>Siam</i>						
All years	201,871	163,929	81.2	676,308	4,780	.9
1918	31,298	24,018	76.7	18,122	3,183	17.6
1919	—	—	—	5,538	—	—
1920 <sup>2</sup>	12,591	10,216	81.1	9,924	56	.6
1921	65,492	54,465	83.2	121,996	1,008	.8
1922	5,106	4,449	87.1	30,391	—	—
1923	48,584	40,758	83.9	258,101	500	.2
1924	38,800	30,023	77.4	232,236	33	.01

<sup>1</sup> Based on total number of persons receiving at least one treatment.<sup>2</sup> Represents part-year effort only.

\* States of Brazil and Australia not indicated separately.

## **TABLE 2**

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
<i>Grand Total.....</i>	<i>\$1,575,648.22</i>	<i>\$1,121,862.86</i>	<i>\$1,436,355.00</i>	<i>\$1,658,572.61</i>
RELIEF AND CONTROL OF HOOKWORM DISEASE...	1,002,078.37	457,936.54	509,091.99	621,520.98
COUNTY HEALTH WORK...	182.95	2,494.53	2,439.25	8,182.77
MALARIA CONTROL.....	94,475.55	26,489.29	34,965.08	133,929.02
YELLOW FEVER CONTROL...	51,207.20	46,639.17	94,526.42	139,757.40
TUBERCULOSIS IN FRANCE	51,856.24	433,030.43	602,775.78	518,013.51
PUBLIC HEALTH EDUCATION.....	1,151.44	35,142.82	36,701.04	68,373.54
PUBLIC HEALTH NURSING.....	.....	.....	.....	.....
PUBLIC HEALTH ADMINISTRATION.....	.....	.....	.....	12,708.81
PUBLIC HEALTH LABORATORY SERVICE.....	.....	.....	.....	.....
FIELD STAFF SALARIES, EXPENSES, ETC., NOT PRORATED TO SPECIFIC BUDGETS.....	39,148.90	5,345.82	21,701.87	26,074.89
MISCELLANEOUS.....	129,800.57	41,339.58	55,846.90	38,539.49
ADMINISTRATION.....	205,747.00	73,444.68	78,306.67	91,472.20
RELIEF AND CONTROL OF HOOKWORM DISEASE...	1,002,078.37	457,936.54	509,091.99	621,520.98
United States.....	190,576.84	87,284.58	110,860.17	136,019.06
West Indies.....	267,537.27	57,800.06	48,457.24	61,857.73
Central America.....	259,432.65	113,545.86	111,684.19	98,303.98
Mexico.....	.....	.....	.....	.....
South America.....	48,088.93	97,031.00	157,555.86	206,486.22
The East.....	218,893.07	97,932.47	80,014.39	113,472.55
Europe.....	.....	.....	.....	.....
Miscellaneous.....	17,549.61	4,342.57	520.14	5,381.44
United States*.....	190,576.84	87,284.58	110,860.17	136,019.06
Alabama.....	5,579.30	5,922.09	5,283.74	17,256.71
Arkansas.....	2,462.59	2,784.41	.....	.....
Georgia.....	25,259.54	5,418.95	4,604.21	4,525.39
Kentucky.....	16,833.12	2,064.97	1,978.40	16,599.03
Louisiana.....	3,621.23	1,317.93	1,370.18	.....
Mississippi.....	29,729.27	9,427.52	15,773.21	20,709.72
North Carolina.....	14,858.04	15,775.89	13,924.04	10,463.00

<sup>1</sup> Includes initial deposit under retirement plan.<sup>2</sup> In September, 1917, the hookworm work in the Southern States began to be absorbed in the programs states than in others, it was not possible to announce until the end of 1920 that in all the states the all efforts directed toward the relief and control of hookworm and other soil-borne diseases.

*Years 1913-1924, Inclusive, Covering All Activities*

1921	1922	1923	1924	Total
\$1,698,776.26	\$1,868,892.12	\$2,486,606.04	\$2,680,877.48	\$14,527,590.59
457,409.50	498,996.06	416,066.37	442,158.67	4,405,258.48
167,996.90	214,854.79	230,829.08	241,717.39	868,697.66
150,291.34	161,455.14	163,400.50	194,715.38	959,721.30
236,755.46	211,980.51	337,378.42	638,619.75	1,756,864.33
359,540.31	268,274.49	82,041.52	67,093.60	2,382,625.88
89,092.64	164,675.97	501,070.58	442,238.41	1,338,446.44
.....	14,630.10	25,654.17	23,237.83	63,522.10
20,736.31	54,287.63	158,714.90	203,834.81	450,282.46
16,109.70	26,325.29	32,180.74	41,767.89	116,383.62
38,936.95	64,781.19	247,734.39	<sup>1</sup> 121,101.32	564,825.33
38,916.59	17,719.15	14,684.51	28,673.81	365,520.60
122,990.56	170,911.80	276,850.86	<sup>1</sup> 235,718.62	1,255,442.39
457,409.50	498,996.06	416,066.37	442,158.67	4,405,258.48
15,730.39	7,510.26	5,960.29	197.01	554,138.60
85,541.60	110,039.59	116,828.44	127,447.18	875,509.11
83,920.99	86,922.83	90,714.46	81,304.80	925,829.76
			36,258.04	36,258.04
150,344.49	170,298.81	70,361.78	79,793.56	979,960.65
115,805.46	116,718.54	101,880.50	91,238.27	935,955.25
6,066.57	7,506.03	30,320.90	4,012.42	4,012.42
			21,907.39	93,594.65
15,730.39	7,510.26	5,960.29	197.01	554,138.60
.....	.....	25.00	.....	34,066.84
.....	.....	.....	.....	5,247.00
.....	.....	.....	197.01	40,005.10
.....	.....	.....	.....	37,475.52
.....	.....	.....	.....	6,309.34
.....	.....	.....	.....	75,639.72
.....	.....	.....	.....	55,020.97

of the rapidly developing county departments of health. The period of transition being longer in some county health departments would henceforth assume as one of their regular functions, responsibility for

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
<b>RELIEF AND CONTROL OF HOOKWORM DISEASE</b>				
<i>Continued</i>				
United States— <i>Cont'd</i>				
South Carolina.....	\$19,483.30	\$13,870.12	\$14,754.86	\$17,210.63
Tennessee.....	24,272.31	6,642.20	10,201.59	13,533.22
Texas.....	23,317.39	9,362.85	22,380.20	14,723.99
Virginia.....	20,363.83	5,947.86	10,012.42	14,965.17
Administration.....	4,796.92	8,749.79	10,577.32	6,032.20
County Dispensary Work in the South.....	4,796.92	.....	.....	.....
Resurveys.....	.....	.....	.....	.....
West Indies.....	267,537.27	57,800.06	48,457.24	61,857.73
Antigua.....	19,593.84	.....	.....	.....
Barbados (survey).....	1,651.31	.....	.....	.....
British Guiana <sup>1</sup> .....	60,797.10	16,504.11	9,984.28	486.37
Cayman Islands (survey).....	1,795.16	.....	.....	.....
Dominica (survey).....	.....	.....	.....	.....
Dutch Guiana <sup>1</sup> .....	34,101.79	4,389.11	613.23	570.34
Grenada.....	35,530.58	1,833.74	.....	.....
Haiti.....	.....	.....	.....	.....
Jamaica.....	.....	3,937.85	9,832.48	18,400.09
Montserrat—Nevis (survey).....	.....	.....	.....	.....
Porto Rico.....	.....	.....	.....	7,823.35
Santo Domingo (survey).....	.....	.....	.....	1,077.07
St. Kitts (survey).....	.....	.....	.....	.....
St. Lucia.....	23,951.86	8,152.28	8,109.32	11,444.57
St. Vincent.....	25,378.51	6,383.25	.....	.....
Tobago (survey).....	1,072.22	.....	.....	.....
Trinidad.....	43,206.14	12,301.48	15,293.43	16,016.71
Administration.....	20,458.76	4,298.24	4,624.50	6,039.23
Central America.....	259,432.65	113,545.86	111,684.19	98,303.98
British Honduras (survey).....	4,273.47	.....	.....	.....
Costa Rica.....	64,941.80	21,330.40	20,492.01	20,219.60
Guatemala.....	35,899.23	20,816.27	19,514.73	17,126.43
Honduras.....	.....	.....	.....	.....
Nicaragua.....	45,771.84	22,454.30	26,164.44	18,745.12
Panama.....	74,919.95	24,312.26	18,565.05	20,061.02
Salvador.....	32,008.99	17,573.90	17,162.10	14,973.80
Administration.....	1,617.37	7,058.73	9,785.86	7,178.01

<sup>1</sup> For administrative reasons British and Dutch Guiana, although on the mainland of South America,<sup>2</sup> Reports incomplete.

*Years 1913-1924, Inclusive, Covering All Activities—Cont'd*

1921	1922	1923	1924	Total
\$.....	\$.....	\$.....	\$.....	\$65,318.91
.....	.....	.....	.....	54,649.32
.....	.....	.....	.....	69,784.43
.....	.....	.....	.....	51,289.28
.....	.....	.....	.....	25,359.31
15,730.39	7,510.26	5,935.29	.....	4,796.92
.....	.....	.....	.....	29,175.94
85,541.60	110,039.59	116,828.44	127,447.18	875,509.11
.....	2,552.67	.....	.....	22,146.51
.....	.....	.....	.....	1,651.31
1,281.02	248.37	.....	.....	89,301.25
.....	.....	.....	.....	1,795.16
12,917.66	17,786.64	19,416.68	2,659.78	2,749.10
.....	.....	.....	.....	89,795.45
.....	.....	.....	.....	37,364.32
16,949.24	23,241.56	21,280.54	10,762.12	10,762.12
.....	.....	.....	27,742.83	121,384.59
18,290.86	28,450.98	30,395.06	511.06	511.06
.....	.....	.....	36,417.62	121,377.87
.....	.....	.....	.....	1,077.07
8,545.88	9,378.80	9,182.04	2,624.67	4,613.91
.....	.....	.....	11,625.68	90,390.43
.....	.....	.....	.....	31,761.76
17,489.50	17,590.83	23,460.87	24,418.00	169,776.96
10,067.44	10,789.74	11,014.69	10,685.42	77,978.02
83,920.99	86,922.83	90,714.46	81,304.80	925,829.76
.....	.....	.....	.....	4,273.47
14,061.92	6,355.05	4,979.63	4,877.16	157,257.57
15,362.58	18,467.99	16,246.60	16,537.26	159,971.09
.....	10,802.41	14,286.73	12,902.91	37,992.05
21,479.43	15,790.55	12,980.46	12,017.01	175,403.15
23,496.22	18,675.03	29,407.59	26,938.47	236,375.59
3,520.84	8,283.79	5,271.68	.....	98,795.10
6,000.00	8,548.01	7,541.77	8,031.99	55,761.74

are considered West Indian colonies.

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
RELIEF AND CONTROL OF HOOKWORM DISEASE— <i>Continued</i>				
Mexico.....	\$.....	\$.....	\$.....	\$.....
South America.....	48,088.93	97,031.00	157,555.86	206,486.22
Brazil.....	48,088.93	97,031.00	155,430.38	193,560.95
Colombia.....	.....	.....	2,125.48	12,925.27
Paraguay.....	.....	.....	.....	.....
Europe.....	.....	.....	.....	.....
Spain.....	.....	.....	.....	.....
The East.....	218,893.07	97,932.47	80,014.39	113,472.55
Uncinariasis Commission to Orient.....	51,483.31	.....	.....	.....
Australia.....	4,074.84	18,633.50	15,902.95	35,417.41
British North Borneo.....	.....	.....	.....	3,106.23
British Solomon Islands (survey).....	.....	.....	.....	.....
Ceylon.....	53,998.91	36,041.44	32,497.87	33,779.28
China.....	3,981.58	12,400.87	12,187.58	.....
Egypt.....	26,074.78	.....	.....	.....
Fiji Islands.....	9,163.29	5,579.84	.....	.....
Java (survey).....	327.66	.....	.....	.....
India.....	.....	.....	.....	7,810.00
Mauritius.....	.....	.....	.....	5,688.56
Seychelles Islands.....	11,932.04	8,089.06	8,291.90	4,643.03
Siam.....	12,606.09	13,042.15	7,514.66	15,850.03
South Sea Islands.....	.....	.....	.....	.....
Administration.....	45,250.57	4,145.61	3,619.43	7,178.01
Miscellaneous.....	17,549.61	4,342.57	520.14	5,381.44
Field Studies:				
Alabama.....	.....	.....	.....	.....
Brazil.....	.....	.....	.....	.....
Ceylon.....	.....	.....	.....	.....
China.....	.....	.....	.....	.....
Porto Rico.....	.....	.....	.....	.....
Thymol.....	15,476.21	.....	.....	.....
Research in carbon tetrachloride.....	.....	.....	.....	.....
Study of methods of diagnosing hookworm disease.....	.....	.....	43.95	.....
Conferences of Health Officers....	2,073.40	2,990.76	.....	2,488.71

<sup>1</sup> Reports incomplete.

INTERNATIONAL HEALTH BOARD 231

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$.....	\$.....	\$.....	\$36,258.04	\$36,258.04
150,344.49	170,298.81	70,361.78	79,793.56	979,960.65
131,709.52	148,602.50	46,592.10	47,338.46	868,353.84
18,634.97	21,696.31	22,217.48	16,241.47	93,840.98
.....	.....	1,552.20	16,213.63	17,765.83
.....	.....	.....	4,012.42	4,012.42
.....	.....	.....	4,012.42	4,012.42
115,805.46	116,718.54	101,880.50	91,238.27	935,955.25
39,912.29	35,375.57	33,745.09	18,693.99	51,483.31
7,440.10	5,641.00	3,101.75	.....	201,755.64
1,378.85	225.60	.....	.....	19,289.08
23,689.34	15,041.57	9,252.78	17,520.64	211,821.83
.....	.....	.....	.....	28,570.03
498.64	10,653.55	Cr. 8,952.64	17,282.03	17,122.14
.....	.....	7,594.37	22,752.97	40,771.72
12,496.30	9,883.53	10,275.40	18,307.39	23,080.63
.....	7,356.43	12,235.10	3,987.01	48,772.62
18,429.18	23,993.28	27,086.88	12,148.57	29,267.10
.....	.....	.....	.....	32,956.03
11,960.76	8,548.01	7,541.77	2,513.68	130,670.84
.....	.....	.....	8,031.99	2,513.68
6,066.57	7,506.03	30,320.90	21,907.39	96,276.15
.....	.....	.....	.....	93,594.65
.....	1,006.35	14,524.06	4,869.46	19,393.52
.....	356.35	220.96	.....	1,227.31
.....	.....	85.09	.....	441.44
3,618.83	5,358.26	7,434.94	10,634.98	18,069.92
.....	.....	.....	.....	8,977.09
.....	.....	.....	.....	15,476.21
.....	.....	9,455.85	.....	9,455.85
500.00	758.57	.....	.....	1,302.52
.....	.....	.....	.....	7,552.87

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
RELIEF AND CONTROL OF HOOKWORM DISEASE— <i>Continued</i>				
Miscellaneous— <i>Cont'd</i>				
Motion Picture Film	\$.....	\$.....	\$.....	\$2,817.73
Salvador:				
Portable house and office.....	.....	945.35	476.19	75.00
Loss from earthquake.....	.....	.....	406.46	.....
Dutch Guiana, Care and storage of motor boat.....	.....	.....	.....	.....
Johns Hopkins Medical School:				
Research in carbon tetrachloride.....	.....	.....	.....	.....
Experiment with pigs.....	.....	.....	.....	.....
Experiment with carbon tetrachloride.....	.....	.....	.....	.....
COUNTY HEALTH WORK...	182.95	2,494.53	2,439.25	8,182.77
United States:				
Alabama.....	.....	.....	.....	.....
California.....	.....	.....	.....	.....
Florida.....	.....	.....	.....	.....
Georgia.....	.....	.....	.....	.....
Illinois.....	.....	.....	.....	.....
Indiana.....	.....	.....	.....	.....
Iowa.....	.....	.....	.....	4,494.00
Kansas.....	.....	.....	.....	.....
Kentucky.....	.....	.....	.....	.....
Louisiana.....	.....	.....	.....	.....
Maryland.....	182.95	2,494.53	2,264.25	.....
Minnesota.....	.....	.....	.....	.....
Mississippi.....	.....	.....	.....	.....
Missouri.....	.....	.....	.....	.....
New Mexico.....	.....	.....	.....	.....
North Carolina.....	.....	.....	.....	957.04
Oklahoma.....	.....	.....	.....	.....
Oregon.....	.....	.....	.....	.....
South Carolina.....	.....	.....	.....	.....
South Dakota.....	.....	.....	.....	.....
Tennessee.....	.....	.....	.....	.....
Texas.....	.....	.....	.....	.....
Utah.....	.....	.....	.....	.....

INTERNATIONAL HEALTH BOARD 233

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$1,584.74	\$.....	\$.....	\$34.66	\$4,437.13
.....	26.50	Cr. 1,400.00	.....	123.04
.....	.....	.....	.....	406.46
363.00	.....	.....	.....	363.00
.....	.....	.....	5,656.58	5,656.58
.....	.....	.....	515.93	515.93
.....	.....	.....	195.78	195.78
167,996.90	214,854.79	230,829.08	241,717.39	868,697.66
18,231.35	21,915.97	19,966.46	10,580.09	70,693.87
.....	607.22	6,250.00	7,187.49	14,044.71
237.75	772.08	.....	750.00	1,759.83
4,338.17	2,790.68	1,537.72	1,588.63	10,255.20
.....	1,927.94	1,849.99	1,725.00	5,502.93
.....	1,641.66	2,250.00	.....	3,891.66
.....	954.18	181.33	2,361.76	3,497.27
6,316.99	13,095.38	7,349.13	6,648.29	37,903.79
16,316.41	16,057.84	16,802.48	15,631.73	64,808.46
5,618.28	15,397.64	14,184.73	10,984.34	46,184.99
1,815.36	7,168.18	3,720.00	.....	17,645.27
.....	.....	2,585.53	2,789.44	5,374.97
15,652.72	11,713.47	20,238.91	12,302.91	59,908.01
600.00	9,391.41	9,575.00	7,350.00	26,916.41
10,837.52	8,510.73	6,879.86	11,240.19	37,468.30
14,413.38	7,169.78	9,041.86	10,836.22	42,418.28
.....	.....	.....	3,283.96	3,283.96
.....	4,441.17	6,138.42	8,116.42	18,696.01
17,651.97	12,302.18	13,929.78	13,489.00	57,372.93
.....	.....	.....	3,645.82	3,645.82
14,686.42	14,421.51	10,950.54	11,807.59	51,966.06
12,944.58	13,765.55	11,386.40	8,636.57	46,733.10
.....	.....	.....	1,066.83	1,066.83

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
COUNTY HEALTH WORK —Continued				
United States—Cont'd				
Virginia.....	\$.....	\$.....	\$.....	\$.....
Washington.....	.....	.....	175.00	2,731.73
West Virginia.....	.....	.....	.....	.....
Wyoming.....	.....	.....	.....	.....
Administration.....	.....	.....	.....	.....
Canada:				
New Brunswick.....	.....	.....	.....	.....
South America:				
Brazil.....	.....	.....	.....	.....
Training Stations:				
Alabama.....	.....	.....	.....	.....
MALARIA CONTROL.....	94,475.55	26,489.29	34,965.08	133,929.02
Co-operative Demonstrations:				
United States:				
Alabama.....	.....	.....	8,906.92	.....
Arkansas.....	15,380.81	4,749.02	13,505.66	7,048.90
California.....	.....	.....	.....	.....
Florida.....	.....	.....	.....	1,230.86
Georgia.....	.....	.....	.....	.....
Illinois.....	.....	.....	.....	.....
Louisiana.....	.....	.....	30,699.94	.....
Mississippi.....	79,094.74	21,740.27	21,167.37	27,537.43
Missouri.....	.....	.....	.....	.....
North Carolina.....	.....	.....	.....	7,526.13
South Carolina.....	.....	.....	.....	13,942.74
Tennessee.....	.....	.....	.....	1,969.94
Texas.....	.....	.....	.....	11,472.34
Virginia.....	.....	.....	.....	5,284.84
Administration.....	.....	.....	.....	6,032.20
South America:				
Brazil.....	.....	.....	.....	.....
Field Studies and Experiments:				
United States:				
Georgia.....	.....	.....	.....	.....
Louisiana.....	.....	.....	.....	.....
Maryland.....	.....	.....	.....	.....
Mississippi.....	.....	.....	.....	.....
Foreign:				
Argentina.....	.....	.....	.....	.....
Austria.....	.....	.....	.....	.....
Brazil.....	.....	.....	292.05	.....

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$13,972.74	\$11,319.44	\$11,710.39	\$8,687.40	\$45,689.97
4,164.56	5,089.15	8,223.28	2,500.00	2,500.00
10,198.70	12,887.71	14,316.45	8,606.13	28,989.85
.....	9,000.00	20,652.83	2,462.51	2,862.26
.....	12,513.92	10,708.24	18,918.77	56,321.63
.....	.....	.....	5,160.06	5,160.06
<b>150,291.34</b>	<b>161,455.14</b>	<b>163,400.50</b>	<b>194,715.38</b>	<b>959,721.30</b>
7,650.06	15,416.93	8,232.07	5,936.26	46,142.24
4,777.15	6,388.11	4,274.13	4,263.40	60,387.18
.....	3,111.12	.....	.....	3,111.12
.....	.....	.....	1,125.00	1,125.00
.....	2,017.08	3,756.74	5,298.38	12,303.06
.....	422.80	1,006.84	827.68	2,257.32
23,095.51	17,365.78	4,519.76	4,745.81	80,426.80
21,185.61	8,901.06	12,692.71	7,539.29	199,858.48
1,471.37	2,900.00	3,200.00	3,000.00	10,571.37
18,416.25	9,046.96	9,292.94	15,644.96	59,927.24
13,321.90	10,892.31	7,556.95	7,196.81	52,910.71
1,512.56	3,659.65	1,963.50	5,516.22	14,621.87
10,347.23	2,307.84	5,213.64	5,007.00	34,348.05
831.65	6,062.08	8,981.35	10,251.00	31,410.92
10,198.68	5,523.30	8,589.87	.....	30,344.05
.....	.....	.....	<b>31,176.69</b>	<b>31,176.69</b>
.....	.....	15,182.09	19,299.29	34,481.38
.....	.....	205.17	.....	205.17
.....	.....	2,447.88	1,432.43	3,880.31
.....	.....	156.34	2,719.10	2,875.44
<b>5,661.02</b>	.....	.....	.....	<b>5,661.02</b>
.....	<b>22,043.09</b>	<b>20,429.27</b>	<b>2,102.00</b>	<b>2,102.00</b>
.....	.....	.....	.....	<b>42,764.41</b>

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
<b>MALARIA CONTROL—</b>				
<i>Continued</i>				
Field Studies and Experiments— <i>Cont'd</i>				
Foreign— <i>Cont'd</i>				
Ecuador.....	\$.....	\$.....	\$.....	\$4,595.59
Italy.....	.....	.....	.....	425.66
Nicaragua.....	.....	.....	.....	.....
Palestine.....	.....	.....	.....	.....
Philippine Islands.....	.....	.....	.....	.....
Porto Rico.....	.....	.....	.....	5,445.18
Miscellaneous:				
Conference of Malaria Workers.....	.....	.....	.....	1,810.35
Motion picture film				
Johns Hopkins School of Hygiene and Public Health				
Field Studies by Dr. Kudo.....	.....	.....	.....	.....
<b>YELLOW FEVER CONTROL.</b>	<b>51,207.20</b>	<b>46,639.17</b>	<b>94,526.42</b>	<b>139,757.40</b>
Yellow Fever Commissions.....	49,590.91	.....	44,271.12	83,717.13
Brazil.....	.....	.....	.....	.....
Colombia and Venezuela.....	.....	.....	.....	.....
Countries bordering on Caribbean Litoral and Amazon Valley.....	1,616.29	2,897.97	48,396.77	28,574.98
Ecuador.....	.....	29,473.98	48,396.77	28,574.98
Mexico and Central America.....	.....	14,267.22	1,858.53	27,465.29
Peru.....	.....	.....	.....	.....
Training of Personnel				
Vaccine and Serum.....	.....	.....	.....	.....
History of Yellow Fever.....	.....	.....	.....	.....
Administration.....	.....	.....	.....	.....
<b>TUBERCULOSIS IN FRANCE</b>	<b>51,856.24</b>	<b>433,030.43</b>	<b>602,775.78</b>	<b>518,013.51</b>
Inauguration of Work	18,671.74	.....	.....	.....
Departmental Organization.....	.....	.....	.....	139,364.76
Public Health Visiting				76,191.46
Educational Division.....	5,316.39	85,755.19	141,053.34	135,920.64
Medical Division.....	9,576.01	267,237.59	389,328.32	80,226.08
Contingent Fund.....	.....	.....	.....	.....

## INTERNATIONAL HEALTH BOARD 237

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$.....	\$.....	\$.....	\$.....	\$4,595.59
6,662.51	8,091.00	13,701.47	15,243.89	15,371.13
.....	7,250.11	10,572.80	6,415.05	35,295.69
.....	6,077.50	8,623.03	11,035.47	28,858.38
24,914.84	23,978.42	6,532.42	15,677.57	30,378.10
			6,200.31	67,071.17
245.00	.....	375.98	.....	2,431.33
.....	.....	5,766.31	4,756.46	10,522.77
.....	.....	.....	2,004.56	2,004.56
.....	.....	.....	300.75	300.75
236,755.46	211,980.51	337,378.42	638,619.75	1,756,864.33
.....	461.30	239.97	.....	177,819.13
.....	469.68	99,838.09	515,247.46	616,016.53
.....	.....	37,259.99	260,714.72	97,974.71
.....	1,698.06	3,017.05	6,332.05	4,153.33
.....	.....	.....	.....	14,999.64
.....	.....	.....	.....	111,160.84
154,260.47	163,219.91	158,324.26	142,159.94	561,555.62
80,335.63	36,041.68	.....	.....	116,377.31
.....	3,000.00	8,875.04	5,000.00	16,875.04
.....	6,000.00	3,786.06	6,000.00	15,786.06
.....	232.19	6,481.45	5,344.30	12,057.94
.....	.....	16,241.51	.....	16,241.51
359,540.31	268,274.49	82,041.52	67,093.60	2,382,625.88
.....	.....	.....	.....	18,671.74
47,281.28	24,044.27	.....	.....	210,690.31
101,473.08	99,525.30	54,759.09	37,371.65	369,320.58
79,839.90	62,422.55	.....	.....	510,308.01
40,621.01	.....	.....	.....	786,989.01
750.00	2,490.94	4,766.70	4,420.94	12,428.58

<sup>1</sup> Reports incomplete.<sup>2</sup> Cost of work in Venezuela includes only the expenses of the survey commission.

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
TUBERCULOSIS IN FRANCE—Continued				
Postgraduate Tuberculosis Courses.....	\$.....	\$.....	\$.....	\$.....
Comité National.....				
Central Administration.....	18,292.10	80,037.65	72,394.12	86,310.57
PUBLIC HEALTH EDUCATION.....				
Schools of Hygiene and Public Health				
Brazil—São Paulo	179.59	32,788.84	23,582.57	29,929.01
Czechoslovakia—Prague.....				
England—London.....				
Poland—Warsaw.....				
Study and Training Courses for Health Officers.....				
Fellowships.....	971.85	2,353.98	13,118.47	38,409.84
Study of Teaching Hygiene and Public Health in Medical School.....				34.69
PUBLIC HEALTH NURSING				
Brazil .....				
PUBLIC HEALTH ADMINISTRATION .....				12,708.81
United States:				
Developm't of State Health Services				
Sanitary Engineering				
Colorado.....				
Iowa.....				
Louisiana.....				
Missouri .....				
Montana.....				
North Dakota.....				
Tennessee .....				
Texas.....				
Utah.....				

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$.....	\$5,044.15	\$..... 22,515.73	\$..... 10,472.28	\$5,044.15 32,988.01
89,575.04	74,747.28	.....	14,828.73	436,185.49
89,092.64	164,675.97	501,070.58	442,238.41	1,338,446.44
24,725.36	20,561.52	5,404.19	7,613.95	144,785.03
204.51	3,416.41	4,964.84	9,610.81	18,196.57
.....	22,774.78	209,023.55	15,953.40	247,751.73
.....	.....	92,200.00	209,100.00	301,300.00
3,466.64	3,286.02	2,958.07	17,532.45	27,243.18
60,696.13	114,637.24	186,519.93	182,427.80	599,135.24
.....	.....	.....	.....	34.69
.....	14,630.10	25,654.17	23,237.83	63,522.10
20,736.31	54,287.63	158,714.90	203,834.81	450,282.46
.....	.....	.....	1,200.00	1,200.00
.....	.....	3,495.12	.....	3,495.12
.....	.....	457.72	.....	457.72
.....	1,050.00	368.43	.....	1,418.43
.....	.....	927.57	1,855.01	2,782.58
.....	.....	.....	477.73	477.73
.....	.....	642.55	.....	642.55
.....	636.33	1,423.50	500.00	1,423.50
.....	.....	345.00	.....	1,481.33

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913-Dec. 31, 1917	1918	1919	1920
PUBLIC HEALTH ADMINISTRATION—Continued				
United States—Cont'd				
Vital Statistics				
Georgia.....	\$.....	\$.....	\$.....	\$.....
West Virginia.....	.....	.....	.....	.....
Epidemiology				
Alabama.....	.....	.....	.....	.....
Utah.....	.....	.....	.....	.....
Virginia.....	.....	.....	.....	.....
Traveling Expenses of State Health Officers.....	.....	.....	.....	.....
Foreign:				
Australia.....	.....	.....	.....	.....
Canada.....	.....	.....	.....	.....
Czechoslovakia.....	.....	.....	.....	12,708.81
France.....	.....	.....	.....	.....
Philippine Islands.....	.....	.....	.....	.....
League of Nations				
Interchange of Public Health Personnel.....	.....	.....	.....	.....
Epidemiological Intelligence Service.....	.....	.....	.....	.....
Training in Vital Statistics.....	.....	.....	.....	.....
Expenses of Dr. W. H. Welch.....	.....	.....	.....	.....
Conference in Singapore.....	.....	.....	.....	.....
PUBLIC HEALTH LABORATORY SERVICE.....	.....	.....	.....	.....
United States:				
Alabama.....	.....	.....	.....	.....
Arkansas.....	.....	.....	.....	.....
Connecticut.....	.....	.....	.....	.....
Delaware.....	.....	.....	.....	.....
Kansas.....	.....	.....	.....	.....
Missouri.....	.....	.....	.....	.....
Montana.....	.....	.....	.....	.....
Oregon.....	.....	.....	.....	.....
Tennessee.....	.....	.....	.....	.....

<sup>1</sup> Reports incomplete.

## INTERNATIONAL HEALTH BOARD

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Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$.....	\$.....	\$400.00	\$.....	\$400.00
.....	.....	.....	1,706.66	1,706.66
.....	.....	.....	2,229.04	2,229.04
.....	.....	151.14	2,550.58	2,701.72
.....	.....	3,536.81	750.00	4,286.81
.....	.....	.....	1,046.90	1,046.90
.....	20,000.00	21,432.73	9,715.68	51,148.41
20,736.31	5,534.47	7,720.00	577.93	577.93
.....	.....	.....	12,720.00	59,419.59
.....	12,046.83	18,873.44	5,000.00	5,000.00
.....	.....	.....	11,944.76	42,865.03
.....	15,020.00	63,080.00	91,353.22	169,453.22
.....	.....	29,215.44	32,808.37	62,023.81
.....	.....	6,645.45	20,850.54	27,495.99
.....	.....	.....	3,097.30	3,097.30
.....	.....	.....	3,451.09	3,451.09
16,109.70	26,325.29	32,180.74	41,767.89	116,383.62
.....	3,261.03	9,973.47	12,560.85	25,795.35
.....	.....	1,676.16	3,836.39	5,512.55
.....	.....	.....	375.00	375.00
2,539.88	5,468.14	2,693.88	1,500.00	1,500.00
.....	874.99	.....	.....	10,701.90
.....	.....	676.74	2,067.41	2,942.40
.....	.....	900.00	2,100.00	2,776.74
.....	250.00	2,888.45	2,688.37	3,588.37
.....	.....	.....	2,166.66	5,305.11

TABLE 2: *Expenditures of the International Health Board for the*

ACTIVITY, STATE, AND COUNTRY	July 1, 1913— Dec. 31, 1917	1918	1919	1920
PUBLIC HEALTH LABORATORY SERVICE— <i>Cont'd</i>				
United States— <i>Cont'd</i>				
Utah.....	\$.....	\$.....	\$.....	\$.....
Virginia.....	.....	.....	.....	.....
Central America:				
Costa Rica.....	.....	.....	.....	.....
Guatemala.....	.....	.....	.....	.....
Honduras.....	.....	.....	.....	.....
Nicaragua.....	.....	.....	.....	.....
Salvador.....	.....	.....	.....	.....
Demonstrations.....	.....	.....	.....	.....
Administration.....	.....	.....	.....	.....
MISCELLANEOUS.....	129,800.57	41,339.58	55,846.90	38,539.49
Surveys and exhibits	58,705.00	14,970.85	16,896.80	24,996.05
Library.....	1,844.12	.....	.....	.....
Philippine Hospital Ship.....	25,000.00	12,500.00	6,500.00	.....
Investigation of sewage disposal in rural homes.....	6,023.50	4,288.01	778.60	.....
Medical commission to Brazil.....	18,513.47	.....	.....	.....
Adviser in Medical Education.....	11,225.19	1,500.00	1,666.67	.....
Investigation of powdered milk.....	.....	.....	.....	500.00
Paris Conference on International Nomenclature of Causes of Death.....	.....	.....	.....	615.30
Compilation of mining sanitary code.....	.....	.....	.....	.....
Smallpox vaccine for Vera Cruz, Mexico.....	.....	.....	.....	.....
Plans for laboratory at Nictheroy, Brazil.....	.....	.....	.....	.....
Traveling expenses of visiting public health authorities.....	2,561.36	.....	.....	.....
Field equipment and supplies.....	3,207.56	3,000.00	23,434.94	5,996.96
Pamphlets, charts, and films.....	2,183.52	4,016.89	5,499.50	5,873.33
Express, freight, and exchange.....	536.85	1,063.83	1,070.39	557.85

Years 1913-1924, Inclusive, Covering All Activities—Cont'd

1921	1922	1923	1924	Total
\$.....	\$.....	\$.....	\$1,900.00	\$1,900.00
.....	.....	899.51	1,053.96	1,953.47
307.50	621.75	303.14	2,994.39	3,297.53
.....	.....	1,581.36	1,715.94	4,226.55
85.18	2,445.53	4,222.71	.....	4,222.71
984.34	1,028.72	3,271.69	6,808.92	12,611.32
.....	206.33	3,093.63	.....	5,106.69
12,192.80	12,168.80	.....	.....	206.33
.....	.....	.....	.....	24,361.60
38,916.59	17,719.15	14,684.51	28,673.81	365,520.60
13,437.76	.....	.....	.....	129,006.46
.....	.....	.....	.....	1,844.12
.....	.....	.....	.....	44,000.00
.....	.....	.....	.....	11,090.11
.....	.....	.....	.....	18,513.47
.....	.....	.....	.....	14,391.86
.....	.....	.....	.....	500.00
.....	.....	.....	.....	615.30
125.98	77.20	.....	.....	203.18
.....	.....	165.62	.....	165.62
.....	.....	429.98	.....	429.98
7,660.12	2,113.62	3,619.19	18,502.74	34,457.03
4,982.25	5,189.62	6,688.08	6,949.08	59,448.49
10,153.44	8,869.43	3,057.48	2,389.95	42,043.54
2,557.04	1,469.28	724.16	832.04	8,811.44



# **CHINA MEDICAL BOARD**

## **Report of the Director**



To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report as General Director of the China Medical Board for the period of January 1, 1924, to December 31, 1924.

Respectfully yours,  
ROGER S. GREENE,  
General Director.

# CHINA MEDICAL BOARD OFFICERS AND MEMBERS

1924

*Chairman and General Director*

GEORGE E. VINCENT<sup>1</sup>

*Director*

ROGER S. GREENE

*Acting Resident Director in China*

HENRY S. HOUGHTON

*Assistant Resident Director in China*

L. CARRINGTON GOODRICH

*Secretary*

EDWIN R. EMBREE

*Assistant Secretary*

MARGERY K. EGGLESTON

*Members*

John G. Agar<sup>2</sup>

Vernon Kellogg<sup>1</sup>

Wallace Buttrick<sup>1</sup>

Paul Monroe

Simon Flexner

John R. Mott

Raymond B. Fosdick<sup>1</sup>

Francis W. Peabody

Frederick L. Gates

John D. Rockefeller, Jr.<sup>1</sup>

Frank J. Goodnow

Wickliffe Rose

Roger S. Greene

George E. Vincent<sup>1</sup>

William H. Welch

<sup>1</sup> Member of Executive Committee.

<sup>2</sup> Temporary service on the Executive Committee of the Rockefeller Foundation, which constituted him a member also of the China Medical Board and of its Executive Committee.

# CHINA MEDICAL BOARD

## OFFICERS AND MEMBERS

1925

*Chairman*

**GEORGE E. VINCENT<sup>1</sup>**

*General Director*

**ROGER S. GREENE**

*Acting Resident Director in China*

**HENRY S. HOUGHTON**

*Assistant Resident Director in China*

**L. CARRINGTON GOODRICH**

*Secretary*

**NORMA S. THOMPSON**

*Executive Secretary*

**MARGERY K. EGGLESTON**

*Members*

<b>John G. Agar<sup>1</sup></b>	<b>Paul Monroe</b>
<b>Ernest D. Burton<sup>2</sup></b>	<b>John R. Mott</b>
<b>Wallace Buttrick</b>	<b>Francis W. Peabody</b>
<b>Raymond B. Fosdick<sup>1</sup></b>	<b>John D. Rockefeller, Jr.</b>
<b>Frederick L. Gates</b>	<b>Wickliffe Rose<sup>1</sup></b>
<b>Frank J. Goodnow</b>	<b>George E. Vincent<sup>1</sup></b>
<b>Vernon Kellogg<sup>1</sup></b>	<b>William H. Welch</b>

<sup>1</sup> Member of Executive Committee.  
<sup>2</sup> Deceased.

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## CHINA MEDICAL BOARD

The China Medical Board renewed during the year 1924 its contributions to the support of three medical schools in China, and extended its work in the promotion of science teaching in colleges by grants towards equipment and maintenance to three institutions not previously aided, besides continuing payments to eight other colleges under appropriations made in previous years. Nursing education was aided for the most part indirectly through grants to medical schools and hospitals. This work done in China was supplemented as before by fellowships for study abroad, given to doctors, nurses, and teachers of physics, chemistry, and biology, who were regarded as qualified by earlier education and by actual experience in their chosen fields to profit by larger opportunities for advanced study than were available in China.

In spite of political disturbances during the latter part of the year most of this work went on with little interruption. There has recently been a marked development of national consciousness in Chinese educational circles, and a

growing desire that all educational work conducted by foreign organizations be brought into harmony with the national system. At present this feeling seems to be strongest with respect to primary and secondary education, and it is probably due in large part to the fact that there is now a considerable body of experienced Chinese teachers and educational administrators who are competent to deal with their own problems in these fields. The fact that they are conscious of certain weak spots in their system, particularly in the teaching of the sciences, gives good ground for hoping that these defects will gradually be remedied. In higher education the progress has not been so marked but it is nevertheless real. The most striking feature of it thus far has been the literary revolution, led by professors in the national universities, which is resulting in the adoption of the spoken language as a medium for literary expression even in such classical subjects as philosophy.

The teachers and students of science have been less conspicuous, but those who follow scientific publications are beginning to see a few original contributions by Chinese workers in some of the leading journals of the west, particularly in the medical sciences. The supply of competent teachers and practitioners varies in the different branches of medical science.

Internal medicine, general surgery, and ophthalmology have thus far attracted the largest number of the better men, but there are already a few workers of great promise in physiology and biochemistry. In the fundamental sciences chemistry is the most popular subject, perhaps on account of its obvious applications to some of the modern industries of China, but a few good men have taken up physics and biology. In general the students of these subjects have been hampered on their return to China by lack of inspiring leadership, by inadequate equipment, and in some of the best institutions by excessive teaching duties.

Among those who are interested in the promotion of science in China there is a marked division into two groups, one believing that at present attention should be devoted almost exclusively to teaching the application of modern science in such fields as medicine, engineering, and agriculture, as they are now known in the west. This group holds that it would be a mistake to encourage scientific research for some time to come. Others believe that while the application of existing scientific knowledge is needed, teaching and research in pure science should not be slighted at this critical period in the educational development of China, and that the scientific workers there should be enabled

to keep up with their literary colleagues in productive research if they are to have their due share of leadership. It is certainly desirable, if not essential, that western methods should be carefully adapted to Chinese conditions and once this is granted it would seem to follow that there is need from the very beginning for that spirit of inquiry which is fostered by the study of the sciences for their own sake.

## I. MEDICAL EDUCATION

### Peking Union Medical College

The Peking Union Medical College graduated in 1924 the first class admitted since it was reorganized under a provisional charter from the Regents of the University of the State of New York. Three students received their degrees, having completed the four years' course of medical studies and a fifth year of satisfactory service as internes in the College hospital. One of these graduates has remained as assistant resident in medicine, and the other two have gone abroad for further study in special branches.

#### Enrollment

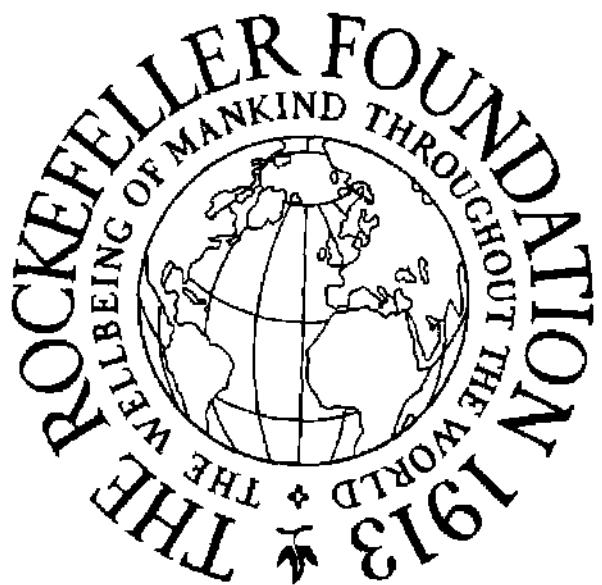
The following table shows the undergraduate enrollment in all departments of the College for the years 1923-1924 and 1924-1925:

Medical School	1923-1924		1924-1925	
	Total	Men	Women	Total
First year	23	16	4	20
Second year	14	15	3	18
Third year	9	9	2	11
Fourth year	5	8	..	8
Fifth year	3	5	..	5
Total	54	53	9	62
		255		

	<i>1923-1924</i>	<i>1924-1925</i>		
<i>Premedical School</i>	<i>Total</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
First year	28	20	10	30
Second year	13	16	2	18
Third year	19	10	2	12
	<hr/>	<hr/>	<hr/>	<hr/>
Total	60	46	14	60
<i>School of Nursing (all women)</i>				
First year	4	..	6	6
Second year	5	..	4	4
Third year	5	..	5	5
Fourth year	1	..	5	5
	<hr/>	<hr/>	<hr/>	<hr/>
Total	15	..	20	20
Total undergraduate enrollment	129	99	43	142

One hundred eighty-two students applied for admission to the premedical and medical schools in 1924, of whom ninety-nine actually took the examinations. These applicants had studied in 230 middle schools and colleges all over China. Forty-two passed the examinations and thirty-eight were actually registered, three in the first year of the medical school in addition to those completing the premedical course at Peking, four in the second and third years of the premedical school, and the remaining thirty-one, including ten women, in the first year of the premedical school.

During the academic year 1923-1924 there were in addition 114 graduate and special students in the medical school and other departments, including many who came for short courses, besides those who remained through the whole year. When it is considered that all of the resident house staff, of whom at the end



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Fig. 45.—Class in biology. Summer Institute for Science Teaching, Tsing Hua College, Peking, 1924

of 1924 there were thirty-four, not counting the fifth-year class of the medical school, and many of the regular teaching staff are in a sense graduate students, though not enrolled as such, it will be seen that the direct educational work of the College is already reaching a not inconsiderable number of persons. The apprenticeship which the College offers to young doctors in clinical work, in teaching, and in research, in their own country, is perhaps the most useful contribution that it is making.

#### Staff

The number of teachers on the staff of the College for the academic year which began in the fall of 1924 is compared in the following table with the numbers in the two years preceding:

	Chinese			Foreign		
	1922-23	1923-24	1924-25	1922-23	1923-24	1924-25
<i>Medical School</i>						
Professors	..	..	..	7	9	9
Associate professors	1	2	3	7	7	8
Assistant professors	..	..	..	1	2	1
Associates	6	4	4	16	18	17
Assistants	15	24	31	5	3	6
Total	22	30	38	36	39	41
<i>Premedical School</i>						
Assistant professors	..	..	..	5	5	3
Instructors	1	1	1	4	6	9
Assistants	4	5	7	4	3	2
Total	5	6	8	13	14	14
<i>School of Nursing</i>	..	1	..	2	2	3
<b>GRAND TOTAL</b>	<b>27</b>	<b>37</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>58</b>



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Fig. 46.—Nursing staff, Peking Union Medical College,  
on way to auditorium for commencement exercises



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Fig. 47.—Part of graduating classes, 1924, Peking Union  
Medical College

**Visiting Professors**

In addition to the regular members of the staff shown above there were in residence during part of 1924, Dr. C. U. Ariëns Kappers, Director of the Dutch Central Institute for Brain Research, completing a six-months' term in anatomy, Dr. W. T. Councilman of the Harvard Medical School in pathology, Dr. W. W. Cort of the Johns Hopkins School of Hygiene and Public Health in parasitology, and Dr. Adalbert Fuchs of Vienna in ophthalmology, all completing a year's service. In the fall Dr. Robert K. S. Lim of Amoy University, formerly a member of the department of physiology at Edinburgh University, began a year's service as visiting professor of physiology.

The fighting in North China in the fall of 1924 prevented the usual exchange of lecturers with the South Manchuria Medical College at Mukden.

During the spring the eight Japanese scientists who had been invited to work at the College after their laboratories at the Imperial University Medical School of Tokyo had been destroyed in the earthquake of 1923, returned to Japan. Their residence at the College during the greater part of one academic year served as another demonstration of the international character of the institution and gave the College staff an

opportunity for intimate contact with some of their Japanese colleagues.

#### Graduate Courses

Short courses for graduate students were conducted during the year 1924 in ophthalmology, surgery, obstetrics and gynecology, and in medicine. A nine-months' course in ophthalmology under Dr. Adalbert Fuchs was completed in the spring quarter. In addition a series of special lectures and demonstrations in roentgenology was given in January for twenty senior students from the Shantung Christian University, who spent ten days at the Peking Union Medical College, and a short series of lectures in histology was given after the Chinese New Year.

The School of Nursing gave a six-months' graduate course, from March 1 to August 31, and the department of medical social service began in September a two-year course for medical social workers.

#### Research

The list of papers published by members of the College staff in 1924 which appears on pages 301 to 307 of this report will show the general character of the studies that are being carried on.

The field study of kala-azar that was begun in 1924 under a special appropriation from the Board resulted in some interesting observations

which appeared to justify the continuance for another year of an intensive study of the problem of the transmission of the disease. Dr. Marshall Hertig of the University of Minnesota, who has been working with the College staff in this investigation, is therefore to remain in China through the year 1925.

The College also co-operated with a commission of the International Health Board in a field study of hookworm infection in China.

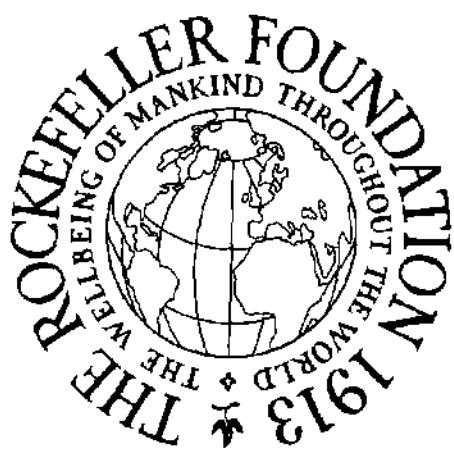
#### The Hospital

The following table shows the gradual increase in the number of patients coming to the hospital for treatment:

	1921-1922	1922-1923	1923-1924
In-patients	2,653	3,403	3,797
Out-patients (total visits)	74,763	77,301	81,814
Staff and private consulting service	10,226	9,409	11,223

The average length of stay for in-patients in 1924 was sixteen days.

The attitude of the public towards autopsies naturally has an important bearing on the scientific work of the institution as well as on routine teaching and clinical activities. The record in this respect has not been wholly satisfactory. In the academic year 1923-1924 only 36 of the 161 cases dying in the hospital came to autopsy, that is 22.36 per cent. In the latter part of



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Fig. 48.—Male surgical ward, Peking Union Medical College



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Fig. 49.—Staff and graduate students, course in ophthalmology, Peking Union Medical College. Dr. Adalbert Fuchs, of Vienna, center, front row

1924, however, special efforts made to explain to relatives and others concerned the reasons for post-mortem examinations led to considerable improvement, so that recently permission for holding an autopsy has been received in 40 per cent or more of fatal cases.

A Chinese member of the department of surgery has been acting as honorary medical adviser to one of the units of the Chinese army at Peking. He has given regular instruction to the military surgeons and has in effect reorganized the surgical service of that unit, so that now fairly important operations are successfully performed in the small military hospital with strict observance of aseptic technique. At the request of the commanding officer an antenatal clinic has also been established at his camp by the department of obstetrics of the College. Nearly a hundred officers and men of this army have volunteered their services as blood donors for cases requiring transfusion.

During the fighting in North China in the fall of 1924, the hospital staff participated in the care of the wounded and assisted in organizing the surgical and nursing service in one of the large military hospitals at Peking.

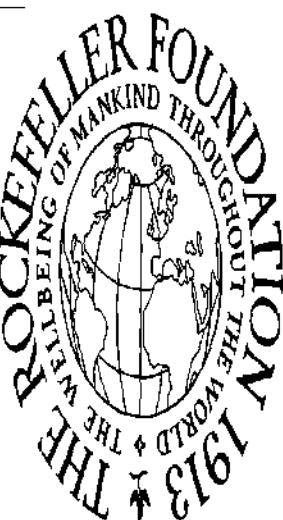
A detailed report of the work of the hospital is published annually by the College and may be



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Fig. 50.—Hunan-Yale College of Medicine. *Left to right:* Atterbury Chapel, Science Hall, Medical School Laboratory Building, Hospital

obtained by persons wishing fuller information about its activities.

#### Receipts and Expenditures

A summary of receipts and expenditures for the operation of the College during the year 1923-1924 is annexed to this report (see pages 308 to 310).

The gross expenditures for the medical and premedical schools, the school of nursing and hospital, not including the cost of maintaining the New York office, amounted to Mex. \$1,434,-813.32 Chinese silver currency, of which Mex. \$403,951.89 was used for salaries and departmental expenses in the medical school itself. The local income, mainly hospital charges, rentals and students fees, amounted to Mex. \$215,245.31, making the net cost under the Peking budget Mex. \$1,219,568.01, or \$630,-169.01 United States currency. Adding the expenses of the trustee's office in the United States and charges for annuities and insurance, the total cost came to \$685,298.08. The net cost is considerably enhanced by the fact that comparatively few of the hospital patients are able to pay more than a nominal fee, while nearly a third pay nothing, thus making the greater part of the hospital expenditure a charge on the College budget. During these earlier years of

the institution when a large part of the staff of all grades must be brought from abroad the expense of travel for staff members and their families, with the relatively frequent furloughs that are necessary, adds to the budget a large item which does not appear in the accounts of established schools in other countries. The College is also obliged to produce its electricity and gas, and to maintain its own water supply service.

#### **Shantung Christian University**

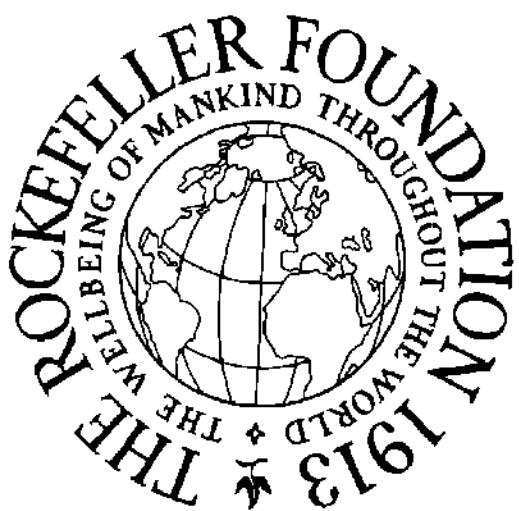
During the past ten years great improvement has been effected by the authorities of the Shantung Christian University in the organization and equipment of the institution, particularly in the medical school. Qualified teachers and ample laboratory space have been provided for the premedical sciences and better equipment has been secured. The students seeking admission from the middle schools have been better prepared. In the medical school itself teachers with no clinical duties have charge of the departments of anatomy, histology, physiology, biochemistry, pharmacology, pathology, and hygiene. The clinical branches are taught by professors with special training in the best schools of Great Britain and the United States. All of the staff are necessarily on a full-time basis, as there are no private practitioners in the city who would

be qualified to share in the teaching. At intervals of about five years provision is made for a year's study abroad for each member of the faculty. Whereas formerly all the teachers were foreigners, three departments are now headed by Chinese and able Chinese assistants have been trained for other departments. Experience with the most recent graduates seems to indicate that the education they have received is not inferior to the training given in many Class A schools in the United States.

The development of the school between 1916 and 1924 is shown by the following figures:

	1916	1924
Number of Missions co-operating	2	12
Teaching staff:		
Foreign	5	24
Foreign-trained Chinese	0	2
Chinese trained in China	1	4
	—	6
	—	30
Total teaching, nursing, and administrative staff:		
Foreign	7	32
Foreign-trained Chinese	0	2
Chinese trained in China	2	10
	—	9
	—	44
Budget:		
School	Mex. \$15,670	Mex. \$124,124
Hospital	12,750	58,970
	<hr/>	<hr/>
	Mex. \$28,420	Mex. \$183,094
Source of support:		
Mission boards	Mex. \$25,750	Mex. \$114,604
China Medical Board		33,000
Local fees and subscriptions	..... 2,670	35,490
	<hr/>	<hr/>
	Mex. \$28,420	Mex. \$183,094

While the China Medical Board has made various contributions towards improvements in buildings and equipment and towards the annual



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Fig. 51.—Science hall, University of Nanking



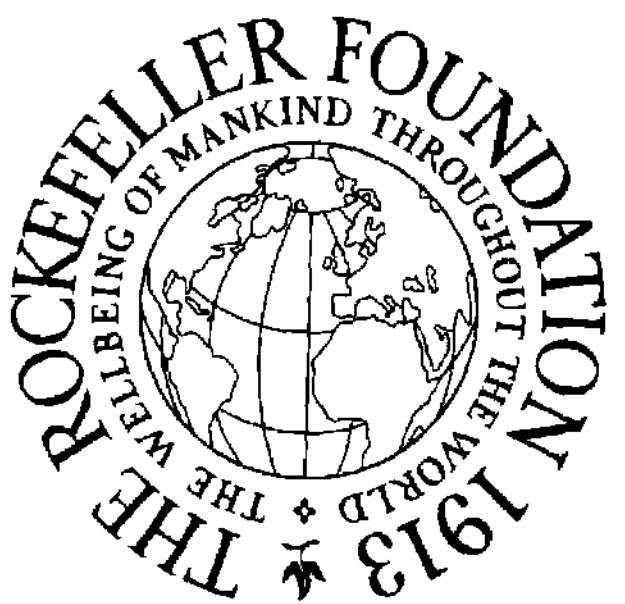
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Fig. 52.—Section of physics laboratory, University of Nanking

budgets, beginning with the year 1916-1917, its part in the maintenance has become relatively small, owing mainly to the marked increase in contributions from the missionary societies interested in the University, and in part to the gradual development of income from local sources, including a grant from the Provincial Government.

The increase in mission contributions has been made possible through the wise adoption by the societies concerned of a policy of concentration resulting in the closing of smaller schools at Hankow, Nanking, and Peking. While a little over a third of the students come from the province of Shantung, the remainder come from fourteen provinces, even including Szechuan which is represented by three students, two of whom are women.

The merging of the medical school for women previously conducted at Peking was completed in 1924, and this made more urgent the need for a larger hospital and more laboratory space. A program requiring the expenditure of approximately Mex. \$545,000 Chinese silver currency having been adopted by the University, the China Medical Board undertook in 1924 to add to its contribution of \$50,000 made in the previous year a sum not exceeding \$80,000 (approximately Mex. \$140,000) towards these improve-



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Fig. 53.—New science building, Nankai University, Tientsin

ments, making its total share about 40 per cent. The responsibility for the remainder was taken by the Women's Committee of the University, which has now raised its quota.

At the same time the Board increased its contribution towards the annual budget in consideration of the contributions in staff and maintenance grants made through the Women's Committee, and agreed to continue its participation until 1928. The total amount appropriated by the Board in 1924 for current expenditure for this four-year period, was Mex. \$113,000, while the Women's Committee undertook to provide for the same period Mex. \$89,000, over and above the previous budget of the school.

#### Hunan-Yale College of Medicine

The period of ten years for which the Hunan Government had pledged an annual contribution to the support of the Hunan-Yale College of Medicine having expired in 1924, negotiations for a new agreement were undertaken. The political disturbances made it difficult to arrive at a satisfactory understanding with assurance that the necessary funds would be forthcoming, and the Board consequently agreed to contribute a sum not exceeding Mex. \$40,000 towards the budget for the year 1924-1925 to enable the school to continue its work while negotiations

were in progress. While no new agreement has yet been concluded, the provincial government has demonstrated its interest in the enterprise by continuing to make payments for the maintenance of the school and therefore no payments from the China Medical Board under this new appropriation have yet been called for.

## II. PREMEDICAL EDUCATION

The plans of the Board for aiding the movement for improving the teaching of the sciences in some of the leading colleges and universities of China made gratifying progress in 1924.

In the fall three students from the Canton Christian College passed the examinations for admission directly to the Peking Union Medical College, this being the first time that students have been able to enter without spending some time in the premedical school to make up deficiencies in their preparation. Several other institutions have so improved their teaching staff and equipment that they should be able to do equally well.

Nankai University completed its new fireproof laboratory building which was designed by a Chinese architect and erected under Chinese supervision. New equipment has been installed and the laboratories are now in use. The cost of the building was Mex. \$200,000 (about \$107,218 United States currency) and about Mex. \$50,000 was spent for movable equipment. The China Medical Board contributed one half of these



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Fig. 54.—Physics laboratory, Soochow University



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Fig. 55.—Science hall, Soochow University

amounts, the remainder being contributed by a Chinese friend of the University. The University now possesses facilities for science teaching which will compare favorably with those of many small colleges of high standing in the United States. Dr. P. I. Wold, of Union College, Schenectady, spent the academic year 1923-1924 at Nankai University as visiting professor of physics, sharing in the teaching and in carrying out plans for the new building and its equipment.

Nankai University, unlike many Chinese and foreign institutions in China, possesses an endowment fund, which brings an annual income of about Mex. \$100,000. During the past five years the number of teachers in the science department has increased from three to nine and the number of enrollments in their courses has grown from ten in 1920 to fifty-one in 1924.

The National Southeastern University at Nanking suffered a serious loss early in the year through the destruction by fire of its main college buildings in which the departments of biology and physics were housed and part of the department of chemistry. The construction of a new fireproof laboratory building for which the Board is contributing half the cost was begun in 1924. In the summer and fall the fighting in the lower Yangtze Valley and the consequent political changes interfered seriously with all the activi-



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Fig. 56.—Botanical laboratory, Soochow University

ties of the institution, but there is ground to hope that these difficulties will soon be overcome. The total number of enrollments in courses in chemistry, physics, and biology at Southeastern in the fall term of 1924 was 949 and the number of teachers was twelve.

The University of Nanking has for some years had but one building for its departments of physics, chemistry, and biology and for its agricultural school. In the past ten years the enrollments in the science courses have increased from 35 to 476, not including the special classes in agriculture. The number of teachers of these subjects has increased from three to twelve during the same period. A new building to house the biological laboratories and the school of agriculture has therefore been badly needed. In 1924 the Board appropriated Mex. \$25,000 towards a total of Mex. \$100,000 for this building and Mex. \$30,000 for equipment. The rest of the money was quickly pledged and the building is now being erected. The Board also made a grant to cover the expense of bringing a visiting professor to Nanking from the United States to assist in teaching in one of the departments for one year and to give advice on the organization and teaching methods of the science departments.

Soochow University, one of the older colleges in China, which is conducted by the Southern

Methodist Mission, has been one of the leading institutions in China in science teaching. The new laboratory building referred to in the report for 1923 was completed and occupied in 1924 and will provide ample space for the departments of chemistry, physics, and biology. The Board had had no part in the construction of the building but in 1924 it made a grant of Mex. \$28,000 for new furniture and apparatus and agreed to contribute Mex. \$35,000 on a diminishing scale during five years towards a larger budget for the science departments.

Shanghai College, which is maintained by the Northern and Southern Baptist Missions, was given a grant of Mex. \$44,000 for additional equipment for its new laboratories and Mex. \$20,000 for an increase in the science budget, payable in instalments during a five-year period.

St. John's University was already provided with a well-equipped laboratory building. The Board undertook in 1924 to contribute during five years the sum of Mex. \$30,000 towards salaries and maintenance of the science departments.

Peking University, now known by its Chinese name as Yenching University, was given a special grant of \$7,500 for the maintenance of its science departments in view of the co-operation which

it has undertaken with the premedical school of the Peking Union Medical College.

It is expected that these seven institutions and a few others, four of which the Board has been assisting, will be able to give good preparation to an adequate number of candidates for admission to the better medical schools now in existence. It is planned, therefore, to close the premedical school of the Peking Union Medical College at the end of the academic year 1924-1925.

#### **Biological Supply Service**

In the fall of 1924 a beginning was made in carrying out a plan for establishing a common biological supply service in China. A naturalist with experience in collecting and preparing biological teaching material was sent to China by the Board. He has established his headquarters for the present at Soochow University and is helping the staff there to organize the supply of materials available in that region, particularly the forms of fresh-water life. Later he will undertake similar work at some institution which is conveniently situated for securing marine forms.

#### **Co-operation with National Association for the Advancement of Education**

Professor George R. Twiss, of Ohio State University, completed in 1924 his two years'



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Fig. 57.—Class in general biology, St. John's University



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Fig. 58.—Physics class, St. John's University

study of science teaching in the middle schools and colleges of China for the Chinese National Association for the Advancement of Education. He visited a large number of institutions in North China and the Yangtze Valley, as far west as Szechuan, and his conferences with teachers and school administrators on teaching methods and on the equipment of laboratories proved very stimulating. His report, which will shortly be published both in English and in Chinese, naturally shows serious defects in the training of science teachers and in the equipment available in most schools, but the interest which he aroused is already resulting in definite steps for the improvement of science teaching. The Board co-operated with the National Association in this survey, by contributing part of the budget. The traveling expenses in China were paid entirely from local funds.

Before his departure Dr. Twiss assisted in organizing under the auspices of the Association a summer institute for science teachers, which was held at Tsing Hua College, near Peking, from July 10 to August 8, 1924. The Institute was attended by 130 teachers from all over the country. Courses were offered in physics, chemistry, and biology, each in two sections, one conducted in Chinese and the other in English. The emphasis was placed on the use of laboratory



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Fig. 59.—General chemistry laboratory, St. John's University



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Fig. 60.—Science hall, Shanghai College

methods, and most of the work consisted of laboratory exercises in which selected experiments suitable for use in elementary college courses were performed under the guidance of leaders chosen from the more experienced teachers. These exercises were supplemented by conferences on teaching methods and by evening lectures of a more or less popular type, attended by members of all the groups.

The results seemed to justify the organization of a similar institute for the summer of 1925, and the Board accordingly made a small grant to the National Association for this purpose.

### III. FELLOWSHIPS

The increase in the proportion of Chinese preparing for important teaching positions in medical and nursing schools and in the science departments of colleges in China appears in the table presented below showing the number of persons studying in the United States and Europe in 1923 and 1924 under fellowships from the China Medical Board. Most of the persons receiving these fellowships studied in the United States, but a few were helped to work in Great Britain and other European countries. No aid is given by the Board for undergraduate studies in foreign countries, and the fellowships given to graduates are being restricted to persons who have shown their ability by some years of actual work in China, except in a few instances in which it has seemed advisable to assist a graduate student who was already abroad to improve his preparation for some particular position in China.

FELLOWSHIPS FOR STUDY IN THE UNITED STATES AND EUROPE

Subjects studied	1923			1924		
	To Chinese	To Americans and Europeans	Total	To Chinese	To Americans and Europeans	Total
Medical:						
Anatomy	..	2	2	..	2	2
Bacteriology, immunology, and ecology	1	..	1	1	..	1

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Subjects studied	1923			1924			Total
	To Chinese	To Americans and Europeans	Total	To Chinese	To Americans and Europeans	Total	
Biochemistry	1	4	5	1	2	3	
Dermatology and syphilology	1	..	1	1	..	1	
Gynecology and obstetrics	..	4	4	..	1	1	
Hygiene	..	1	1	..	..	..	
Medicine	1	4	5	1	5	6	
Neurology	1	1	2	1	1	2	
Ophthalmology	2	7	9	1	1	2	
Oral surgery and dentistry	1	1	2	1	..	1	
Otolaryngology	..	..	..	1	..	1	
Pathology	1	3	4	..	..	..	
Pediatrics	..	2	2	..	..	..	
Pharmacology	1	1	2	2	1	3	
Physiology	1	1	2	1	2	3	
Roentgenology	..	2	2	..	1	1	
Surgery	..	11	11	..	2	2	
Total	11	44	55	11	18	29	
Premedical:							
Biology	..	2	2	..	4	4	
Chemistry	2	3	5	5	3	8	
Physics	2	3	5	3	1	4	
Total	4	8	12	8	8	16	
Miscellaneous:							
Dietetics	1	..	1	1	..	1	
Hospital administration	1	..	1	2	1	3	
Medical photography	1	..	1	1	..	1	
Nursing	1	4	5	6	5	11	
Laboratory technique	..	..	..	..	1	1	
Total	4	4	8	10	7	17	
Deductions for persons counted twice	1	18	19	1	3	4	
GRAND TOTAL	18	38	56	28	30	58	

The fellowships given for graduate study at the Peking Union Medical College show a similar increase in the number of Chinese students, who in 1924 accounted for nearly two thirds of the total number as compared with barely more than half in 1923. The following table shows the numbers enrolled in each department.

FELLOWSHIPS FOR STUDY AT THE PEKING UNION MEDICAL COLLEGE

Subject studied	1923			1924		
	To Chinese	To Americans and Europeans	Total	To Chinese	To Americans and Europeans	Total
Medical:						
Anatomy	2	..	2	1	..	1
Bacteriology	2	..	2	2	..	2
Biochemistry	1	1	2	..	..	..
Embryology	..	..	..	1	..	1
Hygiene (dental)	..	..	..	1	..	1
Hygiene (school)	2	2	4	..	..	..
Medicine	7	9	16	11	4	15
Medicine (clinical lab. technique)	3	..	3	2	..	2
Neurology	..	1	1	..	1	1
Obstetrics and gynecology	..	5	5	5	6	11
Ophthalmology	7	1	8	12	12	24
Parasitology	2	2	4	1	1	1
Pathology	1	..	1	3	1	4
Pediatrics	1	1	2	2	..	2
Pharmacology	..	1	1	1	..	1
Roentgenology	..	1	1	..	5	5
Surgery	5	12	17	5	5	10
Total	33	36	69	47	29	76
Premedical:						
Biology	1	..	1	1	..	1
Total	1	..	1	1	..	1
Miscellaneous:						
Anaesthesia	..	..	..	..	1	1
Dietetics	..	1	1	..	1	1
Hospital administration	..	1	1	..	..	..

Subject studied	1923			1924		
	To Chinese	To Americans and Europeans	Total	To Chinese	To Americans and Europeans	Total
Nursing	6	1	7	14	2	16
Social service	1	..	1	..	..	..
Total	7	3	10	14	4	18
Deductions for persons counted twice	..	1	1	2	1	3
<b>GRAND TOTAL</b>	<b>41</b>	<b>38</b>	<b>79</b>	<b>60</b>	<b>32</b>	<b>92</b>

In 1924, \$43,862.44 was spent for fellowships for study in the United States and Europe and \$8,694.36 for fellowships at the Peking Union Medical College. These amounts include expenditures for tuition and travel in many cases. Some of the fellowships are given to persons who continue to receive all or part of their support from the institutions with which they are connected and the grants to such persons are intended merely to cover the special expenses incidental to their studies. Undergraduate scholarships are given by the Board at Peking only to the one student in each class above the first year in the premedical school, who has the best scholarship record for the previous academic year. A few other scholarships are offered by the College from special funds not provided by the Board.

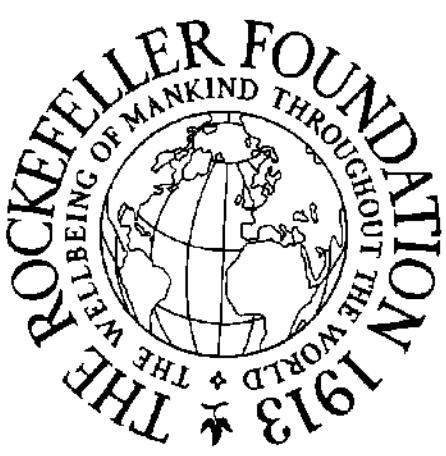
## **IV. MISCELLANEOUS**

### **Aid to Hospitals**

As part of its plans of promoting medical education in China the Board has, during the past ten years, aided a few hospitals in China not connected with medical schools to increase their personnel and improve their physical equipment, thus providing them with better facilities for giving practical experience to young Chinese physicians. A larger number of hospitals have been helped through the special courses offered at the Peking Union Medical College to doctors, nurses, and laboratory technicians. It seemed likely that without the stimulus that could be given by the Board in these ways the necessary improvements might be greatly delayed and that consequently the doctors trained at great cost by the medical schools would for some time be turned out into an environment unfavorable to their continued development, with the result that most of them would gradually deteriorate. The policy of the Board in recognizing the educational function of these community hospitals is in harmony with the views recently expressed by some of the

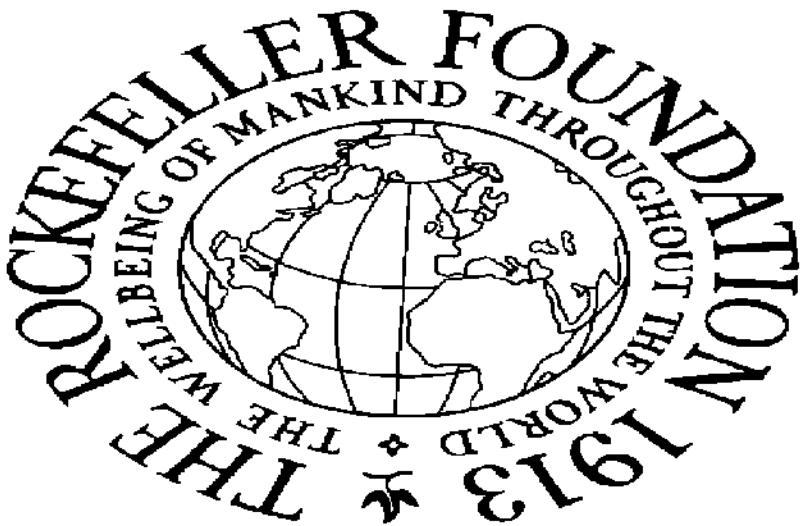
leaders in hospital administration and medical education in the United States. It is obvious that direct financial aid could not be extended indefinitely without exhausting the resources of any private organization, in view of the large and growing number of institutions involved. Fortunately the local communities in China seem to be appreciating better the service of a modern hospital and are prepared to take a larger share in supporting such institutions. Partly as a result of the improvements that have already been effected in hospital standards there has been a marked increase in local income in most of the hospitals aided, in spite of the disturbed political conditions in the past five years. In eight hospitals in northern and central China, the local income from hospital charges and professional fees has increased on an average 111 per cent during this period, their combined earnings for 1920 being Mex. \$120,965, and for 1924, Mex. \$254,816. Another hospital is now taking in nearly ten times as much as it did ten years ago, largely as a result of improvements made by the superintendent from private resources, but with some help in the last seven years from the China Medical Board.

In 1924 two hospitals, one at Huchow in Chekiang Province, and the other at Fenchow, in Shansi, completed new buildings, for which the



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Fig. 61.—Two operating rooms with sterilizing room between, Fenchow Hospital



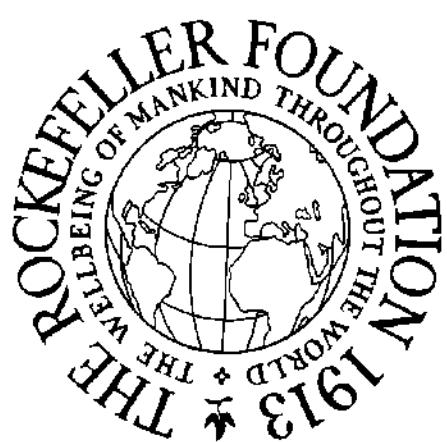
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Fig. 62.—A woman's ward, Fenchow Hospital

China Medical Board had contributed relatively small amounts under appropriations reported in previous years.

The Huchow Hospital, supported by the Southern Methodist and Northern Baptist Missions, is a fireproof structure of four stories with a capacity of eighty beds. Floor plans appearing on pages 311 to 314 illustrate the progress in hospital construction in China. There is also a two-story out-patient building and a power house. The cost of this new plant was approximately Mex. \$97,500. The local Chinese community provided the site and made generous contributions to the building fund, thus showing a real appreciation of the fine service which missionary doctors had been giving their city for many years under great handicaps.

The Fenchow Hospital of the American Board Mission was formally opened in June, 1924, in the presence of representatives of the local authorities. It is built of brick and wood in Chinese style adapted to its modern uses. The main plant consists of a four-story administration building with two three-story ward blocks, to accommodate seventy patients or in emergencies as many as 105. It is equipped with steam heating plant and pressure steam for its sterilizers, electric light, telephones, and modern plumbing throughout. Chinese citizens and officials had helped in



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Fig. 63.—Fenchow Hospital. Men's wing at left, women's at right, clinical and administration building in center



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Fig. 64.—Science building, Ginling College, Nanking

securing the site and had contributed to the building funds. The total cost of land, buildings, and equipment was about \$91,000. Shansi is the one province of China which has retained the same governor since the revolution of 1911. While regarded as one of the poorer provinces, the stability of its government has enabled it to set an example to other provinces in its educational system, and recently in its program of modern highway construction which has greatly improved communications within the province.

In both these hospitals the Board has co-operated through temporary contributions towards larger staff and general maintenance expenses.

Now that the improvement in medical and nursing education has made it possible to find Chinese doctors and nurses who are capable of taking a responsible share in the work of such hospitals, considerable economies can be effected through the gradual substitution of Chinese workers even at equal salaries, for it is a fact not always appreciated that the cost of sending out and maintaining foreign personnel is approximately double the amount of the salaries paid to them, largely on account of the expense of travel and other special provision, such as the period of intensive language study, that must be made for foreigners. As the Chinese come to take more responsible positions the hospital also becomes



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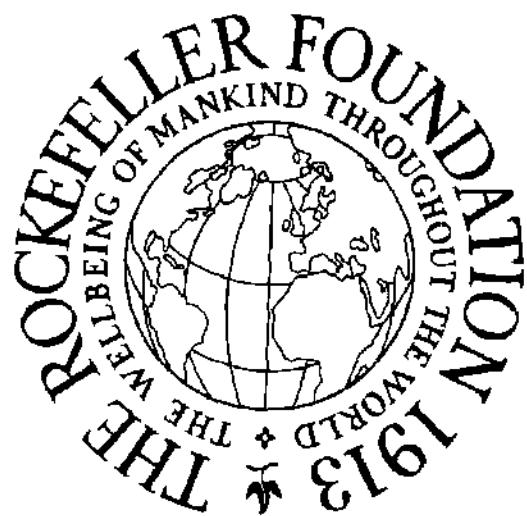
Fig. 65.—Huchow Union Hospital

less of a foreign institution, its influence can be more widely extended, and more local support can be obtained in the form of subscriptions as well as payments for services rendered.

For these reasons the China Medical Board is gradually withdrawing from co-operation with foreign mission hospitals, usually by renewing its appropriations for current expenses for a limited period on a diminishing scale, thus giving the hospital time to readjust its finances and to secure additional support from other sources. Such appropriations were made in 1924 to the men's hospital of the American Methodist Mission at Peking, which has more than trebled its income from hospital charges during the period of co-operation, to the American Presbyterian Mission Hospital at Hwaiyuen, Anhui, and to the American Episcopal Mission hospital at Anking, in Anhui.

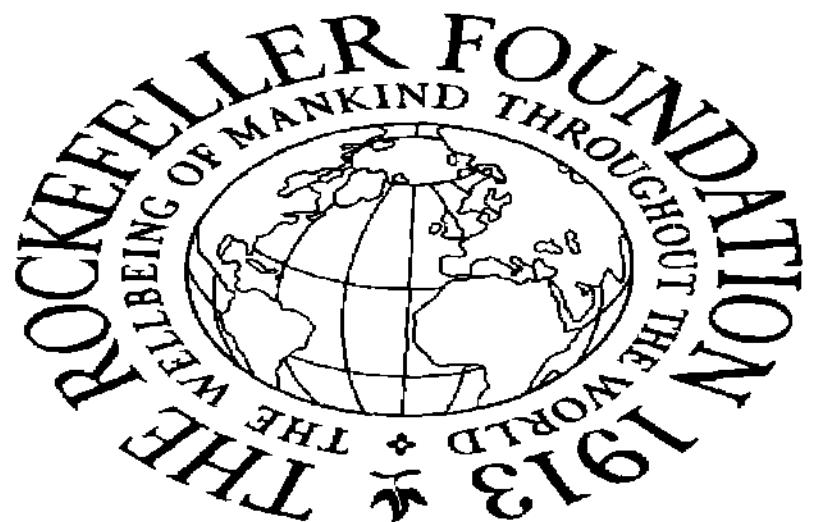
### Nursing Education

The main contribution of the Board to nursing education is made through the School of Nursing of the Peking Union Medical College, both through the undergraduate teaching which is still on a very small scale—only twenty students being registered for the academic year 1924-1925—and through the instruction of Chinese graduate nurses, of whom there were 61



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Fig. 66.—Hospital of the Southern Presbyterian Mission at Hsuchowfu, China, in which the Peking Union Medical College has established temporary offices and laboratories for its field study of kala-azar



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Fig. 67.—Interior of kala-azar laboratory

during the year 1923-1924 on the hospital staff, besides 15 formally enrolled as graduate students. The school is maintaining a high standard and should do much to establish nursing in China on a satisfactory basis.

The Methodist Women's Hospital at Peking, which has one of the best training schools for nurses in China, arranged last year for an affiliation with the School of Nursing of the Peking Union Medical College, under which the senior students will have six months' instruction in practical nursing at the College hospital. In order that the pupil nurses might be better prepared to profit by this opportunity, the Board undertook in 1924 to provide Mex. \$5,000 towards a total of Mex. \$12,000 for teaching equipment for the Methodist Hospital, and an amount sufficient for the salary for three years of an instructor who would be maintained by the hospital. The additional amount needed to make available the appropriation for equipment is being raised by nurses who have graduated from the Methodist Hospital.

#### **Co-operation with Medical and Health Education Associations**

Payments were made for the year 1924 under earlier appropriations to the China Medical Missionary Association towards the expense of

its central offices and for its work in translation of medical textbooks; to the National Medical Association for its work in developing a Chinese scientific terminology; and to the Council on Health Education, both for its general program and for its special campaign to interest middle school and college students in medicine as a career.

#### The Board and Officers

The resignation of Mr. John G. Agar as a member of the Executive Committee of the Rockefeller Foundation, and hence of the China Medical Board, was accepted at a meeting of the Executive Committee of the Foundation held May 20, 1924. Mr. Agar had served as a member of the Executive Committee since December 5, 1923. At the meeting of the Rockefeller Foundation held November 7, 1924, Dr. Francis W. Peabody and Dr. Ernest D. Burton were elected as members of the Board to serve until stated meeting of the Foundation in November, 1927. Dr. Peabody was elected to succeed himself and Dr. Burton was elected as a new member.

At the same meeting Mr. Roger S. Greene was elected General Director of the Board for the year 1925 and Mrs. Norma S. Thompson became Secretary of the Board upon her election as a Secretary of the Rockefeller Foundation. No other changes were made during the year.



## APPENDIX

### I

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- CAMERON, JOHN. A holiday at Tsingtao, North China. *Pharmaceutical Journal and Pharmacist*, Oct., 1924, v. 59, pp. 405-407.
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- CHOU, C. H. Tuberculosis of cornea-sclera. *American Journal of Ophthalmology*, Sept., 1924, v. 7, pp. 670-676.
- CORBETT, C. H. and Y. M. HSIEH. Principles of physics and their modern applications. (A textbook; Yen Ching University Series; v. 2 is to appear in March, 1925) Pub. by Commercial Press, Shanghai.
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- DETWILER, S. R. Experiments on transplantation of limb in amblystoma; innervation and function of limbs transplanted after out-growth of peripheral nerves. *American Journal of Anatomy*, May, 1924, v. 33, pp. 407-419.
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- DIEUAIDE, F. R. Consideration of cardiac arrhythmias on basis of local circulatory changes. *Archives of Internal Medicine*, Nov., 1924, v. 34, pp. 669-689.
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## II

### Peking Union Medical College Peking, China

#### RECEIPTS AND EXPENDITURES FOR THE ACADEMIC YEAR ENDING JUNE 30, 1924

Receipts	
<b>LOCAL INCOME</b>	
General	
Rentals	Mex. \$42,143.00
Tuition, Graduate Students	3,821.95
Tuition, Students	11,305.00
Tuition, Pupil Nurses	1,408.22
Board and Room, Students	9,411.97
	_____
	Mex. 868,090.14
Hospital	
First-class Patients	Mex. \$28,091.00
Second-class Patients	28,894.50
Third-class Patients	15,083.50
Professional Services	43,896.94
X-ray Fees	11,601.45
Laboratory Fees	1,205.00
Out-patient Fees	7,491.96
Operating Room Fees	4,672.50
Hire of Ambulance	1,364.80
Charges for Use of Radium	1,271.15
Physiotherapy Treatments	87.50
	_____
	143,660.30
Miscellaneous	
Sale of Electricity	Mex. \$2,002.27
Sale of Gas	309.00
Sundry Items	1,183.60
	_____
	3,494.87
	_____
RECEIVED FROM CHINA MEDICAL BOARD	Mex. \$215,245.31
Towards regular budget	1,185,038.66
Contingent Fund	34,529.35
	_____
<b>TOTAL RECEIPTS UNDER PEKING ADMINISTRATION</b>	<b>Mex. \$1,434,813.32</b>

## EXPENDITURES

	SALARIES	OTHER EXPENSES	TOTAL
<b>GENERAL OFFICE</b>			
Administration	\$151,573.06	\$23,175.86	\$174,748.92
Library	6,332.50	11,288.68	17,621.18
College Health Service	11,990.00	1,727.06	13,717.06
Reprints	.....	5,775.00	5,775.00
Travel	.....	73,371.68	73,371.68
Language Study	.....	2,469.78	2,469.78
Grants to Schools	.....	5,000.00	5,000.00
	<b>\$169,895.56</b>	<b>\$122,808.06</b>	<b>\$292,703.62</b>
<b>PHYSICAL PLANT</b>			
Mechanical Department	\$49,079.79	\$130,091.47	\$179,171.26
Dept. of Buildings and Grounds	29,000.77	15,424.29	44,425.06
	<b>\$78,080.56</b>	<b>\$145,515.76</b>	<b>\$223,596.32</b>
<b>HOSPITAL</b>			
Administration	\$35,481.78	\$9,541.74	\$45,023.52
Professional Care of Patients	12,189.63	41,196.23	53,385.86
Clinical Laboratory	15,294.37	5,369.40	20,663.77
Nursing Services	92,365.17	425.97	92,791.14
Dietary Department	19,837.05	56,507.64	76,344.69
Nurses' Home	4,822.71	12,826.06	17,648.77
Matron's Department	5,320.95	15,444.23	20,765.18
Laundry	4,518.48	5,333.37	9,851.85
Pharmacy	10,793.27	.....	10,793.27
Roentgenology	4,578.00	7,733.09	12,311.09
	<b>\$205,201.41</b>	<b>\$154,377.73</b>	<b>\$359,579.14</b>
<b>MEDICAL SCHOOL</b>			
Administration	\$3,840.00	\$409.93	\$4,249.93
Scientific Services for All Departments	12,043.29	4,090.56	16,133.85
Central Photographic Bureau	2,134.60	565.46	2,700.06
Central Illustration Bureau	895.00	.....	895.00
Department			
Anatomy	34,571.09	3,397.64	37,968.73
Physiology	16,730.00	2,962.87	19,692.87
Pharmacology	17,366.60	2,463.90	19,830.50
Physiological Chemistry	8,336.00	2,193.06	10,529.06

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	SALARIES	OTHER EXPENSES	TOTAL
MEDICAL SCHOOL (Continued)	<i>Mex.</i>	<i>Mex.</i>	<i>Mex.</i>
Department			
Pathology	\$47,121.61	\$7,721.82	\$54,843.43
Medicine	76,197.81	10,923.03	87,120.84
Neurology	13,351.08	990.87	14,341.95
Surgery	50,958.61	2,080.00	53,038.61
Gynecology and Obstetrics	19,500.61	902.52	20,403.13
Otolaryngology	19,599.96	700.00	20,299.96
Ophthalmology	26,707.84	1,453.67	28,161.51
Roentgenology	13,242.46	500.00	13,742.46
	<u>\$362,596.56</u>	<u>\$41,355.33</u>	<u>\$403,951.89</u>
PREMEDICAL School			
Administration	\$2,326.00	\$.....	\$2,326.00
General Service	1,284.00	742.39	2,026.39
Department			
Chemistry	20,670.00	973.66	21,643.66
Physics	12,010.17	2,400.29	14,410.46
Biology	17,103.11	924.97	18,028.08
Modern Languages	15,060.00	190.87	15,250.87
Chinese	4,500.00	186.13	4,686.13
	<u>\$72,953.28</u>	<u>\$5,418.31</u>	<u>\$78,371.59</u>
SCHOOL OF NURSING	<u>\$12,974.32</u>	<u>\$1,516.24</u>	<u>\$14,490.56</u>
DEPARTMENT OF RELIGIOUS AND SOCIAL WORK	<u>\$4,536.00</u>	<u>\$1,636.55</u>	<u>\$6,172.55</u>
STUDENT HALLS	<u>\$3,333.50</u>	<u>\$18,084.80</u>	<u>\$21,418.30</u>
TOTALS	<u>\$909,571.19</u>	<u>\$490,712.78</u>	<u>\$1,434,813.32</u>
CONTINGENT ITEMS			<u>34,529.35</u>
TOTAL EXPENDITURES UNDER PEKING ADMINISTRATION			<u>34,529.35</u>
SUMMARY OF NET COST YEAR ENDING JUNE 30, 1924			
	<i>Mex.</i>	<i>U. S. Currency</i>	
Net expenditure under regular budget	\$1,185,038.66	\$612,327.17	
Contingent Items	34,529.35	17,841.84	
Retirement Fund, Group and Individual Insurance		9,364.77	
Expenses of Trustees' Office in United States, Purchasing Agency, etc.		45,764.30	
TOTAL NET EXPENDITURES		<u>\$685,298.08</u>	

Huchow Union Hospital Floor Plans

III

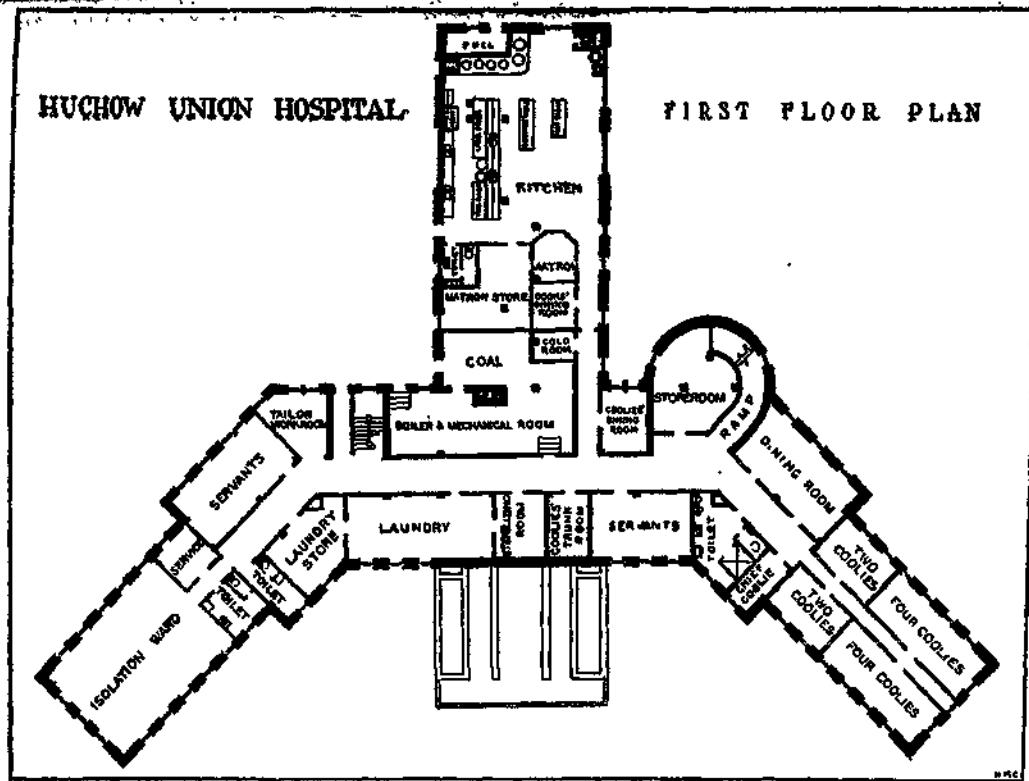


Fig. 68

HUCHOW UNION HOSPITAL

SECOND FLOOR PLAN

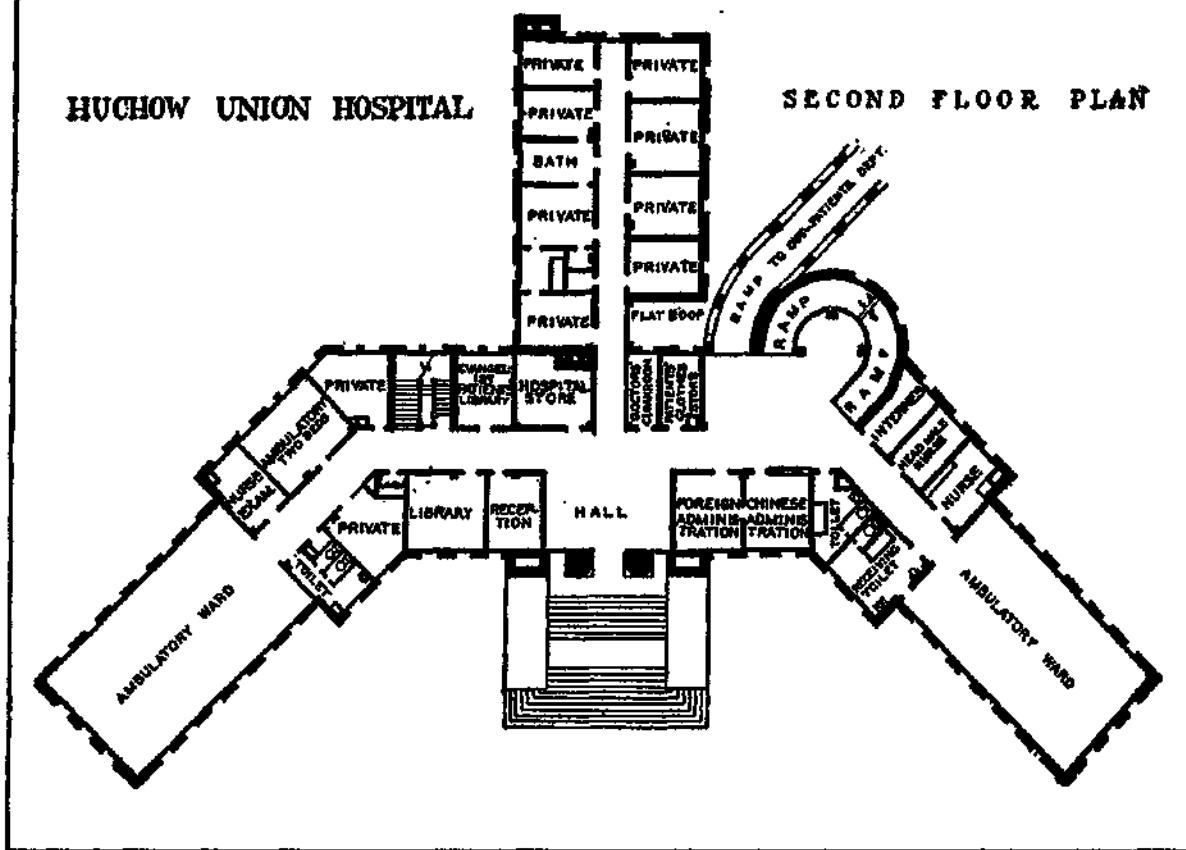


Fig. 69

HUCHOW UNION HOSPITAL

THIRD FLOOR PLAN

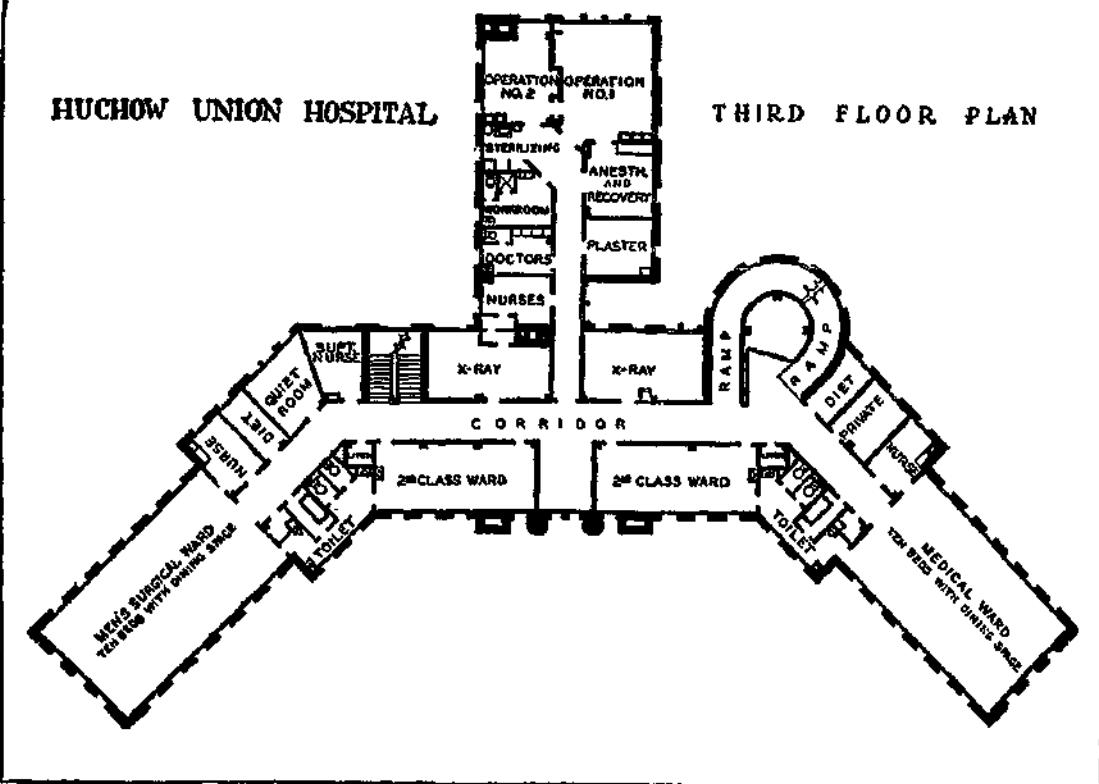


Fig. 70

## HUCHOW UNION HOSPITAL

**FOURTH FLOOR PLAN**

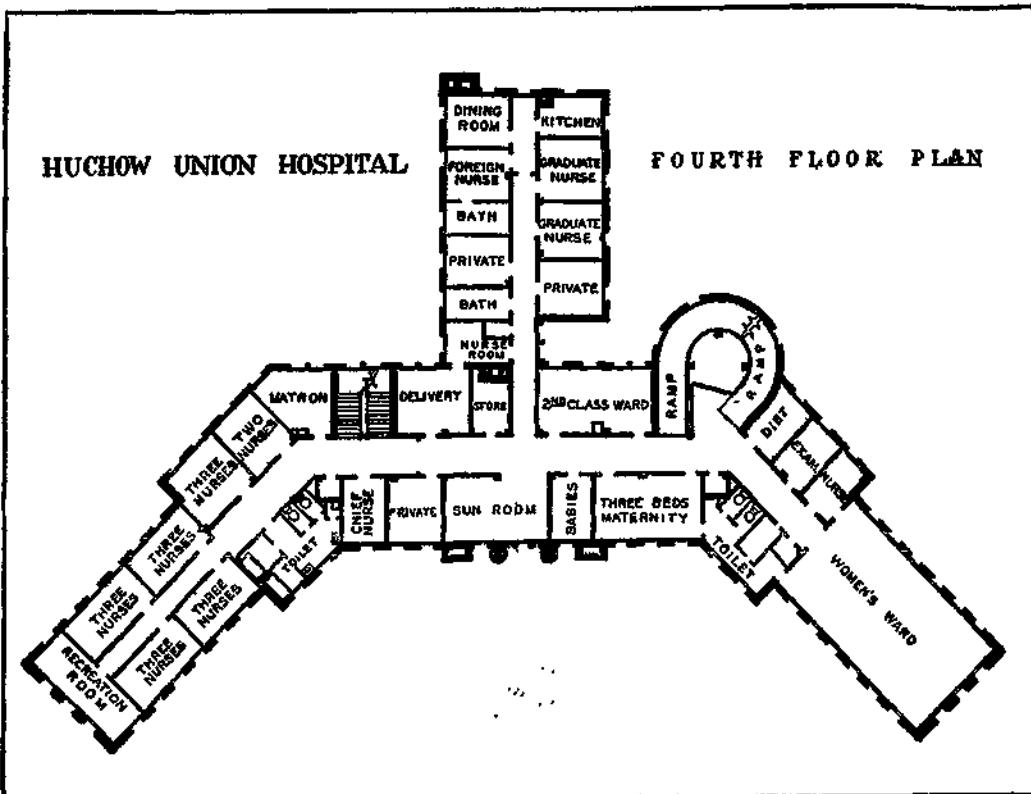


Fig. 71



**DIVISION OF MEDICAL EDUCATION**  
**Report of the Director**



To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report  
as Director of the Division of Medical Education  
for the period January 1, 1924, to December  
31, 1924.

Respectfully yours,  
**RICHARD M. PEARCE,**  
Director.



## DIVISION OF MEDICAL EDUCATION

During the year the Division of Medical Education continued its policy of making studies of present-day needs in medical education and of developing programs for the assistance of medical schools in countries other than the United States and China.

The officers of the Division, co-operating with medical leaders in the many countries which they have visited, have gathered information on conditions and developments in medical education and, where it has seemed wise and where it has been the wish of the local authorities, have proposed to the Rockefeller Foundation trustees programs for assistance in improving the facilities in this field.

### I. Surveys

During 1924 the following countries were visited for the purpose of survey by some representative of the Division: Estonia, Latvia, Lithuania, France, Italy, Turkey, Syria, Egypt, Union of South Africa (Cape Colony, Natal,

the Transvaal), Australia (New South Wales, South Australia, Victoria), New Zealand, and Java.

For study of the development of programs under consideration or already approved or in operation, the following countries were revisited: Canada, England, Germany, Denmark, Poland, Hungary, Yugoslavia, Czechoslovakia, Austria, Bulgaria, the Philippines, and Straits Settlements.

#### **Surveys in America by Visitors from Other Countries**

The Foundation invited the heads of the Faculty of Medicine of the Université de Montréal to visit the United States in connection with plans for the development of their medical school. A commission composed of Monsignor A. J. V. Piette, rector of the Université de Montréal, Dr. L. de L. Harwood, dean of the faculty of medicine, Dr. T. Parizeau, assistant dean of the faculty of medicine, Professor G. Baril, secretary of the faculty of sciences, and Mr. E. Cormier, the architect, arrived in New York on April 25 and later made a tour of the principal schools in nine states.

Professor Hugh MacLean, director of the medical unit of St. Thomas' Hospital Medical School, London, came to the United States on the invitation of the Foundation for the purpose

of studying methods of medical education in this country and visited some of the leading medical schools and hospitals in Baltimore, Boston, New Haven, New York, and Philadelphia.

At the request of the dean of the medical school of the University of Hongkong, Dr. R. E. Tottenham, recently appointed professor of obstetrics and gynecology in that school, visited America on his way to take his chair and, under the auspices of the Foundation, made an extended investigation of maternity centers in fourteen cities in the United States and Canada.

Dr. A. L. Hoops, principal civil medical officer of the Straits Settlements, while visiting the United States, was invited by the Division of Medical Education to study activities in medical education in this country in view of the present developments in medical teaching at the King Edward VII College of Medicine in Singapore. Dr. Hoops visited medical schools in Baltimore, Boston, New York, and Toronto.

During the year, facilities for seeing American medical centers were also given to the following persons who were visiting in the United States: Sir H. Lindo Ferguson, dean of the medical faculty of the University of Otago, New Zealand, Professor J. H. Ashworth and Dr. John H. Crawford of the University of Edin-

burgh, and Dr. G. C. Linder and Dr. C. H. Andrewes of the medical unit of St. Bartholomew's Hospital Medical School, London.

### **Activities of the Division of Medical Education in 1924**

#### *1. Visits and Surveys*

Austria	Latvia
Bulgaria	Lithuania
Canada	Natal
Cape Colony	New South Wales
Czechoslovakia	New Zealand
Denmark	Philippines
Egypt	Poland
England	South Australia
Estonia	Straits Settlements
France	Syria
Germany	Transvaal
Hungary	Turkey
Italy	Victoria
Java	Yugoslavia

#### *2. International Exchange of Information and Teaching Methods*

##### *a. Professors arranged for*

Brazil  
Denmark  
Siam

##### *b. Visits of medical teachers or administrators from*

Canada  
England  
Hongkong  
Straits Settlements

## c. Visiting fellowships from

Australia	Hongkong
Austria	Hungary
Brazil	Japan
Bulgaria	Philippines
Canada	Poland
Czechoslovakia	Rumania
Denmark	Scotland
France	Siam
Germany	Syria
The Netherlands	Yugoslavia

3. *Assistance (Emergency), Not Contingent on Plan of Development*

## a. Literature

Austria	Italy
Belgium	Poland
Bulgaria	Portugal
Czechoslovakia	Rumania
Finland	Russia
France	Switzerland
Germany	Turkey
Hungary	Yugoslavia

## b. Laboratory Supplies

Austria
Bulgaria
Czechoslovakia
Germany
Hungary
Poland
Rumania
Yugoslavia

## c. Local fellowships

Austria
Czechoslovakia
Germany
Poland
Rumania
Yugoslavia

*4. Assistance (Constructive), Contingent on a Plan of Development*

State University of Iowa

Chulalongkorn University, Bangkok, Siam — medical school and premedical school

Faculdade de Medicina e Cirurgia, São Paulo, Brazil

University of Copenhagen, Denmark

Free University of Brussels Medical School

University of Edinburgh

University of Oxford

University of Cambridge

McGill University, Montreal

Université de Montréal

Welsh National School of Medicine

University of Hongkong

American University of Beirut

King Edward VII College of Medicine, Singapore

## II. New Undertakings

### Co-operation in Great Britain

In December, 1923, proposals regarding assistance for buildings and endowment were made to certain medical schools in Great Britain. The grants were to be used in carrying out programs planned by the schools and were contingent on the provision of financial support by the institutions themselves. Arrangements have been completed for this co-operation, and progress has been made in carrying out the proposed programs.

*Universities of Cambridge and Oxford.* Many additional facilities have been provided for the medical sciences at Cambridge and Oxford uni-

versities during the past few years. Cambridge has recently constructed new buildings for physiological chemistry and parasitology, and comparative pathology is being extended. Here, as at Oxford, stimulation has been due largely to the Dunn trustees, who gave funds to Oxford for the development of pathology and to Cambridge for the development of physiological chemistry. Quarters provided with these bequests, together with earlier arrangements, furnished very satisfactory housing facilities for the medical sciences except in the case of pathology at Cambridge and physiological chemistry at Oxford, which did not have space and facilities commensurate with their importance in this general expansion. With a view to perfecting arrangements at these two universities for teaching and research in the preclinical subjects, the Foundation has appropriated £100,000 toward building costs and £33,000 toward the endowment of the new school of pathology at Cambridge, and £75,000 for the erection and maintenance of a building for physiological chemistry at Oxford.

*University of Edinburgh.* In December, 1923, the Foundation pledged to the University of Edinburgh for co-operation in the development of its medical school, £35,000 for the erection and equipment of a new laboratory building on

the infirmary grounds to care for the higher teaching and research of the medical clinics, the University guaranteeing the increased cost of maintenance; £15,000 to complete the endowment of the chair of surgery; the sum of £1,000 a year for a period of five years, to cover the expenses incident to the increased staff in the department of medicine, and the sum of £750 a year for five years to supplement the salary budget of the surgical staff. Of these amounts the pledges for the completion of the endowment of the chair of surgery and for the first annual grant supplementing the salary budget of the surgical staff were paid during 1924.

*Welsh National School of Medicine at Cardiff.* In developing the facilities for clinical teaching in the Welsh school of medicine, the Royal Infirmary at Cardiff undertook to increase the number of beds available for the use of the medical unit, and the University guaranteed payment of the increased maintenance costs involved, if the Foundation would contribute £14,000 for building and equipping a small laboratory to be used by the medical unit for teaching and research purposes. During 1924, the Foundation paid in full its share in this co-operation.

#### Canada

The authorities of the medical faculty of McGill University undertook to reorganize the

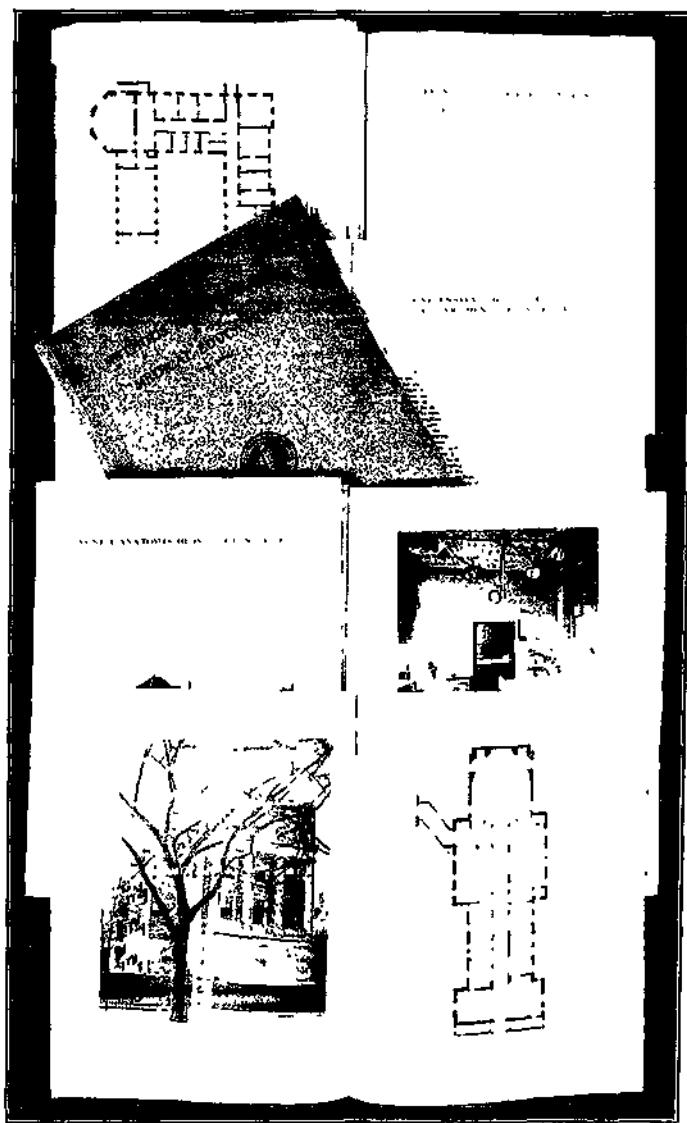


Fig. 72.—Typical pages of the first series of "Methods and Problems of Medical Education"

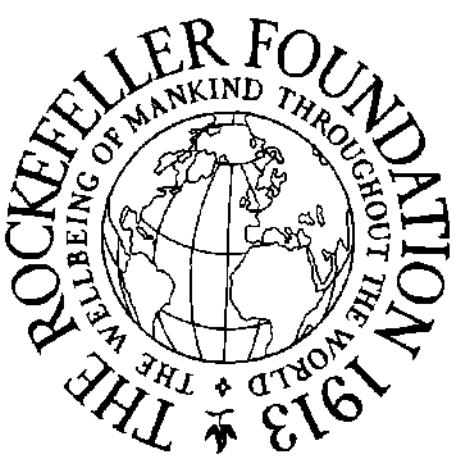
department of medicine and develop it along the lines of a true university clinic. To assist this development the Rockefeller Foundation granted a capital sum of \$500,000 which was paid during 1924.

#### American University of Beirut

Following a visit by the director of the Division of Medical Education to the American University of Beirut early in the year, a plan was adopted by the trustees of the Foundation for aiding the medical school at the University during a period of adjustment. The Foundation pledged itself to provide for this purpose a sum of not more than \$125,000, payable over a five-year period. The object of this assistance was especially to permit more rapid additions to the faculties of anatomy, parasitology, pharmacology, and physiological chemistry, and additions to laboratory equipment; to furnish the salary for an assistant at the Lebanon Hospital, which is affiliated with the medical school of the American University; and to provide for increased library facilities and for fellowships for the training of men for teaching positions. Co-operation along these lines was begun in 1924.

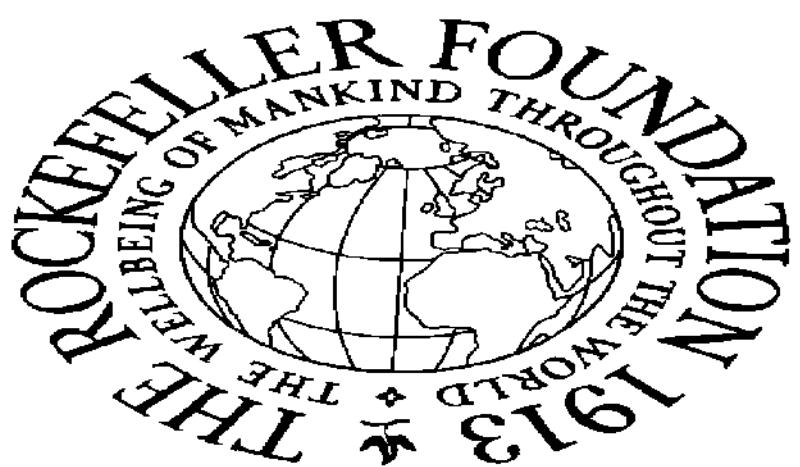
#### Publications

During the year the first two numbers were issued of a new bulletin to appear from time to



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Fig. 73.—Laboratory of Pathological Histology, Pathological Institute, McGill University. The new pathology building, completed in 1924, is a part of a general plan of development for the medical school of McGill University, which the Rockefeller Foundation has helped to finance



Photograph Excised Here

Fig. 74. New medical ward of the Royal Medical College, Bangkok, Siam, and (in the foreground) the old medical buildings which it has replaced

time under the title "Methods and Problems of Medical Education." This publication will include articles by medical leaders throughout the world dealing with significant advances in laboratory and clinic construction, equipment, organization, and methods of teaching. The bulletins are distributed to the deans of medical schools all over the world, and to others interested in the subjects treated. The first issue contained articles on teaching or on organization of departments of anatomy by professors in Basel, Brussels, Gratz, Würzburg, University College (London), University of Wisconsin, Yale University, and the Peking Union Medical College; on departments of obstetrics and gynecology at the Harvard Medical School and at the Peking Union Medical College; on a department of pharmacology and toxicology at Yale; and on a true university clinic of medicine in the City Hospital at Boston. The second issue was devoted to a method of teaching hygiene and included a reproduction of an actual student's report on his sanitary survey of a town. Succeeding bulletins are in course of preparation.

### III. Progress of Earlier Undertakings

#### Emergency Work in Europe

The program of emergency aid, extended for a limited period following the war to countries with

low exchange and difficult economic conditions, was continued during 1924 in sixteen countries of Central and Eastern Europe. In some, only scientific literature was provided; in others laboratory supplies were furnished as well. In seven countries resident fellowships were granted as follows: Germany 262, Poland 12, Czechoslovakia 2, Austria 4, Hungary 9, Rumania 6, Yugoslavia 6. Other countries aided in this general emergency program are: France, Portugal, Switzerland, Italy, Belgium, Bulgaria, Finland, Russia, and Turkey.

#### **University of Hongkong**

During the year a chair of obstetrics was established in the medical school of the University of Hongkong, and Dr. R. E. Tottenham from the Rotunda Hospital, Dublin, Ireland, was appointed by the University as professor of gynecology and obstetrics. The Rockefeller Foundation transferred to the University 250,000 Hongkong dollars for the endowment of this chair, thereby completing its pledge of 1922 to endow chairs of medicine, surgery, and obstetrics.

#### **Chulalongkorn University, Bangkok, Siam**

Construction of the new buildings for the medical school of Chulalongkorn University (the Royal Medical College) in Bangkok, and

the assembling of a staff of visiting professors for the medical and premedical schools, have gone forward during the year. By request of the Siamese authorities the Foundation has continued to assist in finding the visiting professors to serve while Siamese are being trained to succeed them. The following professors, in addition to Dr. Aller G. Ellis, who was already acting as director of studies and visiting professor of pathology, have been appointed by the Siamese Government during 1924:

Dr. C. Witherington Stump, of Edinburgh, professor of anatomy

<sup>1</sup> Dr. Reynold A. Spaeth, of Baltimore, professor of physiology

Mr. Abraham Press, of Washington, professor of physics

Mr. Thomas F. Morrison, of Princeton, professor of biology

At the end of the year negotiations were under way with prospective visiting professors for the departments of surgery and medicine.

Earlier projects in connection with the Philippines, Brussels, São Paulo in Brazil, Université de Montréal in Canada, and the State University of Iowa in the United States, have been continued as previously outlined.

#### Fellowships

During 1924 the Division of Medical Education directly maintained and administered nine-

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<sup>1</sup>Died June 27, 1925.

ty-eight traveling fellowships for young medical scientists from foreign countries, to prepare them for teaching positions guaranteed to them in their own countries and to which they pledged themselves to return after the termination of their fellowships. As in previous years, preference was given to candidates from institutions with which the Division is co-operating. The number of fellows representing each country was as follows: Hungary 13, Austria 9, Brazil 9, Canada 9, Germany 8, Yugoslavia 8, Rumania 7, Poland 7, Japan 5, Czechoslovakia 5, the Netherlands 3, Bulgaria 3, Siam 3, Philippine Islands 2, Hongkong 2, Scotland 1, France 1, Denmark 1, Syria 1, Australia 1. Their studies were conducted in the following countries: United States, Canada, Brazil, England, Scotland, Ireland, Spain, France, Belgium, the Netherlands, Germany, Denmark, Austria, Czechoslovakia, Italy, Switzerland, China.

The distribution by specialties studied was as follows: pathology, bacteriology, and immunology 30, chemistry 23, physiology 22, clinical medicine 17, anatomy and related subjects 13, obstetrics and gynecology 6, surgery 5, pharmacology 4, medicine 3, physics 1.

In addition, the Division has continued its grant to the Medical Research Council of Great Britain to provide fellowships for the study of

medicine in the United States. During 1924, ten fellows appointed by the Council studied the following subjects: brain surgery 2, biochemistry 2, psychiatry 1, cardiovascular diseases 1, tuberculosis 1, gastro-enterology 1, pediatrics 1, and 1 studied and taught internal medicine as exchange professor at the Johns Hopkins Medical School.

Under the Medical Fellowship Board of the National Research Council of Washington, D. C., fifty-four fellowships in medicine were in force in 1924. These were supported by funds from the Rockefeller Foundation and from the General Education Board, jointly, in accordance with a pledge made in 1922 for a period of five years. According to subjects studied, the fellowships were distributed as follows: physiology 16, biochemistry 8, bacteriology 6, pathology 5, surgery 5, anatomy 3, medicine 2, pharmacology 2, laryngology 1, neuropathology 1, biochemistry and immunology 1, physiology and anatomy 1, physiology and biochemistry 1, physiology and pharmacology 1, chemistry and pathology 1.





**DIVISION OF STUDIES**  
**Report of the Director**



To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report as Director of the Division of Studies for the period of January 1, 1924, to December 31, 1924.

Respectfully yours,  
EDWIN R. EMBREE,  
Director.

o

## DIVISION OF STUDIES

The Division of Studies was created January 1, 1924, for the purposes of administering work not included in existing units of the Foundation and of making studies of lines of work which the Foundation might wish to undertake from time to time. While for the present, medical education and public health are regarded as the major fields for Foundation effort, the existence of the new division insures a certain flexibility of program and provides an agency for studying and for carrying out other activities.

The Division of Studies assumed a number of items which had heretofore been carried by the Foundation's officers of central administration. In addition it gave careful study to other fields of work and began to make recommendations for some concentration of effort in subjects included in human biology.

### Nursing Education

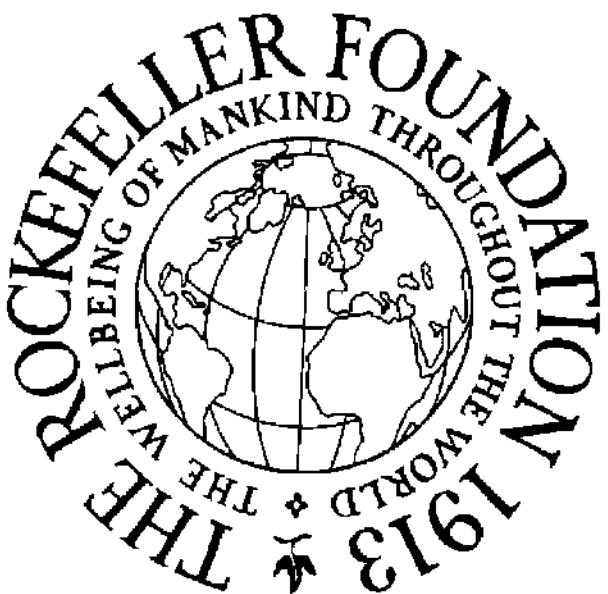
Activities started some years ago, for which the new division now takes responsibility, had

to do largely with nursing education and with hospital and dispensary studies and demonstrations.

Careful surveys of nursing education have been made in twelve countries of Europe and aid has been given in a few instances by making possible advances in educational projects and by fellowships for further training of leaders and teachers in schools of nursing.

Two schools received grants during 1924 for development and maintenance: (1) an institution under the direction of the University of Cracow in Poland, and (2) a school created by government authority in Zagreb, Yugoslavia.

Both these schools have come into being as a result of government initiative and involve co-operation between the departments of education and of hygiene and important hospital agencies. Both schools present educational programs of interest. A course of two years looks toward the training of both laywomen and religious sisters and toward training, on the one hand, for hospital or private duty in sick care, and, on the other, to public health work. Following a common year of hospital training, the course divides, giving the student going on to sick care a second year in bedside work and the student going into public health a second year in dispensary work, tuberculosis, and children's



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Fig. 75.—New laboratory of the Marine Biological Laboratory, Woods Hole, Massachusetts

clinics, as well as general field experience in visiting and instructive nursing.

In nursing education, the Foundation is not committed to any special type of school or to any particular theory of education. It stands ready to co-operate with government or university authorities in helping to build up what appear to be influential centers in accordance with whatever program seems best in the given country.

In the United States support was continued to the interesting experiment undertaken under the auspices of Yale University in New Haven, Connecticut. This university school, of which Miss Annie W. Goodrich is Dean, is offering to a carefully selected group of young women a distinctive educational program in which during the intensive course of twenty-eight months, the pupils are given instruction and experience both in bedside care and in various aspects of public health.

Fellowships for advanced study were provided for a number of leaders who are to return to teaching positions in the countries from which they come. During the year 1924 twenty-three fellowships were given to teachers from five countries, as follows: Belgium 5, France 6, Japan 2, Siam 1, Poland 9. These fellows studied in the following countries: England 11,



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Fig. 76.—Detail of the main entrance of the new laboratory of the Marine Biological Laboratory, Woods Hole, Massachusetts

France 4, the United States 4, Canada 1, the Peking Union Medical College, China 3. Two matrons of important hospital schools in London and of the new schools in Cracow and Zagreb made studies as guests of the Foundation of important educational development in other countries of Europe and in the United States and Canada.

In addition to this work in nursing education under the direction of the Division of Studies, assistance has been given in certain other instances to nursing as a part of the regular programs of other Foundation boards or divisions. The Peking Union Medical College, supported by the China Medical Board, maintains a nursing school of high standard as one of its departments. The International Health Board in connection with its programs of co-operation with ministries of health, has aided public health nursing, particularly in Brazil and in the Philippines. The Division of Medical Education, in its gifts to medical education, has often made possible, indirectly, the improvement of standards of nursing care and nurse training in university teaching hospitals.

#### Hospital and Dispensary Studies

The officers of the Foundation have for some years made special studies of hospital and

dispensary service and administration. Specific appropriations during 1924 included support to the Library and Service Bureau of the American Conference on Hospital Service, in Chicago, and continued support of the program of the New York Committee on Dispensary Development.

The work of this Committee, created by the United Hospital Fund of New York City, looks toward the improvement of standards and of service in out-patient departments of hospitals and in detached clinics and health centers. The work of the Committee began in 1921 and has continued since that time under the direction of Mr. Michael M. Davis, Jr. Services of the Committee have included demonstrations of modern standards in dispensary service, co-operation and consultation with dispensary authorities, detailed studies of a number of problems in the field, and a program of publications bearing upon dispensary standards and service.

An interesting item was the support by this Committee of the "pay clinic," established by Cornell Medical School. The clinic offers excellent medical service to persons of moderate means. Fees ranging from \$1.50 to \$10 practically cover the budget of about \$240,000 per year. Physicians in attendance receive some

payment for their services. Visits of patients, averaging about 10,000 per month, are scheduled by definite appointments made in advance. The clinic is an important factor in the regular teaching and research of the Medical School.

### Human Biology

The general officers of the Foundation and the Director of the Division of Studies have given careful thought to opportunities that may lie before the Foundation in fields other than those included in a strict definition of medical education and public health. A few projects have been undertaken in the natural sciences, particularly in the group of sciences having to do with human biology.

The first appropriation made January 15, 1924, through the Division of Studies was one of half a million dollars toward buildings and endowment of the Marine Biological Laboratory, Woods Hole, Massachusetts. The work and influence, nationally and internationally, of this center of research and teaching in the biological sciences need not be elaborated in this report. In order to make possible adequate permanent buildings and in order to insure future income the Foundation joined with other agencies and individuals in creating a fund for buildings and endowment amounting in total

to somewhat more than one and one half millions of dollars.

Funds to the amount of \$200,000 were given to continue fellowships administered by the National Research Council in the biological sciences and in physics, chemistry, and mathematics. Support was pledged over a ten-year period to the publication of International Biological Abstracts.

In the field of psychology and mental hygiene, aid over a five-year period was pledged to special studies in mental hygiene as applied to school children, to be carried out through the Canadian National Committee for Mental Hygiene under university auspices. Support was continued to surveys by the National Committee for Mental Hygiene of the United States, in the care of the insane and feeble-minded, and a sum was set aside for use by that Committee during a three-year period for fellowships in psychiatry.



**THE ROCKEFELLER FOUNDATION**

**Report of the Treasurer**



NEW YORK, December 31, 1924

To the President of the Rockefeller Foundation:

Sir:

I have the honor to submit herewith my report of the financial operations of The Rockefeller Foundation and its subsidiary organizations for the period January 1, 1924, to December 31, 1924.

Respectfully yours,  
L. G. MYERS,  
Treasurer.



## TREASURER'S REPORT

The following table summarizes the income, disbursements, and appropriations:

Undisbursed income on hand January 1, 1924, amounted to.....	\$6,704,503.59
Income from January 1, 1924, to Decem- ber 31, 1924, including sundry receipts and refunds amounted to.....	8,191,506.16

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The total amount available for disburse- ment was therefore.....	\$14,896,009.75
Disbursements on account of appropria- tions amounted to.....	7,288,822.39

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Leaving a balance of undisbursed income on December 31, 1924, amounting to....	\$7,607,187.36
Unpaid appropriations and commitments effective in 1924 and prior years amount to.....	6,530,043.21

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Leaving a balance in income account avail- able for appropriation amounting to....	\$1,077,144.15
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Appropriations and pledges effective in 1925  
and following years, amounting to \$18,294,-  
768.34, as shown in the annexed balance sheet,  
are not provided for in the foregoing summary

but are considered as charges against the income of the years in which they fall due.

Income invested in land, buildings, and equipment, almost wholly in China, was increased by the net sum of \$50,979.75, as shown in Exhibit L, on page 410, making a total to date of \$8,914,-796.39.

Since the close of the year the accounts of the Comptroller, the accounts of the Treasurer, and the securities owned by the Corporation have been examined by Messrs. Peat, Marwick, Mitchell and Company, Accountants, who have rendered a report to the Chairman.

The financial condition and operations are set forth in the appended exhibits, listed below:

- |   |           |
|---|-----------|
| Balance Sheet.....                                      | Exhibit A |
| Statements of Receipts and Disbursements of Income..... | Exhibit B |
| Foundation Appropriations:                              |           |
| Division of Medical Education.....                      | Exhibit C |
| Division of Studies.....                                | Exhibit D |
| Schools of Hygiene and Public Health..                  | Exhibit E |
| Miscellaneous.....                                      | Exhibit F |
| International Health Board.....                         | Exhibit G |
| China Medical Board.....                                | Exhibit H |

- Summary of Appropriations and Payments..... Exhibit I
- Statement of Appropriations and Payments on account of Special Funds.... Exhibit J
- Statements of Principal Funds..... Exhibit K
- Land, Buildings, and Equipment Funds. Exhibit L
- Schedule of Securities in General Fund.. Exhibit M
- Schedule of Securities in Special Funds.. Exhibit N

## EXHIBIT A

## BALANCE SHEET, DECEMBER 31, 1924

## ASSETS

## I. INVESTMENTS

## General Fund

General Schedule (Exhibit M).....	\$162,423,343.01
Secured demand loans.....	2,781,281.49
	<hr/>
	\$165,204,624.50

## Special Funds (Exhibit N)

Securities.....	\$77,000.00
Cash.....	10,000.00
	<hr/>
	87,000.00
	<hr/>
	\$165,291,624.50
	<hr/>

## II. LAND, BUILDINGS, AND EQUIPMENT (Exhibit L)

In China.....	\$8,875,169.52
In New York.....	39,626.87
	<hr/>
	\$8,914,796.39
	<hr/>

## III. INCOME ACCOUNTS

## Special Funds

Cash on deposit in New York.....	\$106.43
----------------------------------	----------

## General Fund

Cash on deposit in New York.....	\$7,214.82
Cash on deposit in London.....	2,649,914.58
Cash on deposit in Brussels.....	648,615.19
Cash on deposit in Czechoslovakia.....	374,528.18
Secured demand loans.....	1,268,718.51

Funds in hands of agents, to be accounted for, and sundry accounts receivable.....	\$2,670,564.99
Less accounts payable.....	12,368.91
	<hr/>

2,658,196.08
--------------

\$7,607,187.36
----------------

17,217,624.19
---------------

<hr/>
24,824,811.56

<hr/>
\$24,824,917.98

<hr/>
\$199,031,338.87
<hr/>

GRAND TOTAL.....
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## TREASURER'S REPORT

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## EXHIBIT A

## BALANCE SHEET, DECEMBER 31, 1924

## FUNDS AND OBLIGATIONS

## I. FUNDS

General Fund (Exhibit K).....	\$165,204,624.50
Special Funds	
Gift of Laura S. Rockefeller.....	\$50,000.00
Gift of John D. Rockefeller.....	37,000.00
	_____
	87,000.00
	_____
	<b>\$165,291,624.50</b>

## II. LAND, BUILDINGS, AND EQUIPMENT FUND

Appropriations from income (Exhibit L).....	<b>\$8,914,796.39</b>
	_____

## III. INCOME ACCOUNTS

## Special Funds

Estate Laura S. Rockefeller Fund (Exhibit B)	\$64.77
Laura S. Rockefeller Fund (Exhibit B).....	41.66
	_____
	<b>\$106.43</b>

## General Fund

Balance due on appropriations payable in 1924 and prior years (Exhibit I).....	\$6,530,043.21
	_____

Appropriations and pledges effective in 1925  
and following years:

1925.....	\$9,449,177.84
1926.....	3,198,700.50
1927.....	2,748,550.00
1928.....	987,515.00
1929.....	1,115,325.00
1930.....	795,500.00
	_____
	18,294,768.34
	_____
	<b>*24,824,811.55</b>
	_____
	<b>\$24,824,917.98</b>
	_____

GRAND TOTAL.....

**\$199,031,338.87**

\* The total of all unpaid appropriations and pledges is \$17,217,624.19 in excess of the balance of general fund income amounting to \$7,807,187.36, as shown on opposite page, but it will be noted that these obligations become effective over a term of years, thus permitting their satisfaction gradually as the income of the respective years is received.

## EXHIBIT B

STATEMENT OF RECEIPTS AND DISBURSEMENTS OF INCOME  
GENERAL FUND

## RECEIPTS

Balance, December 31, 1923.....	\$6,704,503.59
Contribution for study of hookworm disease.....	25.00
Refunds of payments made in prior years	
International Health Board.....	\$72.91
China Medical Board.....	399.41
	<hr/>
	472.32
Income for the year.....	<hr/>
	\$6,705,000.91
	8,191,008.84
	<hr/>
	\$14,896,009.75

## DISBURSEMENTS

INTERNATIONAL HEALTH BOARD (Exhibit G)	
Hookworm, county health work, malaria, and yellow fever.....	\$1,676,495.29
Tuberculosis in France.....	42,862.47
Public health education.....	405,876.38
Miscellaneous.....	189,468.14
Administration.....	221,631.18
	<hr/>
	\$2,536,338.46

## CHINA MEDICAL BOARD (Exhibit H)

Medical education	
Peking Union Medical College	
Buildings and equipment.....	\$36,722.99
Operation (part of year).....	618,842.19
	<hr/>
	\$655,565.18

Unaffiliated medical schools.....	68,884.60	
Premedical education.....	137,998.42	
Hospitals and premedical education.....	28,055.20	
Hospitals—Mission and Chinese.....	83,238.04	
Educational campaign.....	9,176.16	
Fellowships and scholarships.....	52,556.80	
Miscellaneous.....	35,745.37	
Administration.....	75,077.66	
 DIVISION OF MEDICAL EDUCATION (Exhibit C).....		1,140,297.43
DIVISION OF STUDIES (Exhibit D).....		2,045,298.23
 Dispensary development.....	\$110,318.24	
Nursing education.....	53,563.96	
Hospital studies and demonstrations.....	18,151.42	
Biology, physics, and chemistry.....	644,899.74	
Mental hygiene.....	47,778.11	
Miscellaneous.....	36,019.07	
 SCHOOLS OF HYGIENE AND PUBLIC HEALTH (Exhibit E).....		910,730.54
MISCELLANEOUS (Exhibit F).....		425,000.00
ADMINISTRATION (Exhibit F).....		62,449.13
		162,713.60
 Income on hand December 31, 1924, accounted for in balance sheet.....		7,288,822.39
		<u>\$7,607,187.36</u>

**EXHIBIT B—Continued****SPECIAL FUNDS****LAURA S. ROCKEFELLER FUNDS**

Balance, December 31, 1923.....	\$41.66
Income collected during the year ending December 31, 1924.....	3,000.00

Amounts paid to the several societies designated by Mrs. Rockefeller.....	\$3,041.66
	3,000.00

Balance, December 31, 1924, accounted for in cash on deposit.....	\$41.66
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**JOHN D. ROCKEFELLER FUND**

Income collected during the year ending December 31, 1924.....	\$1,850.00
Amount paid to the society designated by Mr. Rockefeller.....	1,850.00

**ESTATE LAURA S. ROCKEFELLER FUND**

Balance of income December 31, 1924, accounted for in cash on deposit.....	\$64.77
--	---------

1924 FOUNDATION APPROPRIATIONS  
UNPAID BALANCES OF APPROPRIATIONS MADE IN PRIOR YEARS,  
AND PAYMENTS THEREON MADE IN 1924

EXHIBIT C  
DIVISION OF MEDICAL EDUCATION

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS	TREASURER'S REPORT
<b>Belgium</b>				
University of Brussels. Toward building and equipment of the new University institutes (R.F. 2668)*.....	\$500,000.00	\$.....	\$144,000.00	
<b>Brasil</b>				
Faculdade de Medicina e Cirurgia, São Paulo. Scientific equipment and assistants for Department of Pathology (R.F. 2711, 2851).....	378.70	10,000.00	6,920.23	
Toward salary and travel of professor of pathology (R.F. 2709, 2760)....	5,375.28	5,000.00	4,462.24	
<b>Canada</b>				
Université de Montréal, Faculty of Medicine Development of laboratories (R.F. 2735).....	12,500.00	.....	12,500.00	
Expenses of commission from the Université in visiting the United States (R.F. 2817, 2821).....	.....	1,500.00	1,163.86	
McGill University. Endowment of its Department of Medicine (R.F. 2842).....	.....	500,000.00	500,000.00	
<b>Central and Eastern Europe</b>				
Co-operation with medical schools in the rehabilitation of their scientific equipment for teaching and research (R.F. 2495, 2681, 2678, 2735)....	121,504.96	.....	45,741.54	365

\* The figures in parentheses, following the text describing the purpose of each appropriation, are the serial numbers of the resolution of the Board or Executive Committee, authorizing the payment.

## EXHIBIT C—Continued

	PRIOR APPROPRIATIONS	1924 APPROPRIATIONS	1924 PAYMENTS	THE ROCKEFELLER FOUNDATION
Denmark				
University of Copenhagen. Salary and expenses of visiting professor, and laboratory equipment for its medical school (R.F. 2820).....	.....	\$5,000.00	\$4,487.07	
Great Britain				
England				
University of Cambridge. Toward building of School of Pathology £100,000 (R.F. 2910).....	.....	475,000.00	.....	
University of Oxford. Toward buildings and endowment of Department of Biochemistry—£75,000 (R.F. 2828).....	.....	330,000.00	240,115.70	
Scotland. University of Edinburgh				
Toward endowment of Chair of Surgery £15,000 (R.F. 2843).....	.....	66,000.00	65,486.10	
Toward development of clinical teaching in its medical school £1,750 (R.F. 2844).....	.....	7,700.00	8,274.93	
Wales. University of Wales. Building and equipment of teaching laboratory for Welsh National School of Medicine, and improvement of clinical facilities of Royal Infirmary, Cardiff—£14,000 (R.F. 2856).....	.....	65,000.00	61,132.08	
Hongkong				
University of Hongkong. Endowment of Chair of Obstetrics—Hk. 250,000 (R.F. 2807).....	.....	140,000.00	127,812.50	
Philippine Islands				
University of the Philippines. Salary and traveling expenses of associate dean of its medical school (R.F. 2680).....	1,423.92	.....	455.86	

## Siam

## Chulalongkorn University

Buildings for its medical school (R.F. 2819).....	909.51	125,000.00	11,405.97
Expenses of visiting pathologist (R.F. 2727).....		.....	574.52
Toward salaries and traveling expenses of foreign professors in its medical school (R.F. 2754).....		15,000.00	11,199.76
Toward salaries and traveling expenses of foreign professors in the premedical school (R.F. 2866) .....		12,000.00	1,245.35

## Syria

American University of Beirut. Maintenance and equipment (R.F. 2838, 2850).....		25,000.00	7,800.00
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## United States

Columbia University. Building and equipment of medical school laboratories (R.F. 2732).....	991,666.67	.....	.....
University of Iowa. Toward development of its medical school (R.F. 2759, 2845).....		450,000.00	450,000.00

## Miscellaneous

Supplying the chief medical centers of Europe with the important medical journals of America and England (R.F. 2649, 2679).....	49,138.06	.....	27,533.82
Survey of medical schools in Europe and the Near East (R.F. 2651, 2802).....	7,135.73	6,000.00	5,538.25
Travel of visiting scientists (R.F. 2718, 2724, 2750, 2764, 2810, 2813, 2822, 2829-30, 2906).....	2,725.36	11,000.00	1,321.97

## Fellowships

Grants to doctors for medical study (R.F. 2712, 2702, 2912).....	781.65	161,000.00	104,629.58
Fellowships and additional facilities for scientists of Austria, Czechoslovakia, Poland, Hungary, Bulgaria, and Yugoslavia (R.F. 2736, 2753).....		25,000.00	2,105.74

## EXHIBIT C—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
Fellowships—(Continued)			
Fellowships and additional facilities for scientists of Germany (R.F. 2707, 2752).....	\$56,605.58	\$100,000.00	\$65,721.53
Medical Research Council, England. Fellowships in medicine in the United States (R.F. 2730).....	50,000.00	.....	12,708.36
National Research Council. Research fellowships in medicine supported jointly by the Foundation and General Education Board (R.F. 2684, 2763).....	16,449.95	50,000.00	40,995.80
Administration—Division of Medical Education			
Home Office (R.F. 2789, 2811).....	.....	56,597.27	53,902.33
European Office (R.F. 2713, 2793).....	2,448.49	.....	1,671.40
Field Staff (R. F. 2751).....	.....	30,000.00	29,491.74
<b>TOTALS</b> .....	<b>\$1,854,043.86</b>	<b>\$2,672,607.27</b>	<b>\$2,045,298.23</b>
Unexpended balances of appropriations allowed to lapse—			
R.F. 2680.....	\$968.06		
R.F. 2684.....	12,793.64		
R.F. 2707.....	36,587.08		
R.F. 2709.....	5,375.28		
R.F. 2713.....	777.09		
R.F. 2718.....	908.22		
R.F. 2724.....	1,740.21		
R.F. 2727.....	384.99		
R.F. 2736.....	34,796.36		
R.F. 2802.....	1,984.37		
	<hr/>	96,265.30	.....

R.F. 2762.....	\$56,115.32
R.F. 2807.....	12,187.50
R.F. 2811.....	2,694.94
R.F. 2821.....	336.14
R.F. 2843.....	513.90
R.F. 2856.....	<u>3,867.92</u>
	<b>76,715.72</b>
<b>NET TOTALS.....</b>	<b>\$1,757,778.56</b>
	<b>\$2,596,981.55</b>
	<b>\$2,045,298.23</b>

**EXHIBIT D**  
**DIVISION OF STUDIES**

	PRIOR APPROPRIATIONS	1924 APPROPRIATIONS	1924 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>Dispensary Development</b>				
Committee on Dispensary Development. Toward expenses of Committee (R.F. 2689, 2771).....	\$42,391.64	\$145,000.00	\$110,318.24	
<b>Nursing Education</b>				
<b>Europe</b>				
Administration (R.F. 2769).....		20,000.00	5,032.93	
Advanced training of French nurses (R.F. 2687).....	3,136.43		1,679.16	
Travel of directors or teachers of schools of nursing (R.F. 2840, 2847)....		2,000.00		
Study of nurse training (R.F. 2737).....	12,122.78		9,303.57	
Expenses of commission to England from the School of Nursing at Lyon, France (R.F. 2834).....		1,500.00		
University of Cracow School of Public Health and Bedside Nursing Building and equipment (R.F. 2833).....		65,000.00		
School for Public Health and Bedside Nurses, Zagreb, Yugoslavia Building and equipment (R.F. 2832).....		8,500.00		
Salary of assistant and scholarships (R.F. 2918).....		1,250.00		
<b>Yale University—School of Nursing</b>				
Equipment, supplies and incidental expenses (R.F. 2721).....	35,000.00		8,158.92	
Maintenance of educational features (R.F. 2720, 2770, 2831).....	5,000.00	21,250.00	26,250.00	
Survey of negro nursing education in the United States (R.F. 2805).....		1,000.00		
Committee for the Study of Public Health Nursing. Publication of report (R.F. 2667).....	78.52		78.52	
Studies in nursing education (R.F. 2849).....		1,000.00	960.06	
Travel of visiting nurses (R.F. 2859-60).....		3,500.00	2,100.81	

**Hospital Studies and Demonstrations**

American Conference on Hospital Service. Equipment and maintenance of Hospital Library and Service Bureau (R.F. 2748, 2804, 2848).....	10,000.00	20,000.00	17,131.99
Travel of hospital administrators from Australia and New Zealand (R.F. 2857).....	.....	1,000.00	11.94
Study of maternity care in England (R.F. 2858).....	.....	5,000.00	1,007.49

**Biology, Physics, and Chemistry**

National Research Council			
Research fellowships in physics and chemistry (R.F. 2691, 2774).....	48,516.54	100,000.00	86,004.17
Research fellowships in the biological sciences (R.F. 2717, 2775).....	6,130.06	75,000.00	41,112.60
Current expenses of the Concilium Bibliographicum (R.F. 2776).....	.....	15,000.00	15,000.00
Marine Biological Laboratory, Woods Hole. Buildings and equipment (R.F. 2803).....	.....	500,000.00	500,000.00
Traveling expenses of representatives of the Union of American Biological Societies (R.F. 2837).....	.....	5,000.00	2,782.97

**Mental Hygiene**

National Committee for Mental Hygiene			
Survey of the care and treatment of mental deficiency (R.F. 2675, 2773).....	7,339.07	30,000.00	29,470.43
Establishing uniform statistics on mental diseases (R.F. 2676).....	807.68	.....	807.68
Fellowships in mental hygiene (R.F. 2835).....	.....	5,000.00	.....
General expenses (R.F. 2772).....	.....	10,000.00	10,000.00
Canadian National Committee for Mental Hygiene. Studies in the application of mental hygiene to school children (R.F. 2836).....	.....	7,500.00	7,500.00

**Miscellaneous**

New York Academy of Medicine			
Salaries of educational director and librarian, also clerical assistance and incidental expenses (R.F. 2714, 2779).....	15,000.00	20,000.00	7,744.36

## EXHIBIT D—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>Miscellaneous—Continued</b>			
New York Academy of Medicine—Continued			
Expenses of its Bureau of Information and Professional Education (R.F. 2780) . . . . .	\$.....	\$12,000.00	\$10,225.68
General survey, educational and informational work (R.F. 2809) . . . . .	.....	5,000.00	5,000.00
American Medical Association. Toward loss in publishing a Spanish edition of its Journal (R.F. 2777-78) . . . . .	15,000.00	.....	5,937.86
Study of Australian aborigines. Preliminary survey (R.F. 2828) . . . . .	.....	3,500.00	2,305.78
National Health Council. Toward general budget (R.F. 2800) . . . . .	.....	5,000.00	4,805.40
<b>TOTALS</b> . . . . .	<b>\$200,522.72</b>	<b>\$1,089,000.00</b>	<b>\$910,730.54</b>
Unexpended balances of appropriations allowed to lapse—			
R.F. 2675 . . . . .	\$428.08		
R.F. 2687 . . . . .	1,457.28		
R.F. 2689 . . . . .	30,859.34		
R.F. 2691 . . . . .	41,198.64		
R.F. 2714 . . . . .	15,000.00		
R.F. 2717 . . . . .	3,315.11		
R.F. 2737 . . . . .	2,819.21		
R.F. 2748 . . . . .	10,000.00		
R.F. 2777 . . . . .	3,692.49		
R.F. 2778 . . . . .	5,369.65		
	<b>\$114,139.80</b>		
R.F. 2857 . . . . .		<b>\$988.06</b>	
<b>TOTALS</b> . . . . .	<b>\$86,382.92</b>	<b>\$1,088,011.94</b>	<b>\$910,730.54</b>

EXHIBIT E  
SCHOOL OF HYGIENE AND PUBLIC HEALTH

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
Harvard University—School of Public Health			
Toward cost of operation (R.F. 2673, 2768).....	\$6,250.00	\$25,000.00	\$25,000.00
General endowment (R.F. 2814).....	.....	400,000.00	400,000.00
<b>TOTALS.....</b>	<b>\$6,250.00</b>	<b>\$425,000.00</b>	<b>\$425,000.00</b>

**EXHIBIT F**  
**MISCELLANEOUS**

Committee of Reference and Counsel of the Annual Foreign Missions Conference of North America. For carrying out its program and co-ordination in foreign missionary work of the principal American mission boards. Total pledge of \$425,000 extending over a period of ten years beginning 1914 (R.F. 228). Balance of prior instalment.....

New York Association for Improving the Condition of the Poor. Providing pensions for dependent widows with families—\$20,000 a year for ten years beginning 1914 (R.F. 239). Balance of prior instalment.....

National Information Bureau. Sustaining membership (R.F. 2816).....

Publications for persons engaged in public health and medical work (R.F. 2672, 2841).....

Shakespeare Memorial Trustees. Rental of building on site purchased for the London School of Hygiene (R.F. 2808).....

Relief work in Japan  
Through the Peking Union Medical College (R.F. 2743).....

Expenses of Foundation's representatives (R.F. 2801).....

Bulletins and reprints (R.F. 2827, 2852).....

Courtesy funds for the Foundation's various offices (R.F. 2824).....

War Relief Commission. Administration 1917 (R.F. 2216).....

Asset Accounts  
Furniture and fixtures (R.F. 2791).....

Books for the library (R.F. 2792).....

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
Committee of Reference and Counsel of the Annual Foreign Missions Conference of North America. For carrying out its program and co-ordination in foreign missionary work of the principal American mission boards. Total pledge of \$425,000 extending over a period of ten years beginning 1914 (R.F. 228). Balance of prior instalment.....	\$12,500.00	.....	\$12,500.00
New York Association for Improving the Condition of the Poor. Providing pensions for dependent widows with families—\$20,000 a year for ten years beginning 1914 (R.F. 239). Balance of prior instalment.....	15,000.00	.....	15,000.00
National Information Bureau. Sustaining membership (R.F. 2816).....	.....	\$1,000.00	1,000.00
Publications for persons engaged in public health and medical work (R.F. 2672, 2841).....	156.86	200.00	166.84
Shakespeare Memorial Trustees. Rental of building on site purchased for the London School of Hygiene (R.F. 2808).....	.....	6,750.00	6,585.00
Relief work in Japan Through the Peking Union Medical College (R.F. 2743).....	30,000.00	.....	17,677.28
Expenses of Foundation's representatives (R.F. 2801).....	700.00	.....	695.76
Bulletins and reprints (R.F. 2827, 2852).....	.....	5,000.00	4,356.73
Courtesy funds for the Foundation's various offices (R.F. 2824).....	.....	5,000.00	.....
War Relief Commission. Administration 1917 (R.F. 2216).....	644.75	.....	.....
Asset Accounts Furniture and fixtures (R.F. 2791).....	.....	4,000.00	3,833.88
Books for the library (R.F. 2792).....	.....	700.00	633.84
<b>TOTALS</b> .....	<b>\$59,001.61</b>	<b>\$22,650.00</b>	<b>\$62,449.13</b>

## Unexpended balances of appropriations allowed to lapse—

R.F. 2801.....	4.24
R.F. 2791.....	\$166.12
R.F. 2792.....	66.16
R.F. 2808.....	165.00
R.F. 2852.....	643.27
	1,040.55

NET TOTALS.....	\$58,997.37	\$21,609.45	\$62,449.13
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## Administration

Executive Offices (R.F. 2738, 2790, 2812, 2825-26).....	\$10,032.38	\$121,181.11	\$115,845.26
Treasurer's Office (R.F. 2729, 2788, 2806, 2855).....	4,279.72	19,638.39	16,896.05
Paris Office (R.F. 2716, 2793, 2818).....	4,682.06	25,818.00	18,138.99
Group insurance and retiring allowances (R.F. 2794-95).....	16,389.60	8,000.00	16,833.80

TOTALS.....	\$35,383.85	\$174,637.50	\$162,713.60
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## Unexpended balances of appropriations allowed to lapse—

R.F. 2738.....	\$4,991.27
R.F. 2729.....	899.34
R.F. 2716.....	3,147.45
	9,038.06
R.F. 2787.....	5,150.56
R.F. 2790.....	3,295.00
R.F. 2826.....	1,931.40
	10,376.96

NET TOTALS.....	\$26,345.79	\$164,260.54	\$162,713.60
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## EXHIBIT G

1924 INTERNATIONAL HEALTH BOARD APPROPRIATIONS,\*  
 UNPAID BALANCES OF APPROPRIATIONS MADE IN PRIOR YEARS  
 AND PAYMENTS THEREON MADE IN 1924

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>COUNTY HEALTH WORK</b>				
United States				
Alabama				
1923 (I.H. 21879, 21939-42, 22061, 21684-96, 21796, 21852).....	\$11,577.78	\$.....	\$9,654.24	
1924 (I.H. 22107-8).....	.....	11,300.00	4,421.85	
California				
1923 (I.H. 21697-98, 21798, 22078).....	3,750.00	.....	2,916.67	
1924 (I.H. 22079-81).....	.....	7,500.00	3,760.93	
Florida				
1924 (I.H. 22220).....	.....	900.00	750.00	
Georgia				
1923 (I.H. 21573).....	1,233.88	.....	1,171.10	
1924 (I.H. 21993).....	.....	3,900.00	913.39	
Illinois				
1923 (I.H. 21574, 21921).....	1,026.67	.....	610.00	
1924 (I.H. 22208).....	.....	1,800.00	1,800.00	
Iowa				
1923 (I.H. 22109).....	208.33	.....	181.33	
1924 (I.H. 22110).....	.....	2,500.00	1,216.57	

\* The Foundation provides for the cost of work carried on by the International Health Board by making to the Board one or more appropriations to cover its work during the year. From these large grants the Board then makes its own appropriations for specific objects.

Kansas				
1923 (I.H. 21816-22, 21651).....	7,544.81		1,693.94	
1924 (I.H. 22209-13, 22250, 22292-94, 22318).....	.....	6,850.00	3,548.29	
Kentucky				
1923 (I.H. 21658-62, 21864).....	4,850.50		4,486.50	
1924 (I.H. 22111-17).....	.....	16,900.00	11,675.70	
Louisiana				
1923 (I.H. 21787, 21880-84, 22119).....	8,106.78		7,783.07	
1924 (I.H. 21894-98, 22118-20).....	.....	11,500.00	5,087.78	
Maryland				
1923 (I.H. 21582).....	1,950.00		1,860.00	
Minnesota				
1923 (I.H. 21799).....	2,625.00		2,585.53	
1924 (I.H. 21999, 22284, 22352).....	.....	2,780.44	1,499.99	
Mississippi				
1923 (I.H. 21730-36).....	7,571.59		3,601.29	
1924 (I.H. 22121-26, 22295-99, 22353).....	.....	12,000.00	5,027.42	
Missouri				
1923 (I.H. 21702, 21835-41).....	3,406.31		2,331.31	
1924 (I.H. 22189-95, 22251-55, 22300).....	.....	8,100.00	5,175.00	
New Mexico				
1923 (I.H. 21753, 21755-57, 21800, 21855, 21866-68, 21885).....	4,619.34		1,886.70	
1924 (I.H. 22127-33, 22214).....	.....	12,300.00	5,471.92	
North Carolina				
1923 (I.H. 21666).....	3,135.93		2,527.79	
1924 (I.H. 22134).....	.....	10,850.00	5,425.01	
Oklahoma				
1924 (I.H. 22319, 22325, 22339-41).....	.....	3,829.11	720.66	
Oregon				
1923 (I.H. 21584-88, 21854).....	9,160.50		1,015.12	
1924 (I.H. 22001, 22135, 22215-16, 22342-43).....	.....	8,810.00	5,459.61	

## EXHIBIT G—Continued

	PRIOR APPROPRIA- TIONS	1924 APPROPRIA- TIONS	1924 PAYMENTS
<b>COUNTY HEALTH WORK—Continued</b>			
United States—Continued			
South Carolina			
1923 (I.H. 21708-10, 21712, 21801-3).....	\$3,886.97	\$.....	\$3,568.90
1924 (I.H. 22136-43).....	.....	14,128.70	6,194.26
South Dakota			
1924 (I.H. 22221-22).....	.....	5,000.00	1,770.81
Tennessee			
1923 (I.H. 21667-69, 21886, 21944-49).....	3,894.06	.....	2,944.60
1924 (I.H. 22002-8, 22301-7).....	.....	12,862.50	6,437.38
Texas			
1923 (I.H. 21589-92, 21907-15).....	10,000.00	1,431.19	8,297.23
1924 (I.H. 22144-48, 22308-11).....	.....	9,000.00	3,087.68
Utah			
1924 (I.H. 22217, 22354).....	.....	1,108.33	450.00
Virginia			
1923 (I.H. 21737, 21739-43, 21922).....	3,072.85	.....	2,737.98
1924 (I.H. 22009-15, 22218, 22344).....	.....	15,083.33	6,564.99
Washington			
1924 (I.H. 22149).....	.....	2,500.00	.....
West Virginia			
1923 (I.H. 21758-63, 21923).....	6,945.74	.....	3,669.02
1924 (I.H. 22150-56, 22490).....	.....	14,860.00	213.00
Wyoming			
1923 (I.H. 22157).....	416.67	.....	399.75
1924 (I.H. 22158).....	.....	2,500.00	.....

<b>Foreign Countries</b>				
<b>Brazil</b>				
1923 (I.H. 21593-96, 21598-9, 21851, 21601, 21920).....	15,673.30	.....	16,395.00	4,258.54
1924 (I.H. 22016-24, 22347).....	.....			6,827.91
<b>Canada</b>				
New Brunswick				
1923 (I.H. 21604).....	21,281.76	.....	18,000.00	14,934.59
1924 (I.H. 22025).....	.....			8,989.44
<b>Training Bases for Field Staff</b>				
Alabama				
1924 (I.H. 22178, 22263, 22279, 22323-24).....	.....		3,153.11	663.83
Mississippi				
1923 (I.H. 21699).....	2,288.27	.....	2,500.00	1,597.48
1924 (I.H. 22000, 22338).....	.....			825.00
<b>Hookworm Work</b>				
<b>United States</b>				
Alabama				
1923 (I.H. 21933).....	45.00	.....		45.00
Mexico				
1924 (I.H. 22228, 22241-43, 22271, 22315-16, 22336).....	.....		36,628.00	11,445.08
<b>Central America</b>				
Costa Rica				
1923 (I.H. 21551).....	2,210.37	.....		1,090.00
1924 (I.H. 21954).....	.....		5,600.00	3,607.16
Guatemala				
1923 (I.H. 21552).....	11,400.56	.....		1,939.67
1924 (I.H. 21955, 22547).....	.....		18,620.00	5,609.77
Honduras				
1923 (I.H. 21553, 21919).....	4,077.62	.....		578.03
1924 (I.H. 21950).....	.....		2,653.00	1,504.21

## EXHIBIT G—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>Hookworm Work—Continued</b>			
<b>Central America—Continued</b>			
Nicaragua			
1923 (I.H. 21554).....	\$3,504.25	\$.....	\$2,897.13
1924 (I.H. 21957).....	.....	2,500.00	2,498.89
Panama			
1923 (I.H. 21555, 21876).....	22,096.20	.....	15,130.87
1924 (I.H. 21958).....	.....	25,310.00	14,845.40
South America			
Brazil			
1923 (I.H. 21565-68, 21648, 21682-83, 21784).....	48,063.60	.....	12,217.14
1924 (I.H. 21969-72, 22173).....	.....	71,900.00	23,629.32
Colombia			
1923 (I.H. 21685, 21834).....	4,302.45	.....	1,477.65
1924 (I.H. 22182).....	.....	7,600.00	3,757.21
Dutch Guiana			
1923 (I.H. 21657).....	2,936.04	.....	Cr. 49.79
Paraguay			
1924 (I.H. 21973).....	.....	22,000.00	4,791.92
West Indies			
Dominica (survey)			
1923 (I.H. 21556).....	1,210.68	.....	.....
1924 (I.H. 21959).....	.....	1,300.00	840.82
Haiti (survey)			
1924 (I.H. 21960).....	.....	6,660.00	1,692.35

Jamaica				
1923 (I.H. 21558-59).....	22,036.50			2,675.45
1924 (I.H. 22073-74, 22203).....	.....	34,080.00		12,636.55
Montserrat, Nevis (survey)				
1924 (I.H. 21981).....	.....	1,300.00		92.46
Porto Rico				
1923 (I.H. 21560, 21938).....	14,318.85			7,567.63
1924 (I.H. 21962-64, 22076).....	.....	28,416.00		17,759.12
St. Kitts (survey)				
1923 (I.H. 21562).....	1,417.24			98.92
1924 (I.H. 21965).....	.....	1,500.00		828.24
St. Lucia				
1923 (I.H. 21563).....	4,800.10			4,144.96
1924 (I.H. 21966, 22244).....	.....	11,500.00		7,704.98
Trinidad, Tobago				
1923 (I.H. 21564).....	4,845.67			2,687.28
1924 (I.H. 21967-68).....	.....	19,290.00		12,180.54
The East				
Australia				
1923 (I.H. 21569, 22069).....	4,626.49			3,708.49
1924 (I.H. 22070).....	.....	10,000.00		5,986.09
Ceylon				
1923 (I.H. 22283).....	.....	2,800.00		2,232.47
1924 (I.H. 22327).....	.....	320.00		.....
Fiji				
1923 (I.H. 21649).....	1,090.15			339.18
1924 (I.H. 22335).....	.....	1,800.00		1,080.23
India				
1923 (I.H. 21570, 21775, 21904).....	16,500.00			3,316.35
1924 (I.H. 22071-72, 22350, 22501).....	.....	11,080.00		5,073.00

## EXHIBIT G—Continued

THE ROCKEFELLER FOUNDATION

## HOOKWORM WORK—Continued

## The East—Continued

## Java (survey)

1924 (I.H. 22202).....

PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
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## Mauritius

1923 (I.H. 21571).....

1924 (I.H. 21974).....

## Seychelles (survey)

1924 (I.H. 21975).....

## Siam

1923 (I.H. 21572, 21877).....

1924 (I.H. 22076, 22257-58).....

## South Sea Islands

1924 (I.H. 22282).....

<b>China</b>				
1923 (I.H. 21752, 21794).....	4,441.06	11,150.00	3,456.76	
1924 (I.H. 22068, 22334).....	.....	660.00	6,873.15	
<b>Experiments with pigs (I.H. 22239)</b>			160.04	
Research in carbon tetrachloride (I.H. 21892, 22065-66, 22259)....	4,270.03	8,010.00	8,128.05	
Resurveys in selected counties in the Southern States (I.H. 21850, 22270).....	3,991.93	200.00	124.23	
Motion picture film on hookworm disease (I.H. 22493).....	.....	1,000.00	34.66	
<b>MALARIA WORK</b>				
<b>Co-operative Demonstrations</b>				
<b>United States</b>				
<b>Alabama</b>				
1923 (I.H. 21765, 21855-57, 21898).....	4,960.47	7,040.00	4,440.04	
1924 (I.H. 22091).....	.....	5,000.00	2,830.11	
<b>Arkansas</b>				
1923 (I.H. 21545).....	5,000.00	5,000.00	4,274.13	
1924 (I.H. 22082).....	.....	.....	.....	
<b>Florida</b>				
1924 (I.H. 22228).....	.....	2,062.50	.....	
<b>Georgia</b>				
1923 (I.H. 21546, 21810, 21853).....	3,738.02	6,650.00	3,094.76	
1924 (I.H. 21976, 22185, 22205).....	.....	.....	3,956.99	
<b>Illinois</b>				
1923 (I.H. 21811, 21828).....	2,159.82	1,000.00	.....	
1924 (I.H. 22272).....	.....	.....	827.69	
<b>Louisiana</b>				
1923 (I.H. 21768, 21778-79, 21812-14).....	3,950.94	5,600.00	1,921.71	
1924 (I.H. 22206-7, 22245).....	.....	.....	2,300.17	
<b>Mississippi</b>				
1923 (I.H. 21745, 21780-82, 21858).....	2,627.30	9,300.00	2,384.83	383
1924 (I.H. 22093, 22273-74, 22288).....	.....	.....	3,165.52	

## EXHIBIT G—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>MALARIA WORK—Continued</b>				
Co-operative Demonstrations—Continued				
United States—Continued				
Missouri				
1923 (I.H. 21717, 21842-43).....	\$2,200.00	\$.....	\$2,000.00	
1924 (I.H. 22186-87, 22246-47).....	.....	3,000.00	2,250.00	
North Carolina				
1923 (I.H. 21769, 21788-90, 21845).....	9,131.26	.....	7,924.22	
1924 (I.H. 22095-102).....	.....	17,450.00	7,390.13	
South Carolina				
1923 (I.H. 21720-21, 21859-61, 22083).....	9,370.00	.....	7,556.95	
1924 (I.H. 22188, 22248-49).....	.....	8,000.00	2,579.85	
Tennessee				
1923 (I.H. 21951-53).....	2,500.00	.....	1,968.50	
1924 (I.H. 21977-79, 22289-91).....	.....	6,137.50	2,876.34	
Texas				
1923 (I.H. 21722, 21898-901).....	5,701.50	.....	3,465.14	
1924 (I.H. 22103-6).....	.....	10,900.00	2,138.77	
Virginia				
1923 (I.H. 21748, 21808, 21827-30).....	2,955.90	.....	2,117.25	
1924 (I.H. 21980-85).....	.....	11,000.00	7,816.90	
Field Studies and Experiments				
United States				
Georgia				
1923 (I.H. 21809, 21844).....	1,186.49	.....	16.24	
1924 (I.H. 22184, 22229, 22278, 22286, 22555).....	.....	11,650.21	6,742.88	

Louisiana				
1923 (I.H. 21807).....	119.83			
Maryland				
1923 (I.H. 21894).....	204.69			
1924 (I.H. 22276).....		2,640.00		1,432.43
Mississippi				
1924 (I.H. 22094, 22230).....		2,900.00		1,208.34
Johns Hopkins School of Hygiene				
1923 (I.H. 21825).....	450.00			262.57
1924 (I.H. 22204, 22260).....		2,080.00		1,808.06
Central America				
Nicaragua				
1923 (I.H. 21547, 21906).....	400.94			300.89
1924 (I.H. 21990, 22183).....		1,860.00		97.57
South America				
Brazil				
1923 (I.H. 21548-50, 21766-67, 21935, 22062).....	19,023.84			5,434.73
1924 (I.H. 21986-88, 22287, 22337).....		25,600.00		12,555.62
West Indies				
Porto Rico				
1924 (I.H. 21992, 22320).....		2,900.00		1,634.97
Europe				
Austria				
1924 (I.H. 22090).....		2,600.00		998.59
Italy				
1923 (I.H. 21824).....	4,906.58			
1924 (I.H. 21989).....		5,000.00		2,767.88
The East				
Palestine				
1923 (I.H. 21746).....	1,822.80			510.08
1924 (I.H. 22284, 22351).....		2,600.00		132.69
				385

## EXHIBIT G—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>MALARIA WORK—Continued</b>			
Field Studies and Experiments—Continued			
The East—Continued			
Philippine Islands			
1923 (I.H. 21747).....	\$7,944.81	\$.....	\$1,123.89
1924 (I.H. 22550-51).....	.....	7,200.00	4,623.50
Miscellaneous			
Motion picture film on malaria (I.H. 21643, 22237).....	283.69	5,000.00	4,649.46
<b>YELLOW FEVER</b>			
Brazil			
1923 (I.H. 21873, 22058).....	183,365.42	.....	67,483.34
1924 (I.H. 22169, 22266, 22332, 22484).....	.....	475,000.00	329,806.87
Colombia and Venezuela			
1923 (I.H. 21847, 21874-75).....	33,664.38	.....	17,745.78
1924 (I.H. 22167, 22238).....	.....	75,000.00	37,105.84
Countries bordering on the Caribbean Littoral and Amazon Valley			
1923 (I.H. 21793).....	4,734.43	.....	886.48
1924 (I.H. 22168, 22267).....	.....	10,000.00	4,153.33
Mexico and Central America			
1923 (I.H. 21846).....	63,217.81	.....	58,611.57
1924 (I.H. 22166, 22326, 22338, 22485).....	.....	60,000.00	3,638.52
Training of personnel (I.H. 21751, 21934, 22170).....	2,624.96	10,000.00	4,615.59
Vaccine and serum (I.H. 22171).....	.....	6,000.00	4,895.46
History of yellow fever (I.H. 21750, 22172).....	3,518.55	10,000.00	4,085.32

**TUBERCULOSIS IN FRANCE**

<b>Comité National</b>				
1923 (I.H. 21610, 21727).....	8,370.90			5,186.72
1924 (I.H. 22034).....	.....	20,630.00		4,149.38
<b>Public Health Visiting</b>				
1923 (I.H. 21611).....	55,947.17			11,636.26
1924 (I.H. 22035).....	.....	68,440.00		20,357.87
<b>Contingent Fund</b>				
1923 (I.H. 21612).....	2,864.02			1,130.72
1924 (I.H. 22036, 22269).....	.....	9,000.00		401.52

**PUBLIC HEALTH EDUCATION**

**Schools of Hygiene and Public Health**

<b>Brazil—Institute of Hygiene, São Paulo</b>				
Operation (I.H. 21618, 21681, 22175).....	7,463.92	12,000.00		6,362.50
Equipment and supplies (I.H. 22176).....	3,000.00	.....		3,000.00
<b>Czechoslovakia—Institute of Hygiene, Prague. Buildings and equipment (I.H. 21680, 22174, 22497).....</b>	584,120.35	220,000.00		9,230.86
<b>England—School of Hygiene and Tropical Medicine, London</b>				
Land, buildings, and equipment (I.H. 21723).....	28,201.67			.....
Operation (I.H. 21740, 22041).....	25,000.00	25,000.00		.....
<b>Poland—Institute of Hygiene, Warsaw</b>				
Building and equipment (I.H. 22331, 22314).....	187,500.00	80,000.00		187,500.00
Support of biochemist (I.H. 21031, 22042).....	800.00	3,000.00		3,000.00
Production of insulin (I.H. 22200).....	.....	3,600.00		3,600.00
<b>Summer courses in public health. Printing and distribution of pamphlets (I.H. 22268).....</b>	.....	7,500.00		6,362.23
<b>Study and Training Courses for Health Officers</b>				
<b>California (I.H. 22345).....</b>	.....	600.00		.....

## EXHIBIT G—Continued

## PUBLIC HEALTH EDUCATION—Continued

## Ohio

## Correspondence courses

Health Officers (I.H. 21937, 22177).....	\$264.07	\$1,500.00	\$847.13
Health Nurses (I.H. 21646, 21772).....	370.03	.....	.....
Health Officers Institute (I.H. 22346).....	.....	600.00	415.82

Training fund for candidates and new appointees for state health work  
(I.H. 22261).....

## Teaching of hygiene in medical schools

Harvard Medical School. Preparation of syllabus (I.H. 22046).....	.....	8,800.00	.....
Medical School of Vanderbilt University. Special training for professor of hygiene and public health (I.H. 22219).....	.....	7,500.00	4,389.98

Fellowships. Grants to doctors for study of public health (I.H. 21862,  
22043-45, 22276, 22494).....

## PUBLIC HEALTH ADMINISTRATION

## United States—Aid in developing state health services

## Sanitary Engineering

## Colorado

1924 (I.H. 22312).....	.....	1,200.00	.....
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## Connecticut

1924 (I.H. 22358).....	.....	166.66	.....
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## Missouri

1923 (I.H. 21602).....	81.57	.....	.....
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## Montana

1923 (I.H. 21870).....	950.00	.....	927.57
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1924 (I.H. 22026).....	.....	1,900.00	1,380.87
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North Dakota				
1924 (I.H. 22224)	.....	1,406.63	477.73	
Utah				
1923 (I.H. 21603)	690.00	.....	345.00	
1924 (I.H. 22231)	.....	500.00	200.00	
Epidemiology				
Alabama				
1924 (I.H. 22159)	.....	8,000.00	420.29	
Utah				
1923 (I.H. 22196)	267.50	.....	151.14	
1924 (I.H. 22197, 22230)	.....	3,376.65	1,268.59	
Virginia				
1923 (I.H. 21777)	1,444.62	.....	704.82	
1924 (I.H. 22027)	.....	750.00	750.00	
Vital Statistics				
Georgia				
1923 (I.H. 21878)	400.00	.....	400.00	
West Virginia				
1924 (I.H. 22198)	.....	2,400.00	327.44	
Travel of state health officers to study health organizations and activities. 1924 (I.H. 22179)	.....	2,500.00	069.56	
Brazil—Toward maintenance of a public health nursing service				
1923 (I.H. 21605-06)	6,818.29	.....	6,272.46	
1924 (I.H. 22028-29)	.....	21,200.00	10,288.84	
Canada—Public health survey of Province of Quebec (I.H. 22265)	.....	1,000.00	577.03	
France—Toward development of public health service of the Department of Hérault (I.H. 22234)	.....	18,500.00	.....	
Czechoslovakia				
1923 (I.H. 21607)	4,520.00	.....	4,020.00	339
1924 (I.H. 22030)	.....	13,020.00	8,500.00	

## EXHIBIT G—Continued

## PUBLIC HEALTH ADMINISTRATION—Continued

## Philippine Islands

1923 (I.H. 21729).....	\$157.54	\$.....	\$2.02
1924 (I.H. 22256).....	.....	200.00	155.52

## League of Nations

Toward maintenance of an international interchange of public health personnel

1922 (I.H. 21525).....	15,020.00	.....	.....
1923 (I.H. 21609, 22089).....	63,080.00	80,040.00	63,080.00

1924 (I.H. 22031, 22322).....	.....	.....	.....
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Toward development of an epidemiological intelligence service

1923 (I.H. 21608).....	32,840.00	.....	29,215.44
1924 (I.H. 22032, 22360).....	.....	37,840.00	.....

Toward cost of training health officers in vital and public health statistics

1923 (I.H. 21871).....	7,500.00	.....	6,645.45
1924 (I.H. 22033).....	.....	21,000.00	.....

## PUBLIC HEALTH LABORATORY SERVICE

## United States

## Alabama

1923 (I.H. 21613, 21770).....	3,982.42	.....	3,955.89
1924 (I.H. 22160-61).....	.....	12,820.00	6,004.67

## Arkansas

1923 (I.H. 22162).....	2,000.00	.....	1,676.16
1924 (I.H. 22163).....	.....	4,000.00	.....

## Connecticut

1924 (I.H. 22357).....	.....	375.00	.....
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<b>Delaware</b>				
1924 (I.H. 22349)	.....	1,500.00	.....	.....
<b>Kansas</b>				
1923 (I.H. 21673)	.....	56.12	.....	.....
<b>Missouri</b>				
1924 (I.H. 22225, 22313)	.....	.....	2,325.00	522.54
<b>Montana</b>				
1923 (I.H. 21869)	.....	1,050.00	.....	676.74
1924 (I.H. 22037)	.....	.....	2,100.00	1,575.00
<b>Oregon</b>				
1923 (I.H. 21925, 22084)	.....	750.00	.....	750.00
1924 (I.H. 22085)	.....	.....	2,700.00	1,835.63
<b>Tennessee</b>				
1924 (I.H. 22491)	.....	.....	391.66	.....
<b>Utah</b>				
1924 (I.H. 22359)	.....	.....	1,000.00	.....
<b>Virginia</b>				
1923 (I.H. 21806)	.....	257.34	.....	256.85
1924 (I.H. 22038, 22280)	.....	.....	1,069.00	786.61
<b>Central America</b>				
<b>British Honduras</b>				
1923 (I.H. 21614)	.....	2,300.00	.....	.....
<b>Costa Rica</b>				
1923 (I.H. 21672)	.....	196.86	.....	75.66
1924 (I.H. 22356)	.....	.....	3,000.00	2,867.88
<b>Guatemala</b>				
1923 (I.H. 21615)	.....	1,894.85	.....	426.21
1924 (I.H. 22039)	.....	.....	3,060.00	908.76
<b>Honduras</b>				
1923 (I.H. 21804)	.....	813.83	.....	12.20

## EXHIBIT G—Continued

	PRIOR APPROPRIATIONS	1924 APPROPRIATIONS	1924 PAYMENTS	THE ROCKEFELLER FOUNDATION
<b>PUBLIC HEALTH LABORATORY SERVICE—Continued</b>				
<b>Central America—Continued</b>				
Nicaragua				
1923 (I.H. 21616, 21823).....	\$1,163.41	\$.....	\$935.10	
1924 (I.H. 22040).....	.....	5,500.00	3,412.76	
Salvador				
1923 (I.H. 21617).....	1,702.37	.....	547.45	
Demonstrations (I.H. 21771).....	300.00	.....	.....	
<b>ADMINISTRATIVE FIELD STAFF</b>				
Salaries (I.H. 21622, 22047).....	6,784.09	430,000.00	374,789.33	
Traveling expenses (I.H. 21624, 22049).....	34,552.04	120,000.00	106,763.97	
Commutation (I.H. 21622-23, 22048).....	14,677.90	60,000.00	43,292.28	
Medical examinations (I.H. 22053).....	.....	1,500.00	400.00	
Drugs for conserving health (I.H. 22052).....	.....	1,000.00	69.89	
Bonding (I.H. 22051, 22262).....	.....	7,000.00	5,859.10	
Automobiles (I.H. 22054).....	.....	8,000.00	1,746.83	
Traveling expenses of families (I.H. 22050, 22180, 22227).....	945.87	24,000.00	19,708.83	
Retiring allowances (I.H. 22164-65).....	47,673.69	55,000.00	50,029.45	
<b>MISCELLANEOUS</b>				
Travel of visiting scientists (I.H. 21642, 21774, 21932, 22199, 22226, 22281, 22321, 22328-30, 22335).....	3,782.21	30,800.00	16,999.12	
Express, freight, and exchange (I.H. 22055).....	.....	5,000.00	Cr. 1,221.68	
Field equipment and supplies (I.H. 22056).....	.....	7,000.00	6,949.08	
Pamphlets and charts (I.H. 22057).....	.....	5,000.00	1,399.13	
Hookworm and malaria films donated or lent (I.H. 22201).....	.....	1,000.00	990.82	

**ADMINISTRATION**

Home Office (I.H. 21644, 21773, 21902, 22087).....	17,322.77	202,106.32	200,040.08
Paris Office (I.H. 21728, 21788).....	8,046.07	21,525.00	14,085.24
Group insurance and retiring allowances (I.H. 22164, 22165).....	7,574.79	5,000.00	7,505.86
<b>TOTALS</b> .....	<b>\$1,871,851.77</b>	<b>\$3,345,225.84</b>	<b>\$2,536,333.46</b>
Unexpended balances of appropriations allowed to lapse.....	\$420,123.60	90,940.58	
<b>NET TOTALS*</b> .....	<b><u>\$1,451,728.17</u></b>	<b><u>\$3,248,285.26</u></b>	<b><u>\$2,536,333.46</u></b>
Refund on prior year appropriations British Guiana (I.H. 21268).....		<b><u>\$72.91</u></b>	

\* The Foundation appropriated to the International Health Board for its work during the year 1924 the sum of \$3,285.00.

## EXHIBIT H

**1924 CHINA MEDICAL BOARD APPROPRIATIONS\***  
**UNPAID BALANCES OF APPROPRIATIONS MADE IN PRIOR YEARS**  
**AND PAYMENTS THEREON MADE IN 1924**

	PRIOR APPROPRIATIONS	1924 APPROPRIATIONS	1924 PAYMENTS
<b>HOSPITALS OF MISSIONARY SOCIETIES</b>			
American Baptist Foreign Mission Society			
Ningpo. Support of additional staff (C.M. 276)			
Balance of prior instalments.....	\$9,000.00	\$.....	\$.....
Instalment for 1924.....	.....	2,250.00	.....
Shaohsing			
Support of additional staff (C.M. 277)			
Balance of prior instalments.....	8,636.86	.....	3,880.41
Instalment for 1924.....	.....	2,475.00	.....
Residence (C.M. 2319)	3,000.00	.....	.....
American Board of Commissioners for Foreign Missions			
Fenchow			
Support of additional staff (C.M. 2519)			
Instalment for 1923.....	3,700.00	.....	2,002.76
Instalment for 1924.....	.....	3,700.00	.....
Maintenance (C.M. 2520)			
Balance of prior instalments.....	1,712.50	.....	.....
Instalment for 1924—Mex. 2,500.....	.....	1,500.00	.....

\* The Foundation provides for the cost of work carried on by the China Medical Board by making to the Board one or more appropriations to cover its work for the year. From these large grants the Board then makes its own appropriations for specific objects.

Tehchow				
Support of additional staff (C.M. 211, 294, 297, 2229, 2360, 2498)				
Balance of prior instalments.....	10,848.70			
Instalment for 1924.....	.....	1,091.00		
Maintenance (C.M. 2571)				
Balance of prior instalments.....	3,170.30		2,310.50	
Instalment for 1924.....	.....	2,310.50		
Board of Foreign Missions of the Methodist Episcopal Church				
Peking				
Support of additional staff (C.M. 2266, 2522)				
Balance of prior instalments.....	7,950.00		4,950.00	
Instalment for 1924.....	.....	5,400.00		
Residences (C.M. 2523)		4,000.00		
Equipment for dental department (C.M. 2540)		10,000.00		
Wuhu				
Support of additional staff (C.M. 2384)				
Balance of prior instalments.....	17,549.33		9,867.82	
Instalment for 1924.....	.....	7,250.00		
Building of hospital and residences (C.M. 2385, 2499)		58,000.00		13,930.56
Board of Missions of the Methodist Episcopal Church, South. Soochow—Support of additional staff (C.M. 2418)				
Balance of prior instalments.....	38,000.00		8,440.00	
Instalment for 1924—Mex. 8,000.....	.....	9,600.00		
Board of Missions of the Methodist Episcopal Church, South—American Baptist Foreign Mission Society, Jointly. Huchow—Support of additional staff (C.M. 2162, 2153, 2154)				
Instalment for 1923.....	1,725.00		1,725.00	395
Instalment for 1924.....	.....	2,175.00		

## EXHIBIT H—Continued

## HOSPITALS OF MISSIONARY SOCIETIES—Continued

	PRIOR APPROPRIATIONS	1924 APPROPRIATIONS	1924 PAYMENTS
Board of Foreign Missions of the Presbyterian Church in the U. S. A.			
Changteh—Maintenance (C.M. 2144, 2604)			
Balance of prior instalments.....	\$450.00	\$.....	\$.....
Instalment for 1924.....		3,750.00	
Chefoo			
Support of additional staff (C.M. 284)			
Balance of prior instalments.....	6,361.80	.....	.....
Maintenance (C.M. 2603). Instalment for 1924.....		3,750.00	
Hwaiyuen			
Support of additional staff (C.M. 285, 2655, 2656)			
Balance of prior instalments.....	3,937.50	.....	.....
Instalment for 1924.....		2,625.00	
Maintenance for year 1924–25 (C.M. 2657).....		750.00	
Paotungfu			
Support of additional staff (C.M. 295, 2306). Balance of prior instalments.....	1,600.00	.....	.....
Maintenance (C.M. 2572)			
Balance of prior instalments.....	6,750.00	.....	4,500.00
Instalment for 1924.....		4,500.00	
Shuntehfu—Maintenance (C.M. 2573)			
Balance of prior instalments.....	3,125.00	.....	2,250.00
Instalment for 1924.....		1,750.00	
Board of Foreign Missions of the Reformed Church in America. Amoy			
Equipment (C.M. 2282).....	2,025.00	.....	.....
Support of additional staff (C.M. 2283)			
Balance of prior instalments.....	7,524.00	.....	.....
Instalment for 1924.....		1,881.00	

Church of Scotland Foreign Mission Committee. Ichang—Support of additional staff (C.M. 289)			
Balance of prior instalments.....	6,750.00	2,250.00	750.00
Instalment for 1924.....	.....	.....	.....
Domestic and Foreign Mission Society of the Protestant Episcopal Church in the U. S. A. Anking			
Support of additional staff (C.M. 2308)			
Balance of prior instalments.....	6,975.00	.....	4,500.00
X-ray equipment (C.M. 2622).....	1,000.00	.....	1,000.00
Executive Committee of Foreign Missions of the Presbyterian Church in the U. S., South Soochow, Kashin. Support of additional staff (C.M. 2101)			
Balance of prior instalments.....	18,625.00	.....	.....
Foreign Mission Board of the Southern Baptist Convention. Laichowfu			
—Support of additional staff (C.M. 279, 280)			
Balance of prior instalments.....	7,350.00	1,650.00	.....
Instalment for 1924.....	.....	.....	.....
Hwanghien—Support of additional staff (C.M. 281, 282, 2103)			
Balance of prior instalments.....	5,850.00	900.00	.....
Instalment for 1924.....	.....	.....	.....
Yangchow			
Support of additional staff (C.M. 2104, 2106). Balance of prior instalments.....	4,875.00	1,000.00	1,000.00
Maintenance (C.M. 2525). Instalment for 1924.....	.....	.....	.....
London Missionary Society			
Siaochang—Support of additional staff (C.M. 2167)			
Balance of prior instalments.....	1,853.75	587.82	.....
Instalment for 1924.....	.....	600.00	.....
Taungchow—Support of additional staff (C.M. 2326). Balance of prior instalments.....	1,081.87	781.68	.....

## EXHIBIT H—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>HOSPITALS OF MISSIONARY SOCIETIES—Continued</b>			
Methodist Women's Hospital in Peking. Nurses' Training School			
Equipment and supplies—Mex. 5,000 (C.M. 2677).....	\$.....	\$3,000.00	\$.....
Support of additional staff (C.M. 2678)			
Instalment for 1924—Mex. 960.....	.....	550.00	.....
Nanking Union Hospital			
Buildings and equipment—Mex. 45,000 (C.M. 2574).....	27,000.00	.....	2,600.00
Maintenance (C.M. 2575)			
Instalment for 1923.....	9,250.00	.....	9,250.00
Instalment for 1924.....	.....	9,250.00	.....
United Christian Missionary Society			
Luchowfu			
Support of additional staff (C.M. 2330, 2331)			
Balance of prior instalments.....	5,712.50	.....	.....
Instalment for 1924.....	.....	2,800.00	.....
Maintenance (C.M. 2329, 2637)			
Balance of prior instalments.....	20,300.00	.....	.....
Instalment for 1924.....	.....	12,100.00	.....
Luchowfu, Nantungchow. Support of additional staff (C.M. 2100).			
Balance of prior instalment.....	12,445.00	.....	.....
Nantungchow			
Support of additional staff (C.M. 2218)			
Balance of prior instalments.....	6,750.00	.....	.....
Instalment for 1924.....	.....	1,650.00	.....
Buildings and equipment—Mex. 12,000 (C.M. 2658).....	.....	7,000.00	.....

United Free Church of Scotland. Mukden—Support of additional staff (C.M. 2232). Balance of prior instalments.....	750.00	.....	750.00
Women's Foreign Missionary Society of the Methodist Episcopal Church. Kinkiang—Support of additional staff (C.M. 2359). Instalment for 1923—Mex. 525.....	500.00	.....	.....
Loss in Exchange. To cover loss in exchange on payments to missionary societies for their hospitals (C.M. 2503).....	27,219.59	.....	1,983.47
<b>HOSPITALS UNDER CHINESE MANAGEMENT</b>			
Central Hospital, Peking Support of additional staff (C.M. 2464) Balance of prior instalments.....	18,658.07	.....	1,223.02
X-ray equipment (C.M. 2617).....	1,000.00	.....	1,000.00
<b>MISSIONARY SOCIETIES—HOSPITALS AND PREMEDICAL EDUCATION</b>			
Yale Foreign Missionary Society. Hunan-Yale Medical School, Changsha—Support of additional staff of hospital, premedical school, and nurses' training school—Mex. 41,605 and \$6,845 a year for five years (C.M. 2454, 2485) Balance of prior instalment.....	31,645.00	.....	28,055.20
Instalment for 1924.....	56,645.00	.....	.....
<b>PREMEDICAL EDUCATION</b>			
Canton Christian College Equipment (C.M. 2443).....	10,000.00	.....	.....
Support of additional staff (C.M. 2445) Balance of prior instalments.....	24,000.00	.....	10,977.76
Instalment for 1924—Mex. 10,200.....	12,000.00	.....	.....
Construction and equipment of science building—Hk 77,700 (C.M. 2631).....	47,000.00	.....	.....

## EXHIBIT H—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>PREMEDICAL EDUCATION—Continued</b>			
Fukien Christian University. Support of additional staff (C.M. 2274, 2275)			
Instalment for 1923.....	\$12,700.00	\$.....	\$.....
Maintenance of Science department (C.M. 2276).....	10,000.00	.....	.....
Ginling College. Support of additional staff (C.M. 2402)			
Balance of prior instalment.....	4,704.00	.....	1,248.00
Instalment for 1924—Mex. 2,400.....	.....	2,400.00	.....
Nankai College			
Science building—Mex. 50,000 (C.M. 2591).....	32,390.95	.....	22,718.20
Scientific equipment—Mex. 25,000 (C.M. 2592).....	15,000.00	.....	.....
Support of additional staff (C.M. 2593)			
Balance of prior instalment.....	3,785.59	.....	.....
Instalment for 1924—Mex. 6,750.....	.....	4,050.00	319.36
Support of visiting professor—1923-24 (C.M. 2632).....	4,000.00	.....	2,800.00
Nanking University			
Toward construction of science building—Mex. 25,000 (C.M. 2680).....	.....	15,000.00	.....
Equipment for science departments—Mex. 25,000 (C.M. 2681).....	.....	15,000.00	.....
Gas plant—Mex. 5,000 (C.M. 2682).....	.....	3,000.00	.....
Support of visiting professor for one year—Mex. 15,000 (C.M. 2683).....	.....	9,000.00	.....
Peking (Yenching) University			
Maintenance of premedical department (C.M. 2569, 2670)			
Balance of prior instalment.....	1,875.00	.....	1,875.00
Instalment for 1924.....	.....	7,500.00	5,625.00
Construction and equipment of science building—Mex. 112,157.81 (C.M. 2602).....	70,000.00	.....	38,235.96

St. John's University, Shanghai. Maintenance of science departments (C.M. 2679). Instalment for 1924—Mex. 10,000.....	.....	6,000.00	.....
Shanghai College Equipment for science building—Mex. 44,000 (C.M. 2687).....	.....	24,000.00	23,320.00
Maintenance of science departments (C.M. 2688). Instalment for 1924—Mex. 6,000.....	.....	3,300.00	.....
Soochow University Furniture and equipment for science department—Mex. 28,000 (C.M. 2673).....	.....	16,000.00	.....
Maintenance of science department (C.M. 2674) Instalment for 1924—Mex. 12,000.....	.....	6,850.00	6,180.00
Southeastern University Toward construction of science building—Mex. 100,000 (C.M. 2587)...	60,000.00	.....	17,689.57
Scientific equipment—Mex. 25,000 (C.M. 2588).....	15,000.00	.....	.....
Support of additional staff (C.M. 2589) Balance of prior instalment.....	6,733.96	4,050.00	2,826.93
Instalment for 1924—Mex. 6,750.....	1,600.00	.....	.....
Support of visiting professor—1923 (C.M. 2590).....	.....	4,500.00	15.97
Miscellaneous Salary of specialist in science teaching for work under the direction of the National Educational Reform Association of China (C.M. 2628).. Expenses of biological supply service (C.M. 2685, 2690).....	4,166.68	8,500.00	4,166.68
Summer Institute for science teachers at Tsing Hua College (C.M. 2672).....	.....	4,500.00	.....
<b>MEDICAL EDUCATION</b>			
Medical Schools—Affiliated Peking Union Medical College Purchase of additional property (C.M. 2381).....	4,808.58	.....	1,010.11
Buildings and fixed equipment (C.M. 2613, 2646).....	81,081.15	.....	25,381.88
Alterations to original buildings (C.M. 2635).....	2,772.85	.....	2,772.85

## EXHIBIT H—Continued

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THE ROCKEFELLER FOUNDATION

**MEDICAL EDUCATION—Continued****Medical Schools—Affiliated—Continued****Peking Union Medical College—Continued**

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
Alterations to new buildings (C.M. 2566)	\$442.88	\$.....	\$442.88
Alterations to Chinese houses (C.M. 2579)	1,347.20	.....	726.38
Movable equipment (C.M. 2614)	12,140.79	.....	3,481.21
Accessories (C.M. 2529)	13,691.92	.....	1,638.05
Library (C.M. 2624)	7,184.41	.....	1,274.63
Peking stock (C.M. 2648)	250,000.00	.....	.....
Operation			
Budget 1923-24 (C.M. 2626, 2651)	187,536.64	350,000.00	449,863.81
Budget 1924-25 (C.M. 2676)	.....	405,000.00	.....
Contingent Fund			
Year 1922-23 (C.M. 2584)	8,129.58	.....	5,172.93
Year 1923-24 (C.M. 2627)	12,799.43	15,000.00	15,641.27
Group insurance and retiring allowances (C.M. 2649, 2650)	8,662.89	18,700.00	18,192.54
Expenses in America			
Year 1923 (C.M. 2611)	1,782.81	.....	83.64
Year 1924 (C.M. 2664, 2665)	.....	51,212.15	48,579.88
Insurance on buildings and plate glass (C.M. 2601, 2652, 2653, 2684)	92.52	45,350.00	41,289.41
Travel and expenses of trustees in attending dedication of college (C.M. 2494)	2,752.03	.....	130.27
Visiting professors			
Year 1923 (C.M. 2609)	9,335.38	.....	7,695.38
Year 1924 (C.M. 2654)	.....	30,000.00	11,938.82

Training service for Chinese doctors				
Year 1922-23 (C.M. 2581).....	12,827.09	.....	.....	
Year 1923-24 (C.M. 2630).....	21,350.01	.....	18,016.26	
Diet investigation (C.M. 2539).....	981.09	.....	.....	
Field studies in kala azar (C.M. 2633).....	15,000.00	.....	7,238.04	
Shanghai Medical School—Purchase of land (C.M. 2269, 2429).....	1,518.85	.....	Cr. 513.30	
<b>Medical Schools—Unaffiliated</b>				
Hunan-Yale College of Medicine. Toward budget for year 1924-25—				
Mex. 40,000 (C.M. 2689).....	1,500.00	22,000.00	.....	1,495.39
National Medical College, Peking. X-ray equipment (C.M. 2618).....	.....	.....	.....	
Shantung Christian University				
Maintenance (C.M. 2578)	8,309.67	.....	8,309.67	
Balance of prior instalments.....	.....	20,000.00	9,592.84	
Instalment for 1924—Mex. 33,000.....	.....	.....	.....	
Purchase of land, construction of buildings and equipment (C.M. 2636, 2692).....	50,000.00	50,000.00	50,000.00	
Loss in exchange on remittances for capital expenditure (C.M. 2693).....	.....	30,000.00	.....	
<b>FELLOWSHIPS AND SCHOLARSHIPS</b>				
For study in the United States and Europe 1924 (C.M. 2659, 2686, 2710).....	.....	44,000.00	43,862.44	
For study at the Peking Union Medical College				
Chinese students				
Year 1922-23 (C.M. 2580).....	5,717.60	.....	.....	
July 1 to December 31, 1923 (C.M. 2629).....	4,633.01	.....	2,518.85	
Year 1924 (C.M. 2661).....	.....	10,000.00	2,945.97	
Foreign students				
Year 1923 (C.M. 2608).....	4,363.24	.....	1,558.46	
Year 1924 (C.M. 2660).....	.....	6,000.00	1,676.08	
Students from the Canton Christian College for study in the medical department of the University of Hongkong (C.M. 2554 to 2558)				
Balance of prior instalment.....	300.00	.....	.....	
Instalment for 1924—Hk 1,200.....	.....	900.00	.....	

## EXHIBIT H—Continued

	PRIOR APPROPRIA-TIONS	1924 APPROPRIA-TIONS	1924 PAYMENTS
<b>EDUCATIONAL CAMPAIGN</b>			
Council on Health Education			
Toward general budget (C.M. 2642)			
Instalment for 1923—Mex. 13,500.....	\$7,500.00	\$.....	\$6,907.77
Instalment for 1924—Mex. 13,500.....	.....	7,500.00	.....
For carrying out a special campaign among the middle schools and colleges of China concerning the value and possibilities of scientific medicine (C.M. 2643)			
Instalment for 1923—Mex. 4,500.....	2,500.00	2,500.00	2,268.30
Instalment for 1924—Mex. 4,500.....	.....	2,500.00	.....
<b>TRANSLATION</b>			
China Medical Missionary Association, Publication Committee. For use in its translation work—Mex. 6,000 (C.M. 2639).....	.....	4,000.00	.....
National Medical Association of China. Toward its share of the expenses of the Terminology Committee (C.M. 2453)			
Balance of prior instalments.....	1,200.00	.....	.....
Instalment for 1924—Mex. 500.....	.....	600.00	.....
<b>MISCELLANEOUS</b>			
China Medical Missionary Association. Toward current expenses (C.M. 2585, 2586)			
Instalment for 1923—Mex. 15,000.....	9,000.00	.....	7,832.63
Instalment for 1924—Mex. 10,000.....	.....	6,000.00	.....
Committee of three Chinese scientists. Expenses of visit to the United States (C.M. 2562).....	8,500.00	.....	.....

North China Union Language School. Toward cost of recitation building—Mex. 35,075 (C.M. 2502).....	42,459.10	.....	16,360.51
Emergency Fund. For aid of medical work in China, at the discretion of the resident director (C.M. 2647).....	1,563.04	.....	807.01
Land and building for Peking Office (C.M. 2671).....	.....	18,000.00	10,745.22
<b>ADMINISTRATION</b>			
Home Office (C.M. 2663, 2684, 2610).....	1,943.29	80,808.10	30,173.93
Peking Office (2666, 2612).....	22,015.74	27,000.00	27,134.54
Architectural Bureau in Peking Office (C.M. 2616, 2662).....	6,376.77	10,800.00	11,033.96
Group Insurance and Retiring Allowances (C.M. 2667, 2668).....	4,097.74	3,400.00	6,735.23
<b>TOTALS</b> .....	<b>\$1,575,129.20</b>	<b>\$1,506,972.75</b>	<b>\$1,146,297.43</b>
Unexpended balances of appropriations allowed to lapse.....	132,444.71	62,423.19	.....
<b>NET TOTALS *</b> .....	<b>\$1,442,684.49</b>	<b>\$1,444,549.56</b>	<b>\$1,146,297.43</b>
Refund of amount disbursed in prior year— Travel of director (C.M. 2641).....	.....	<b>\$399.41</b>	.....

\* The Foundation appropriated to the China Medical Board for its work during the year 1924 the sum of \$1,450,100.

**EXHIBIT I**  
**SUMMARY OF APPROPRIATIONS AND PAYMENTS**

	PRIOR APPROPRIA- TIONS	1924 APPROPRIA- TIONS	1924 PAYMENTS
INTERNATIONAL HEALTH BOARD.....	\$1,451,728.17	\$3,248,285.26	\$2,536,333.46
CHINA MEDICAL BOARD.....	1,142,684.49	1,444,549.56	1,146,297.43
DIVISION OF MEDICAL EDUCATION.....	1,757,778.56	2,596,981.55	2,045,298.23
DIVISION OF STUDIES.....	86,382.92	1,088,011.94	910,730.54
SCHOOL OF HYGIENE AND PUBLIC HEALTH.....	6,250.00	425,000.00	425,000.00
MISCELLANEOUS.....	58,997.37	21,609.45	62,449.13
ADMINISTRATION.....	26,345.79	164,260.54	162,713.60
 <b>TOTALS.....</b>	 <b>\$4,830,167.30</b>	 <b>\$8,988,698.30</b>	 <b>\$7,288,822.39</b>
Prior Appropriations.....	\$4,830,167.30		
1924 Appropriations.....	8,988,698.30		
 <b>TOTAL APPROPRIATIONS.....</b>	 <b>\$13,818,865.60</b>		
1924 Payments .....		7,288,822.39	
 Balance payable on appropriations.....	 <b>\$6,530,043.21</b>		

In addition to the foregoing, the Foundation has made pledges and appropriations which become effective in future years, and will require for payment the following amounts:

YEAR 1925.....	\$9,449,177.84
YEAR 1926.....	3,198,700.50
YEAR 1927.....	2,748,550.00
YEAR 1928.....	987,515.00
YEAR 1929.....	1,115,325.00
YEAR 1930.....	795,500.00
<b>TOTAL.....</b>	<b>\$18,204,768.34</b>

## EXHIBIT J

STATEMENT OF APPROPRIATIONS AND PAYMENTS ON ACCOUNT OF SPECIAL FUNDS DURING THE  
YEAR 1924

## LAURA S. ROCKEFELLER FUNDS

	APPROPRIA-	PAYMENTS
	TIONS	
Baptist Home for the Aged in New York City (R.F. 2784).....	\$500.00	\$500.00
Baptist Home of Northern Ohio (R.F. 2782).....	500.00	500.00
Euclid Avenue Baptist Church of Cleveland, Ohio (R.F. 2783).....	1,500.00	1,500.00
Ministers and Missionaries Benefit Board of the Northern Baptist Convention (R.F. 2781).....	500.00	500.00
	<u>\$3,000.00</u>	<u>\$3,000.00</u>

## JOHN D. ROCKEFELLER FUND

Baptist Home for the Aged in New York City (R.F. 2785-86).....	<u>\$1,850.00</u>	<u>\$1,850.00</u>
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EXHIBIT K  
STATEMENTS OF PRINCIPAL FUNDS

## GENERAL FUND

Balance of Mr. Rockefeller's gifts..... \$165,204,624.50

This fund is accounted for in securities and secured demand loans.

## LAURA S. ROCKEFELLER FUND

Mrs. Rockefeller's gifts comprising four separate funds..... \$50,000.00

These funds are invested in securities and cash on deposit.

## JOHN D. ROCKEFELLER FUND

Mr. Rockefeller's gifts for special purposes..... \$37,000.00

This fund is invested in securities.

## EXHIBIT L

## LAND, BUILDINGS, AND EQUIPMENT FUNDS

	BALANCE DECEMBER 31, 1923	EXPENDITURES 1924	BALANCE DECEMBER 31, 1924	THE ROCKEFELLER FOUNDATION
<b>THE ROCKEFELLER FOUNDATION</b>				
Library.....	\$4,451.48	\$633.84	\$5,085.32	
Equipment.....	30,707.67	3,833.88	34,541.55	
<b>NET TOTALS, The Rockefeller Foundation.....</b>	<b>\$35,159.15</b>	<b>\$4,467.72</b>	<b>\$39,626.87</b>	
<b>CHINA MEDICAL BOARD</b>				
Peking Office—Land and building.....	\$.....	\$10,745.22	\$10,745.22	
Peking Union Medical College				
Original purchase.....	171,013.29	.....	171,013.29	
Additional land.....	202,145.46	1,010.11	203,155.57	
New buildings.....	6,914,921.21	25,381.88	6,940,303.09	
Alterations—original buildings.....	290,627.15	2,772.85	293,400.00	
Alterations—Chinese houses.....	4,652.80	726.38	5,379.18	
Movable equipment.....	447,587.11	3,481.21	451,068.32	
Accessories.....	381,691.78	1,633.05	383,324.83	
Supplies.....	20,200.09	.....	20,200.09	
Heavy furniture for staff residences.....	7,258.04	.....	7,258.04	
Library.....	80,815.59	1,274.63	82,090.22	
Street improvements.....	8,899.72	.....	8,899.72	

Shanghai Medical School				
Land.....	298,845.25	Cr. 513.30	298,331.95	
NET TOTALS, China Medical Board.....	\$8,828,657.49	\$46,512.03	\$8,875,169.52	
Net GRAND TOTALS.....	<u>\$8,863,816.64</u>	<u>\$50,979.75</u>	<u>\$8,914,796.39</u>	

## SUMMARY

Balance, December 31, 1923.....	\$8,863,816.64
Expenditures 1924.....	50,979.75
Balance, December 31, 1924.....	<u>\$8,914,796.39</u>

**EXHIBIT M**  
**SCHEDULE OF SECURITIES IN GENERAL FUND ON DECEMBER 31, 1924**  
**BONDS**

THE ROCKEFELLER FOUNDATION

NAME	RATE PER CENT	DATE OF MATURITY	AMOUNT	PRICE PER CENT	FOUNDATION'S LEDGER VALUE
American Agricultural Chemical Co. First Mortgage Convertible.....	5	Oct. 1928	\$310,000.00	101.	\$313,100.00
American Telephone & Telegraph Co. Thirty-year Collateral Trust.....	5	Dec. 1946	100,000.00	97.75	97,750.00
Armour & Co. Real Estate First Mortgage.....	4½	June 1939	1,000,000.00	93.25	932,500.00
Atlantic & Birmingham Ry. First Mortgage.....	5	Jan. 1934	677,000.00	90.	609,300.00
Atlantic Refining Co. Notes.....	4½	July 1926	700,000.00	99.51	696,570.00
Atlantic Refining Co. Notes.....	4½	Jan. 1927	400,000.00	99.51	398,040.00
Atlantic Refining Co. Notes.....	4½	July 1927	400,000.00	99.51	398,040.00
Baltimore & Ohio R. R. Refunding and General Mortgage.....	5	Dec. 1995	650,000.00	99.75	648,375.00
Belgian Government Securities.....			Fcs 28,000,000.00		1,992,900.00
Chicago & Alton R. R. Refunding Mortgage.....	3	Oct. 1949	\$551,000.00	65.	358,150.00
Chicago & Alton Ry. First Lien.....	3½	July 1950	854,000.00	53.	452,620.00
Chicago City & Connecting Railways Collateral Trust.....	5	Jan. 1927	1,305,000.00	85.	1,109,250.00
Chicago, Milwaukee & St. Paul Ry. General Mortgage Series "A".....	4	May 1989	30,000.00	97.	29,100.00
Chicago, Milwaukee & St. Paul Ry. General Mortgage Series "C".....	4½	May 1989	500,000.00	103.	515,000.00

Chicago, Milwaukee & St. Paul Ry. Debenture..	4	July 1934	\$450,000.00	88.2838	\$397,277.50
Chicago, Milwaukee & St. Paul Ry. General and Refunding Mortgage Series "A" .....	4½	Jan. 2014	500,000.00	91.0625	455,312.50
Chicago & North Western Ry. Extension.....	4	Aug. 15, '26	50,000.00	95.	47,500.00
Chicago & North Western Ry. Sinking Fund Debenture.....	5	May 1933	80,000.00	102.	81,600.00
Chicago Railways Co. First Mortgage.....	5	Feb. 1927	500,000.00	97.	486,000.00
Cleveland, Cincinnati, Chicago & St. Louis Ry., St. Louis Division Collateral Trust.....	4	Nov. 1990	73,000.00	90.	65,700.00
Cleveland, Cincinnati, Chicago & St. Louis Ry. General.....	4	June 1993	700,000.00	83.893	587,250.00
Cleveland Short Line First Mortgage.....	4½	Apr. 1961	500,000.00	95.	475,000.00
Colorado Industrial Co. First Mortgage.....	5	Aug. 1934	2,000,000.00	80.	1,600,000.00
Dominion of Canada, Government of, Fifteen-year.....	5	Apr. 1931	500,000.00	94.565	472,825.00
Erie R. R. General Mortgage Convertible Fifty-year Series "B" .....	4	Apr. 1953	1,065,000.00	74.7175	795,742.30
Illinois Central R. R. Refunding Mortgage.....	4	Nov. 1955	300,000.00	87.	261,000.00
Interborough Rapid Transit Co. First Mortgage (Stamped).....	5	Jan. 1966	1,750,000.00	96.8571	1,695,000.00
International Mercantile Marine Co. First and Collateral Trust Sinking Fund.....	6	Oct. 1941	2,848,000.00	97.5	2,776,800.00
Lake Erie & Western R. R. Second Mortgage.....	5	July 1941	100,000.00	100.	100,000.00
Lake Shore & Michigan Southern Ry. First Mortgage.....	3½	June 1997	926,000.00	87.	805,620.00
Lake Shore & Michigan Southern Ry. Debenture.....	4	May 1981	1,678,000.00	92.	1,539,180.00
Magnolia Petroleum Co. First Mortgage.....	6	Jan. 1997	1,772,000.00	100.	1,772,000.00
Missouri, Kansas & Texas R. R. Prior Lien Series "A" .....	5	Jan. 1962	331,250.00	78.5	260,031.25

## EXHIBIT M—Continued

NAME	RATE PER CENT	DATE OF MATURITY	AMOUNT	PRICE PER CENT	FOUNDATION'S LEDGER VALUE
Missouri, Kansas & Texas R. R. Prior Lien Series "B"...	4	Jan. 1962	\$331,250.00	64.5	\$213,656.25
Missouri, Kansas & Texas R. R. Adjustment Series "A"...	5	Jan. 1967	96,800.00	61.5	59,532.00
Morris & Essex R. R. First and Refunding Mortgage...	3½	Dec. 2000	175,000.00	82.75	144,812.50
Mutual Fuel Gas Co. First Mortgage...	5	Nov. 1947	250,000.00	100.	250,000.00
National Railways of Mexico, Prior Lien Fifty-year Sinking Fund with July 1, 1914 and subsequent coupons attached...	4½	July 1957	50,000.00	60.3275	30,168.75
Secured 6% Notes for coupon due January 1, 1914...		Jan. 1983	1,125.00 7,357.50 13,500.00	.59. 5.50 .50	663.75 404.66 67.50
Certificate Series "A" for interest in arrears...					
Certificate Series "B" for interest in arrears...					
New York Central Lines Equipment Trust of 1913...	4½	Jan. '25-'28	144,000.00	99.0393	142,616.61
New York Central & Hudson River R. R. Thirty-year Debenture...	4	May 1934	330,000.00	88.45	291,885.00
New York, Chicago & St. Louis R. R. First Mortgage...	4	Oct. 1937	35,000.00	95.	33,250.00
New York, Chicago & St. Louis R. R. Debenture	4	May 1931	1,303,000.00	87.	1,138,610.00
New York Connecting R. R. First Mortgage...	4½	Aug. 1958	500,000.00	95.69073	478,453.65

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Northern Pacific Ry. Refunding and Improvement Mortgage.....	4½	July 2047	\$390,000.00	91.577	\$357,150.00
Pennsylvania R. R. Consolidated Mortgage Sterling.....	4	May 1948	£2,400.00	99.	11,880.00
Pennsylvania R. R. General Mortgage.....	4½	June 1965	1,500,000.00	98.25	1,473,750.00
Philadelphia & Reading Coal & Iron Co. Refunding Sinking Fund.....	5	Jan. 1973	167,000.00	94.25234	157,401.42
Pittsburg, Cincinnati, Chicago & St. Louis Ry. Consolidated Mortgage Series "I".....	4½	Aug. 1963	500,000.00	103.	515,000.00
Reading Co. General and Refunding Series "A".....	4½	Jan. 1997	333,000.00	94.25	318,852.50
Rutland R. R. First Consolidated Mortgage.....	4½	July 1941	25,000.00	90.	22,500.00
St. Louis—San Francisco Ry. Prior Lien Series "A".....	4	July 1950	1,500,000.00	72.75	1,091,250.00
Seaboard Air Line Ry. Adjustment Mortgage.....	5	Oct. 1949	455,000.00	77.	350,350.00
Southern Pacific R. R. First and Refunding Mortgage.....	4	Jan. 1955	100,000.00	86.	86,000.00
United States Fourth Liberty.....	4½	Oct. 15, '38	1,075,000.00	93.21347	1,002,044.80
United States Second Liberty Converted.....	4½	Nov. 15, '42	2,100,000.00	93.00921	1,953,193.40
United States Government Treasury Notes Series "B".....	4½	Mar. 15, '27	3,000,000.00	100.	3,000,000.00
United States Government Treasury Notes Series "C".....	4½	June 15, '25	3,000,000.00	100.	3,000,000.00
United States Government Treasury Notes.....	4½	Sept. 15, '26	1,000,000.00	100.	1,000,000.00
United States Government Treasury Notes Series "A".....	4½	Dec. 15, '27	4,000,000.00	100.	4,000,000.00
United States Government Treasury Certificates of Indebtedness.....	4	Mar. 15, '25	3,110,000.00	100.	3,110,000.00
Wabash R. R. Second Mortgage.....	5	Feb. 1939	120,000.00	97.8	117,360.00

## EXHIBIT M—Continued

NAME	RATE PER CENT	DATE OF MATURITY	AMOUNT	PRICE PER CENT	FOUNDATION'S LEDGER VALUE
Washington Ry. & Electric Co. Consolidated Mortgage.....	4	Dec. 1951	\$450,000.00	83.5	\$375,750.00
Western Maryland R. R. First Mortgage.....	4	Oct. 1952	1,032,000.00	78.8913	814,168.76
Wheeling & Lake Erie R. R. Lake Erie Division First Mortgage.....	5	Oct. 1926	140,000.00	100.	140,000.00
Wheeling & Lake Erie R. R. Equipment Trust Series "B".....	5	Apr. '25-'27	150,000.00	99.75	149,625.00
Wilson Realty Co. First Mortgage.....	6	July 1929	7,500.00	95.	7,125.00
<b>TOTAL BONDS.....</b>					<b>\$49,051,020.10</b>

## STOCKS

NAME	NUMBER OF SHARES	PRICE PER SHARE	FOUNDATION'S LEDGER VALUE
American Ship Building Co. Common.....	24,260	\$54.173537	\$1,314,250.00
Anglo-American Oil Co., Ltd. (Par £1).....	366,517	25.166404	9,228,915.10
Atchison, Topeka & Santa Fe Ry. Preferred.....	5,000	98.25	491,250.00
Atchison, Topeka & Santa Fe Ry. Common.....	21,100	95.2563	2,009,908.33

The Buckeye Pipe Line Co. (Par \$50).....	49,693	100.	\$4,969,300.00
Central National Bank, Savings & Trust Co. Capital.....	950	177.8538	168,961.10
Chehalis & Pacific Land Co. Capital.....	220	24.2034	5,324.75
Chicago City & Connecting Ry. Participation Certificates Preferred.....	17,530	15.	262,950.00
Chicago City & Connecting Ry. Participation Certificates Common.....	10,518	2.	21,036.00
Chicago & Eastern Illinois Ry. Preferred.....	3,000	34.	102,000.00
Cleveland Arcade Co. Capital.....	2,500	98.6222	246,555.56
Cleveland Trust Co. Capital.....	457	195.7541	89,459.52
Colorado & Southern Ry. First Preferred.....	4,800	54.	259,200.00
Consolidated Gas Co. of N. Y. Capital (No par value).....	40,000	60.5889375	2,423,557.50
The Crescent Pipe Line Co. (Par \$25).....	14,120	35.	494,200.00
Cumberland Pipe Line Co. ....	6,000	40.6666	244,000.00
Erie R. R. First Preferred.....	21,400	45.8306	980,773.76
Eureka Pipe Line Co. ....	12,357	162.	2,001,834.00
Galena Signal Oil Co. Preferred.....	4,193	139.7	585,779.50
Galena Signal Oil Co. Common.....	20,000	107.6856735	2,153,713.47
Great Lakes Towing Co. Preferred.....	1,527	88.7361	135,500.05
Great Lakes Towing Co. Common.....	1,200	12.	14,400.00
Indiana Pipe Line Co. (Par. \$50).....	24,845	106.1111	2,611,486.28
Kanawha & Hocking Coal & Coke Co. Preferred.....	202	100.	20,200.00
Kanawha & Hocking Coal & Coke Co. Common.....	668	90.953	60,756.40
Manhattan Ry. Capital (Modified Guarantee).....	10,000	100.	1,000,000.00
Missouri, Kansas & Texas R. R. Co. 7% Preferred.....	9,531	40.	381,240.00
Missouri Pacific R. R. Convertible Preferred.....	16,880	55.5	936,840.00
Mutual Oil Co. (Par \$5).....	200,000	3.890458	778,091.60
National Transit Co. (Par \$12.50).....	126,481	28.4	3,604,708.50
New York Transit Co. ....	12,382	122.	1,511,824.00
Northern Pacific Ry. Common.....	700	91.7625	64,233.75
Northern Pipe Line Co. ....	9,000	95.	855,000.00

## EXHIBIT M—Continued

NAME	NUMBER OF SHARES	PRICE PER SHARE	FOUNDATION'S LEDGER VALUE
Pere Marquette Ry. Preferred.....	5,740	54.56502	\$313,204.35
Provident Loan Certificates (Par \$5,000).....	40	100.	200,000.00
The Solar Refining Co.....	9,076	92.5035	839,561.76
Southern Pipe Line Co.....	24,845	125.	3,105,825.00
South West Pennsylvania Pipe Lines.....	8,000	125.	1,000,000.00
Standard Oil Co. (Indiana) (Par \$25).....	460,760	43.35	19,973,946.00
Standard Oil Co. (Nebraska).....	2,620	90.	235,800.00
Standard Oil Co. (New Jersey) Non-voting Cumulative Preferred.....	55,000	102.8729	5,658,008.48
Standard Oil Co. (New Jersey) Common (Par \$25).....	919,500	36.475	33,538,762.50
The Standard Oil Co. (Ohio) Common.....	33,912	102.	3,459,024.00
The Standard Oil Co. (Ohio) Preferred Non-voting Cumulative.....	17,088	106.	1,811,328.00
Tilden Iron Mining Co. Capital.....	1,780	27.35	48,683.46
Union Tank Car Co. Common.....	36,000	44.6135	1,606,087.97
Virginia-Carolina Chemical Co. Non-voting, no par Class "B" Common.....	8,750	18.	157,500.00
Western Pacific R. R. Corporation Preferred.....	20,195	43.50	878,482.50
Western Pacific R. R. Corporation Common.....	30,292	15.25	461,980.62
Wilson Realty Co. Capital.....	591	100.	59,100.00
Woman's Hotel Co. (In liquidation) Capital.....	300	10.	3,000.00
<b>TOTAL Stocks.....</b>	.....	.....	<b>\$113,372,322.91</b>
<b>SUMMARY</b>			
Bonds.....			\$49,051,020.10
Stocks.....			113,372,322.91
Total ledger value of investments belonging to General Fund.....			<b>\$162,423,343.01</b>

EXHIBIT N  
 SCHEDULE OF SECURITIES IN SPECIAL FUNDS ON DECEMBER 31, 1924  
 JOHN D. ROCKEFELLER FUND  
 BONDS

NAME	RATE PER CENT	DATE OF MATURITY	AMOUNT	PRICE PER CENT	FOUNDATION'S LEDGER VALUE
Canada Southern Ry. Consolidated Mortgage Series "A" ..	5	Oct. 1962	\$37,000	100.	\$37,000.00
<b>TOTAL BONDS .....</b>					<b>\$37,000.00</b>

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LAURA S. ROCKEFELLER FUND  
 BONDS

Colorado Industrial Co. First Mortgage.....	5	Aug. 1934	\$50,000	80.	\$40,000.00
<b>TOTAL BONDS .....</b>					<b>\$40,000.00</b>



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